PROPOSED MINING OF GRANITE ON A PORTION OF PORTION 2 (REMAINING EXTENT) OF THE FARM AROAMS 57, REGISTRATION DIVISION OF NAMAQUALAND, NORTHERN CAPE.

DRAFT BASIC ASSESSMENT REPORT

MAY 2019

REFERENCE NUMBER: NC 30/5/1/3/2/10746MP

PREPARED FOR:

Limes Sales Limited

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ABBREVIATIONS

BID	Background Information Document
DBAR	Draft Basic Assessment Report
DEAT	Department of Environment, Agriculture and Tourism
DMR	Department of Mineral and Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ECO	Environmental Control Officer
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
FBAR	Final Basic Assessment Report
GN	Government Notice
GNR	Government Notice Regulation
HIA	Heritage Impact Assessment
I&AP's	Interested and Affected Parties
LED	Local Economic Development
NEMA	National Environmental Management Act
MPRDA	Minerals and Petroleum Resources Development Act, 2002
MHSA	Mine Health and Safety Act
PPP	Public Participation Process
PPE	Personal Protective equipment
Ptn	Portion
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SHE	Safety, Health and Environment
SLP	Social and Labour Plan
WMA	Water Management Area

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mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT:	*Lime Sales Limited*
TEL NO:	*021 527 5200*
FAX NO:	*021 527 5255*
POSTAL ADDRESS:	*PO Box 160, Milnerton*
PHYSICAL ADDRESS:	*On a portion of Portion 2 (Remaining Extent) of the farm Aroams 57, Registration Division of Namaqualand RD, Northern Cape*
FILE REFERENCE NUMBER SAMRAD:	*NC 30/5/1/3/2/ 10746 MP*

1. IMPORTANT NOTICE

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

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

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

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

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

2. Objective of the basic assessment process

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

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

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

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

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

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

  (ii) the degree to which these impacts –

    (aa) can be reversed;

    (bb) may cause irreplaceable loss of resources; and

    (cc) can be managed, avoided or mitigated;

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

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

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

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

PART A: SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of the Practitioner:	Greenmined Environmental
	Yolandie Coetzee
Tel No.:	011 966 4390 / 082 734 5113
Fax No.:	086 546 0579
E-mail address:	yolandie.c@greenmined.co.za

ii) Expertise of the EAP.

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

(with evidence).

Mrs. Yolandie Coetzee has a B.Sc. Degree in Microbiology and Biochemistry and an Honours Degree in Envivornmental Sciencies. Please find full CV attached in Appendix I.

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

(In carrying out the Environmental Impact Assessment Procedure)

Yolandie Coetzee is an Environmental Consultant with 9 years' experience in the environmental sector. She specialized the last 5 years in the rehabilitation of mines where she conducted the conceptual rehabilitation and management designs and the closure plans and programs. She has also been involved in a number of other environmental projects including railway sidings, filling stations, abattoir's, logistics hub and mining sites where she compiled environmental management plans, environmental impact assessments, environmental audits, due diligences, IWULA's/IWWMP's and alien invasive encroachment programs. She studied at the University of Potchefstroom where she has successfully completed her undergraduate degree in microbiology and biochemistry and her Honors degree in environmental sciences. See a list of past project attached as Appendix I.

b) Location of the overall Activity.

Farm Name:	On a portion of Portion 2 (Remaining Extent) of the farm Aroams 57, Registration Division of Namaqualand RD, Northern Cape
Application area (Ha)	5ha
Magisterial district:	Registration Division of Namaqualand RD
Distance and direction from the nearest town	Approximately 8.84 km East Aggeneys, Northern Cape Province
21 digit Surveyor General Code for each farm portion	C05300000000057000002

c) Locality map

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

The requested map is attached as Appendix B.

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

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

Lime Sales Limited intends to apply for a mining permit to mine 5 ha of on a portion of portion 2 (remaining extent) of the farm Aroams 57, which falls in the Khâi-Ma Municipality Local Municipality in the Registration Division of Namaqualand RD, Northern Cape Province.

The area earmarked for the proposed mining falls on a section of the farm that was previously used as an existing quarry and the intention of this application is to increase the existing quarry. The proposed Lime Sales quarry will be located over a section of the current SPH Kundalila Quarry whereby these mining permits will overlay each other. SPH Kundalila will no longer be mining in the area that is to be allocated for the proposed Lime Sales Quarry. The mining methods will make use of blasting means of explosives in order to loosen the hard rock, in pit crushing is also taking place, the material is then loaded and hauled out of the excavation to the mobile crushing and screening plants. Lime Sales will be using the existing processing area that SPH Kundalila have been using. Potential expansion (less than 1ha) of this proposed processing area will take place. The granite will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site. Blasting of rock and secondary blasting could occur more than once a month. The noise caused by blasting will be instantaneous and of short duration. As there are no residents within close proximity to the proposed mining area, the blasting at the site will not have an adverse effect on surrounding landowners. The applicant must ensure that all surrounding residents as well as permit holders are informed of each blasting event.

The proposed mining area is approximately 5 ha in extent and the applicant, Lime Sales Limited (Pty) Ltd, intents to win material from the area for at least 2 years with a possible extension of another 3 years. The granite to be removed from the quarry will be used for road construction and various other projects in the vicinity.

The granite to be mined at the site is found at surface level, and very little to no topsoil exist in the proposed mining area. Topsoil stripping is therefore not viable at the proposed quarry area. The overburden (product that could not be sold) will be removed and stockpiled separately for later use when the quarry is rehabilitated. Blasting of rock and secondary blasting could occur more than once a month. The noise caused by blasting will be instantaneous and of short duration. As there are no residents within close proximity to the proposed mining area, the blasting at the site will not have an adverse effect on surrounding landowners. The applicant must ensure that all surrounding residents as well as permit holders are informed of each blasting event.

The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Blasting;
- Excavating;
- Crushing;
- Stockpiling and transporting;
- Sloping and reshaping upon closure of the site; and
- Replacing the topsoil for future vegetation growth the disturbed area.

The mining site will contain the following:

- Drilling equipment;
- Excavating equipment;
- Earth moving equipment; and
- Mobile crushing and screening plants.
- Access Roads;
- Site Office (Container);
- Site vehicles;
- Parking area for visitors and site vehicles;
- Hard Park for TMM's;
- Vehicle service area;
- Wash bay;
- Workshop;
- Salvage Area;
- Bunded diesel and oil storage facilities;
- Generator on bunded area;
- Ablution Facilities;
- Jo-Jo Tanks;
- Solar power panel's;
- Weigh Bridge; and
- Demarcated general and hazardous waste area.

Due to the remote locality of the proposed operation no infrastructure will be affected. Existing roads and tracks will be used and in the case of new tracks being developed it will be addressed at final closure and rehabilitation.

EXISTING INFRASTRUCTURE:

As stated above, the proposed mining area will be established adjacent to an existing quarry

The following structures are present within a 3 km radius from the proposed mining area:

- ±150m from site: Borehole with pump
- ±890 m from site: Cement dam with water pipe line

- ±2.5 km from site: N14 national road

The impact of the proposed mining area on the infrastructural features of the surrounding area is deemed to be of very low significance. The impact of the mining activities will be concentrated within the 5ha footprint area of the mine.

Generators and solar power panels will be used to power the infrastructure on site. Future endeavours will dictate if or when an Eskom connection will be secured. All diesel storage will be below the threshold as mentioned in the EIA regulations of the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended 2017. See the requested map attached as Appendix C.

i) Listed and specified activities

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
(E.g. For Mining – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc **E.g. for mining –** excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Ha or m^2**	**Mark with an X where applicable or affected**	**(GNR 324, GNR 325, GNR 326 OR GNR 327)**
Demarcation of site with visible beacons	5ha	N/A	Not Listed
Site establishment (establishment of temporary buildings and infrastructure within boundaries of site.	0m2 Already existing	N/a	Not listed
Stripping and stockpiling of topsoil of the mining area Drilling and Blasting Excavating and Loading Crushing and Screening Sloping and reshaping upon closure of the site (Final Rehabilitation)	5ha Crushing and Screening (±1ha- forms part of the existing processing area)	X	GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 21 (Mining Permit area): *Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —* *(a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource [,]; or [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]* *(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;* *But excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies*
Stripping and stockpiling of topsoil of the mining area Drilling and Blasting Excavating and Loading Crushing and Screening Sloping and reshaping upon closure of the site (Final Rehabilitation)	5ha	X	GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 21 (Mining Permit area): *Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —* *(a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource [,]; or [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]* *(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;* *But excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies*
Stripping and stockpiling of topsoil of the mining area Drilling and Blasting Excavating and Loading Crushing and Screening Sloping and reshaping upon closure of the site (Final Rehabilitation)	5ha	X	GNR 327 environmental impact assessment regulations listing notice 1 of 2017 activity 22: *The decommissioning of any activity requiring –* *(i) a closure certificate in terms of section 43 of the mineral and petroleum resources development act, 2002 (act no. 28 of 2002); or* *(ii) a mining right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure;* *But excluding the decommissioning of an activity relating to the secondary processing of a –* *(a) mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource; or* *(b) petroleum resource, including the refining of gas, beneficiation, oil or petroleum products; –* *In which case activity 31 in this notice applies.*
Stripping and stockpiling of topsoil of the mining area Drilling and Blasting Excavating and Loading Crushing and Screening Sloping and reshaping upon closure of the site (Final Rehabilitation)	5ha	X	GNR 327 environmental impact assessment regulations listing notice 1 of 2017 activity 27 (mining area): *The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.*
Stripping and stockpiling of topsoil of the mining area Drilling and Blasting Excavating and Loading Crushing and Screening	5ha	X	GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 28 (Mining and Stockpile area): *Commercial and industrial developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.*
Stripping and stockpiling of topsoil of the mining area Excavating and Loading Crushing and Screening	5ha	X	GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 35 (Mining and Stockpile area): *The expansion of residential, retail, recreational, tourism, commercial or institutional developments on land previously used for mining or heavy industrial purposes, where the increased development footprint will exceed 1 000 square meters; excluding—* *(i) where such land has been remediated in terms of part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; or* *(ii) where an environmental authorisation has been obtained for the decommissioning of such a mine or industry in terms of this Notice or any previous NEMA notice; or* *(iii) where a closure certificate has been issued in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) for such land.*

ii) Description of the activities to be undertaken

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

The area earmarked for the proposed development is situated on a portion of portion 2 (remaining extent) of the farm Aroams 57 is situated Approximately 8.84 km East Aggeneys, Northern Cape Province. The area earmarked for the proposed mining falls on a section of the farm that was previously used as an existing quarry and the intention of this application is to increase the existing quarry. The proposed Lime Sales quarry will be located over a section of the current SPH Kundalila Quarry whereby these mining permits will overlay each other. SPH Kundalila will no longer be mining in the area that is to be allocated for the proposed Lime Sales Quarry. When proceeding with option 1 (preferred alternative), a smaller “Greenfields” area is to be disturbed having minimal impacts on the natural receiving environment. The mining methods will make use of blasting means of explosives in order to loosen the hard rock, primary crushing is conducted in the pit, and the material is then loaded and hauled out of the excavation to the mobile crushing and screening plants. Lime Sales will be using the existing processing area that SPH Kundalila have been using. Potential expansion (less than 1ha) of this proposed processing area will take place. The proposed site will include a section of the old Raumix Mining Permit area that was not utilized during the Raumix mining permit time.

The GPS coordinates of the proposed mining area are as follow:

Preferred Alternative	
Decimal Degrees	**Degrees; Minutes: Seconds**
A – 29.169714°S; 18.991503°E	A 29°10'10.97"S 18°59'29.41"E
B – 29.169424°S; 18.993927°E	B 29°10'9.93"S 18°59'38.14"E
C – 29.169963°S; 18.993924°E	C 29°10'11.87"S 18°59'38.13"E
D – 29.169816°S; 18.994834°E	D 29°10'11.34"S 18°59'41.40"E
E - 29.170214°S; 18.994001°E	E 29°10'12.77"S 18°59'38.40"E
F - 29.170657°S; 18.994091°E	F 29°10'14.37"S 18°59'38.73"E
G - 29.170624°S; 18.994532°E	G 29°10'14.25"S 18°59'40.31"E
H - 29.171368°S; 18.994995°E	H 29°10'16.92"S 18°59'41.98"E
I - 29.171830°S; 18.992989°E	I 29°10'18.59"S 18°59'34.76"E
A – 29.169714°S; 18.991503°E	A 29°10'10.97"S 18°59'29.41"E

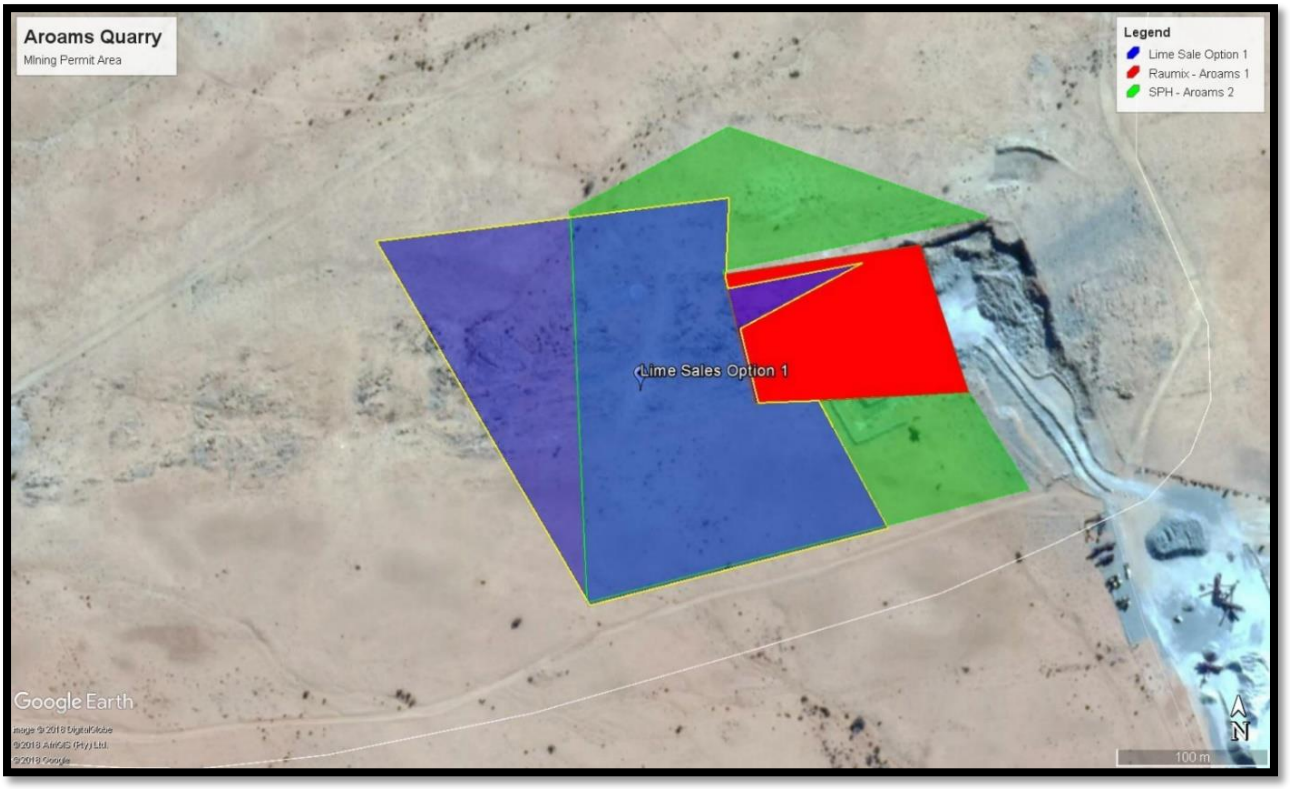

Figure 1: Lime Sales – Option 1

ALTERNATIVE SITE DESCRIPTION

The following alternative sites was assessed for the proposed mining but found not environmentally and practically suitable. The site still has a green status and a larger area of the natural area will need to be disturbed for the quarry to be established. This area will lay over a section of the SPH mining permit area and will include a green fields area. The area will not encapsulate the Raumix mining permit area.

SITE ALTERNATIVE 1
Decimal Degrees
A – 29.1697°S; 18.991437°E
B – 29.169424°S; 18.993927°E
C – 29.169963°S; 18.993924°E
F - 29.170657°S; 18.994091°E
G - 29.170624°S; 18.994532°E
H - 29.171368°S; 18.994995°E
I - 29.171830°S; 18.992989°E
A – 29.169714°S; 18.991503°E

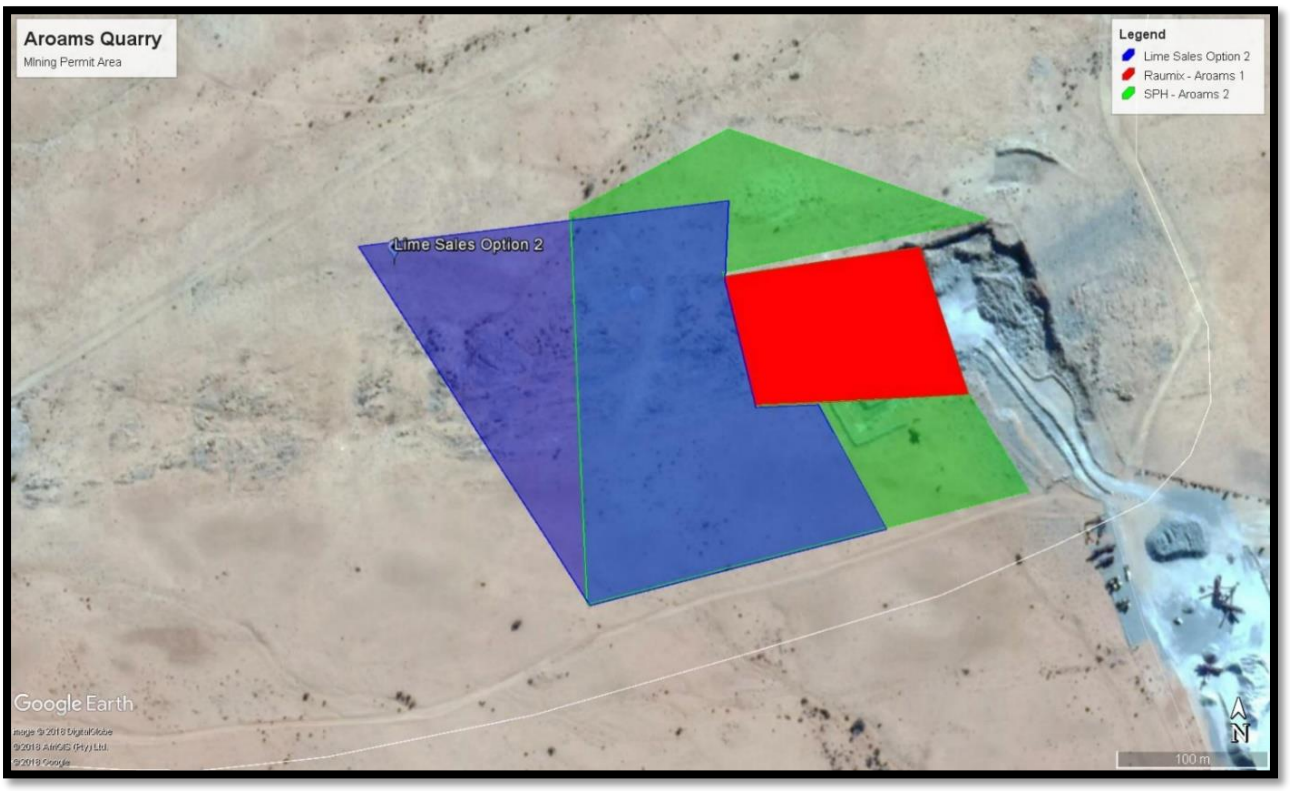

Figure 2: Lime Sales – Option 2

ALTERNATIVE SITE DESCRIPTION 3

The following alternative site was assessed for the proposed mining but found not environmentally and practically suitable. The site still has a green status and the natural area will need to be disturbed for the quarry to be established. A whole new area needs to be cleared for mining to proceed.

Decimal Degrees
A,-29,169714,18.991503
B, -29.169424,18.993927
C,-29.169963,18.993924
D,-29.169816,18.994834
E,-29.170214,18.994001
F,-29.170657,18.994091
G,29.170624,18.994532
H,29.171368,18.994995
I,-29.171830,18.992989
A,-29,169714,18.991503

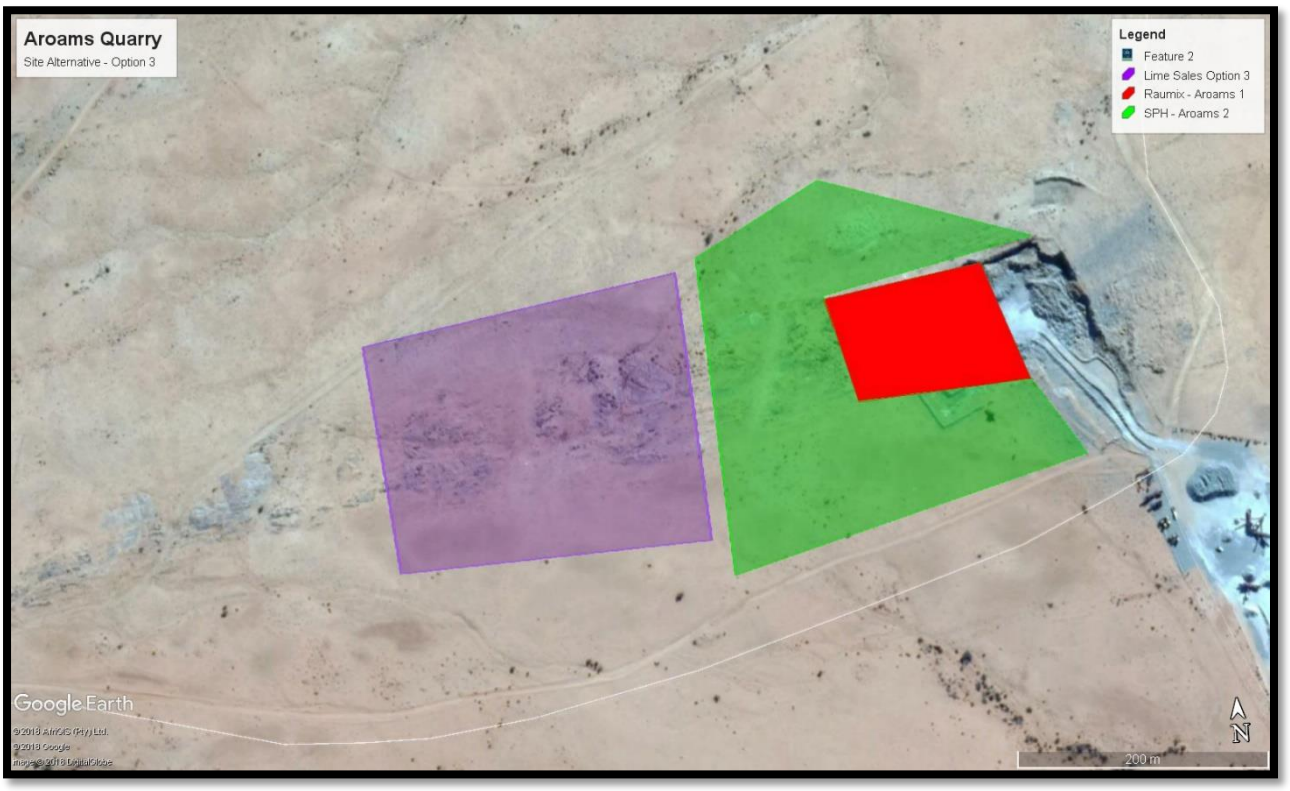

Figure 3: Lime Sales – Option 3

An application for a mining permit in terms of Section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) [MPRDA] was submitted to the Department of Mineral Resources (DMR).

The proposed project triggers the following listed activities in terms of the National Environmental Management Act,1998 (Act No.107 of 1998) [NEMA] and the Environmental Impact Assessment (EIA) Regulations (as amended by GNR 326 effective 7 April 2017), and therefore requires a basic assessment process to obtain environmental authorisation:

- <u>GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 21:</u>

Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —

(a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource [,]; or [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]

(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;

but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 22:

The decommissioning of any activity requiring –

(i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); or

(ii) a Mining right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure;

but excluding the decommissioning of an activity relating to the secondary processing of a –

(a) mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource; or

(b) petroleum resource, including the refining of gas, beneficiation, oil or petroleum products; in which case activity 31 in this Notice applies.

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 27:

The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28:

Commercial and industrial developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 35:

The expansion of residential, retail, recreational, tourism, commercial or institutional developments on land previously used for mining or heavy industrial purposes, where the increased development footprint will exceed 1 000 square meters; excluding—

(i) where such land has been remediated in terms of part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; or

(ii) where an environmental authorisation has been obtained for the decommissioning of such a mine or industry in terms of this Notice or any previous NEMA notice; or

(iii) where a closure certificate has been issued in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) for such land.

Other legislation triggered by the proposed project includes:

- An application for a Mining Permit in terms of Section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) has been submitted to the Department of Mineral Resource.

Site Establishment / Construction phase:

There will be no site establishment / construction phase as Lime Sales will continue working from the SPH mining permit area into the Lime Sales mining permit area. Lime Sales will be using the same processing area that was used by SPH Kundalila during the mining permit timeframe. Potential expansion (less than 1ha) of this proposed processing area will take place.

During the site establishment phase the applicant have to fence the footprint area and clear the topsoil from the applied area, it should be noted that there is very little topsoil on site.

Upon stripping, the topsoil will be stockpiled along the boundaries of the mining area to be used during the rehabilitation phase. Topsoil stripping will be restricted to the areas to be used for granite stockpiling and mining. The complete A-horizon (topsoil – the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil has to be stripped. The topsoil will be stockpiled in the form of a berm alongside the boundary of the mining area where it will not be driven over, contaminated, flooded or moved during the operational phase. The topsoil berm will measure a maximum of 1.5 m high and should be planted with indigenous grass species if vegetation does not naturally establish within 6 months of stockpiling to prevent soil erosion and to discourage growth of weeds. The roots of the grass will also improve the viability of the soil for rehabilitation purposes.

The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Blasting;
- Excavating;
- Crushing;
- Stockpiling and transporting;
- Sloping and reshaping upon closure of the site; and
- Replacing the topsoil for future vegetation growth the disturbed area.

The mining site will contain the following:

- Drilling equipment;
- Excavating equipment;
- Earth moving equipment; and
- Mobile crushing and screening plants.
- Access Roads;
- Site Office (Container);
- Site vehicles;

- Parking area for visitors and site vehicles;
- Hard Park for TMM's;
- Vehicle service area;
- Wash bay;
- Workshop;
- Salvage Area;
- Bunded diesel and oil storage facilities;
- Generator on bunded area;
- Ablution Facilities;
- Jo-Jo Tanks;
- Solar power panel's;
- Weigh Bridge; and
- Demarcated general and hazardous waste area.

Due to the remote locality of the proposed operation no infrastructure will be affected. Existing roads and tracks will be used and in the case of new tracks being developed it will be addressed at final closure and rehabilitation.

EXISTING INFRASTRUCTURE:

As stated above, the proposed mining area will be established adjacent to an existing quarry

The following structures are present within a 3 km radius from the proposed mining area:

- ±150m from site: Borehole with pump
- ±890 m from site: Cement dam with water pipe line
- ±2.5 km from site: N14 national road

The impact of the proposed mining area on the infrastructural features of the surrounding area is deemed to be of very low significance. The impact of the mining activities will be concentrated within the 5ha footprint area of the mine.

Generators and solar power panels will be used to power the infrastructure on site. Future endeavours will dictate if or when an Eskom connection will be secured. All diesel storage will be below the threshold as mentioned in the EIA regulations of the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended 2017. Potable water will be transported to site daily. See the requested map attached as Appendix B.

Operational phase:

The proposed mining site will be an extension of the existing quarry pit previously distributed by stone aggregate mining activities. The mining methods will make use of blasting means of explosives in order to loosen the hard rock, the material is then loaded and hauled out of the excavation, where primary crushing is conducted in the pit, to the mobile crushing and screening plants. The granite will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site. Blasting of rock and secondary blasting could occur more than once a month. The noise caused by blasting will be instantaneous and of short duration. As there are no residents within close proximity to the proposed mining area, the blasting at the site will not have an adverse effect on surrounding landowners. The applicant must ensure that all surrounding residents as well as permit holders are informed of each blasting event.

The proposed mining area is approximately 5 ha in extent and the applicant, Lime Sales Limited (Pty) Ltd, intents to win material from the area for at least 2 years with a possible extension of another 3 years. The granite to be removed from the quarry will be used for road construction and various other projects in the vicinity

The stockpiling process includes mechanical loading and transportation of the sought granite. As mentioned previously the granite will be loaded with a front end loader onto trucks upon which it will be weighed and transported to the client. The product stockpiling activities will consist of the following:

- Loading of granite;
- Weighing of granite; and
- Transportation of granite.

A chemical toilet (flushable) will be established on site to be used by the employees. The existing farm and provincial roads currently used to gain access to the property will be used to transport the granite from the mining site to the client. Haul trucks will travel along the existing farm road up to the provincial/public road. Turning onto the N14, they will travel along the existing N14 road, as illustrated below.

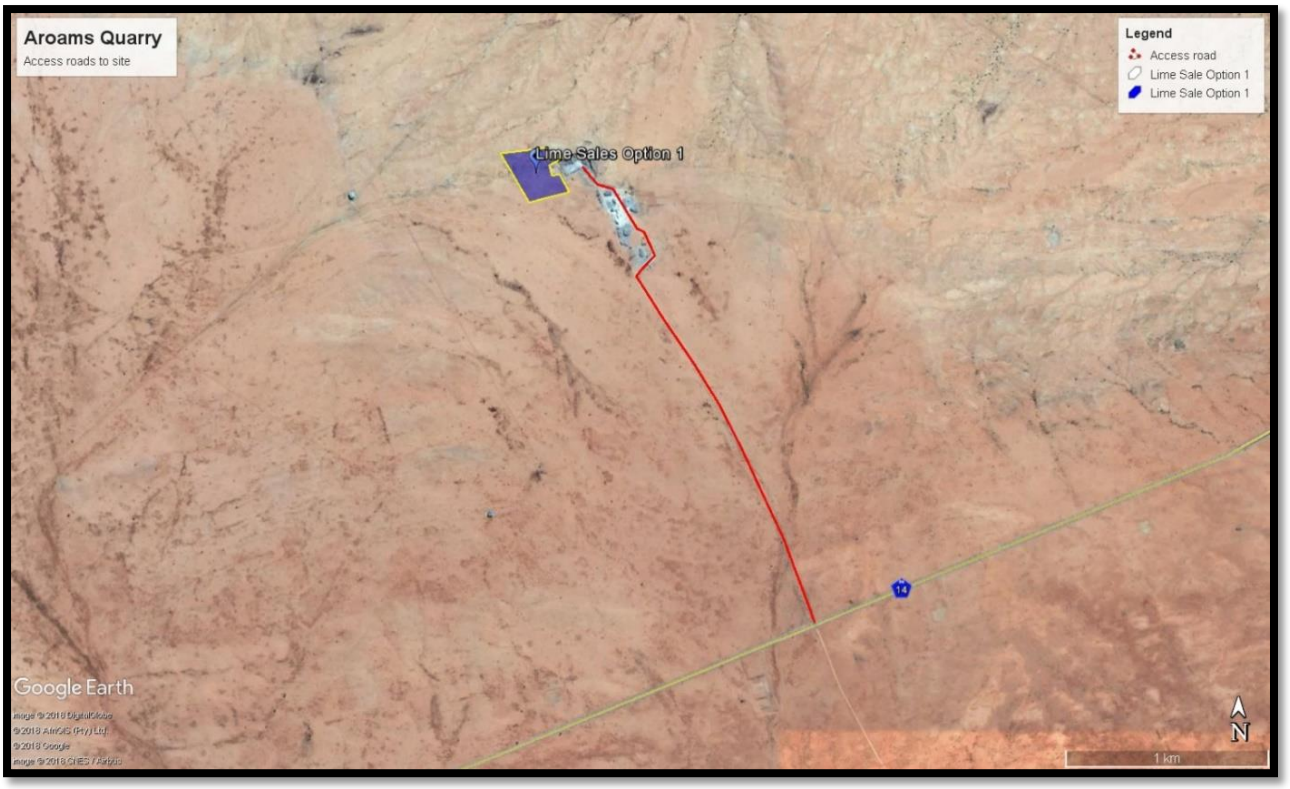

Figure 4: Satellite view indicating the access road to the mining site

Decommissioning phase:

The closure objectives for the mining area is to be made safe, and the remainder of the site to be returned to agricultural use (grazing). The perimeter of the site will be subject to 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.

Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding (if applicable) has been done in an area.

Site management will implement an alien invasive plant management plan during the 12 months' aftercare period to address germination of problem plants in the area.

The decommissioning activities will consist of the following:

- Reshaping during rehabilitation;
- Replacing of topsoil; and
- Implementation of an alien invader plant management plan.

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) Section 27	Part A(d) Description of the scope of the proposed overall activity. Application for a Mining Permit Ref No: NC 30/5/1/3/2/10746MP	Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) - Section 27 – Application for a mining permit submitted to DMR-NC.
National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2017 • GNR 327 LN 1 of 2017 Activity 21 • GNR 327 LN 1 of 2017 Activity 27 • GNR 327 LN 1 of 2017 Activity 28 • GNR 327 LN 1 of 2017 Activity 35	Application for environmental authorisation Ref No: NC 30/5/1/3/2/ MP	Application for environmental authorisation submitted to DMR-NC.
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) and amendments	Biophysical Environment	Weed / Alien vegetation clearing. Should the proposed mitigation measures be implemented no aspects of the project could be identified that triggers the NEM:BA, 2004.
Mine Health and Safety Act, 1996 (Act No. 29 of 1996)	The mitigation measures proposed for the site includes specifications of the MHSA. Part A(iv)(1)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Health and Safety Aspects.*	The operational phase of the site will trigger the MHSA. The mitigation measures proposed for the site includes specifications of the MHSA, 1996
National Heritage Resources Act No. 25 of 1999	Cultural and Heritage Environment. Part A(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment*	No aspects of the project could be identified that triggers the NHRA. A Notice of Intent to Develop in terms of Section 38(8) of the NHRA, 1999 was submitted to SAHRA on 3 August 2018 to determine the action required for the proposed project. SAHRA requested that a HIA and Palaeontological Study be conducted. The mitigation measures proposed for the site includes specifications of the NHRA, 1999.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	Part A(iv)(1)(a) Type of environment affected by the proposed activity: *Physical Environment – Geology and Soil.* Part A(iv)(1)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of weeds- or invader plants*.	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Northern Cape Nature Conservation Ordinance 8 of 1969	Biophysical Environment	Protected trees and plants in the area have been identified. Relevant acts are complied with and the necessary permits and licences obtained.
Northern Cape Nature Conservation Act No. 9 of 2009		
Cape Nature and Environmental Conservation Ordinance 9 of 1974		
National Environmental Management: Air Quality Control Act, 39 (Act No 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827	Part A(iv)(1)(a) Type of environment affected by the proposed activity – *Air and Noise Quality.*	
National Water Act, 36 (Act No 36 of 1998) read together with applicable amendments and regulations thereto.	Part A(iv)(1)(a) Type of environment affected by the proposed activity – *Aquatic Features.*	No mining will be conducted within 100m from a watercourse.
National Environmental Management: Waste Act, 59 (Act No 59 of 2008) read together with applicable amendments and regulations thereto. NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)	Part A(ii) Description of the activities to be undertaken: *Operational phase – Waste Handling*	The mitigation measures proposed for the site take into account the NEM:WA.
Land Use Planning Ordinance (Ordinance 15 of 1985)	Land use zoning requirements	Land Use Planning Ordinance (Ordinance 15 of 1985)
Khai-Ma Municipality Rural Spatial Development Framework / Land Development Plan, 2010	Description of the current land uses	Land Rezoning will be conducted once the mining permit application has been converted to a mining right application.
Northern Cape Planning and Development Act No 7 of 1998		
Khai-Ma Municipality, Spatial Planning and Land Use Management Act, 16 of 2013		
Northern Cape Spatial Planning and Land Use Management Bill 2012		

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Khai-Ma Local Municipality Integrated Development Plan		
Spatial Planning and Land Use Management Act, Act 16		
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(ii) Details of the Public Participation Process Followed Application for a mining permit Ref No: **NC 30/5/1/3/2/10746MP** Application for a Environmental Authorisation Ref No: **NC 30/5/1/3/2/10746MP**	Public Participation Guideline in terms of the NEMA EIA Regulations

f) Need and desirability of the proposed activities.

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

The increase in building, construction and road maintenance projects in the vicinity of the property triggered the need of the applicant to trade with the available granite. The proposed mining will also contribute to the diversification of activities on the property, extending it from agriculture to include small scale mining.

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

The proposed site earmarked for the mining of the loose granite will entail an area previously used for mining. The proposed site was identified as the preferred alternative due to the following reasons:

- The mining site offers the mineral sought after;
- The mineral to be mined is already in granite form and will not need to be blasted in order to loosen the material;
- The proposed sites were previously used for mining activities, thus minimal environmental damage will occur;
- The mining area can be reached by an existing farm access road that connects to N14. No new road infrastructure need to be constructed;
- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and
- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site. The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil (contained in sealed bins) will be collected from site by a hazardous waste handling Removal Company to be disposed of at a registered hazardous waste handling site.

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

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

i) Details of the development footprint alternatives considered.

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

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

The applicant identified three (3) alternative sites for the proposed mining activity namely:

1. **Site Alternative 1 (S1) (Preferred Alternative):** The Applicant, Lime Sales Limited intends to apply for a mining permit, 5ha, on a portion of portion 2 (remaining extent) of the farm Aroams 57 is situated Approximately 8.84 km East Aggeneys, Northern Cape Province. The area earmarked for the proposed mining falls on a section of the farm that was previously used as an existing quarry and the intention of this application is to increase the existing quarry. The proposed Lime Sales quarry will be located over a section of the current SPH Kundalila Quarry whereby these mining permits will overlay each other. SPH Kundalila will no longer be mining in the area that is to be allocated for the proposed Lime Sales Quarry. When proceeding with option 1 (preferred alternative), a smaller “Greenfields” area is to be disturbed having minimal impacts on the natural receiving environment. The mining methods will make use of blasting means of explosives in order to loosen the hard rock, the material is then loaded and hauled out of the excavation, where primary crushing is conducted in the pit, to the mobile crushing and screening plants. Lime Sales will be using the existing processing area that SPH Kundalila have been using. Potential expansion (less than 1ha) of this proposed processing area will take place. The proposed site will include a section of the old Raumix Mining Permit area that was not utilized during the Raumix mining permit time.

The GPS coordinates of the proposed mining area are as follow:

Preferred Alternative	
Decimal Degrees	**Degrees; Minutes: Seconds**
A – 29.169714°S; 18.991503°E	A 29°10'10.97"S 18°59'29.41"E
B – 29.169424°S; 18.993927°E	B 29°10'9.93"S 18°59'38.14"E
C – 29.169963°S; 18.993924°E	C 29°10'11.87"S 18°59'38.13"E
D – 29.169816°S; 18.994834°E	D 29°10'11.34"S 18°59'41.40"E
E - 29.170214°S; 18.994001°E	E 29°10'12.77"S 18°59'38.40"E
F - 29.170657°S; 18.994091°E	F 29°10'14.37"S 18°59'38.73"E
G - 29.170624°S; 18.994532°E	G 29°10'14.25"S 18°59'40.31"E
H - 29.171368°S; 18.994995°E	H 29°10'16.92"S 18°59'41.98"E
I - 29.171830°S; 18.992989°E	I 29°10'18.59"S 18°59'34.76"E
A – 29.169714°S; 18.991503°E	A 29°10'10.97"S 18°59'29.41"E

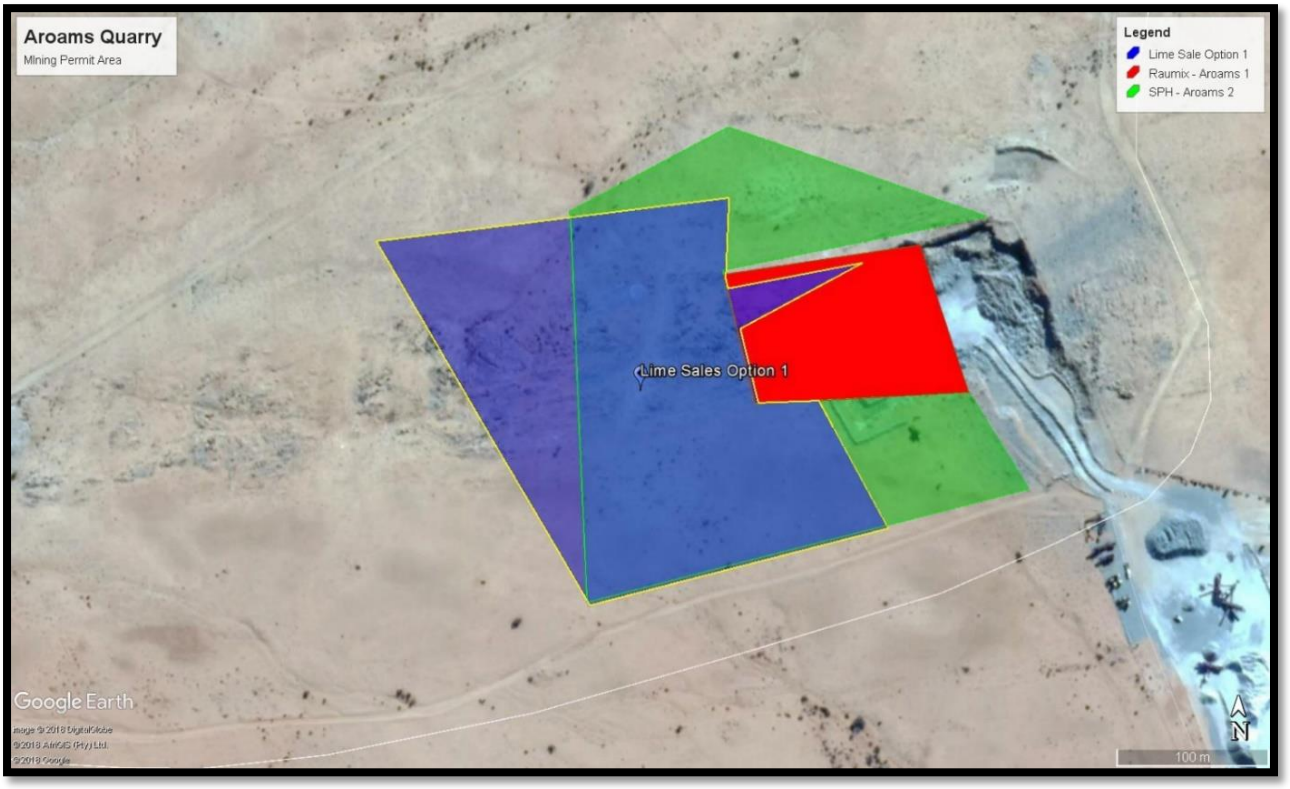

Figure 5: Lime Sales – Option 1 (Preferred Option)

Site Alternative 1 was identified during the assessment phase of the environmental impact assessment, by the applicant and project team, and was therefore selected as the **preferred alternative** due to the following:

- The mining site offers the mineral sought after;
- The proposed footprint area was previously used for mining therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area;
- The mining site is more than 8.84 km away for the town of Aggeneys, and will not affect the community with regards to dust and noise;
- The mining area can be reached by an existing farm access road and existing mine road that connects to N14. No new road infrastructure need to be constructed;
- The proposed Lime Sales quarry will be located over a section of the current SPH Kundalila Quarry whereby these mining permits will overlay each other. SPH Kundalila will no longer be mining in the area that is to be allocated for the proposed Lime Sales Quarry.
- Lime Sales will be using the existing processing area that SPH Kundalila have been using. Potential expansion (less than 1ha) of this proposed processing area will take place.
- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and

- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site. The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

ALTERNATIVE 2 SITE DESCRIPTION

The following alternative site was assessed for the proposed mining but found not environmentally and practically suitable. The site still has a green status and a larger area of the natural area will need to be disturbed for the quarry to be established. This area will lay over a section of the SPH mining permit area and will include a green field's area. The area will not encapsulate the Raumix mining permit area.

SITE ALTERNATIVE 2
Decimal Degrees
A – 29.1697°S; 18.991437°E B – 29.169424°S; 18.993927°E C – 29.169963°S; 18.993924°E F - 29.170657°S; 18.994091°E G - 29.170624°S; 18.994532°E H - 29.171368°S; 18.994995°E I - 29.171830°S; 18.992989°E A – 29.169714°S; 18.991503°E

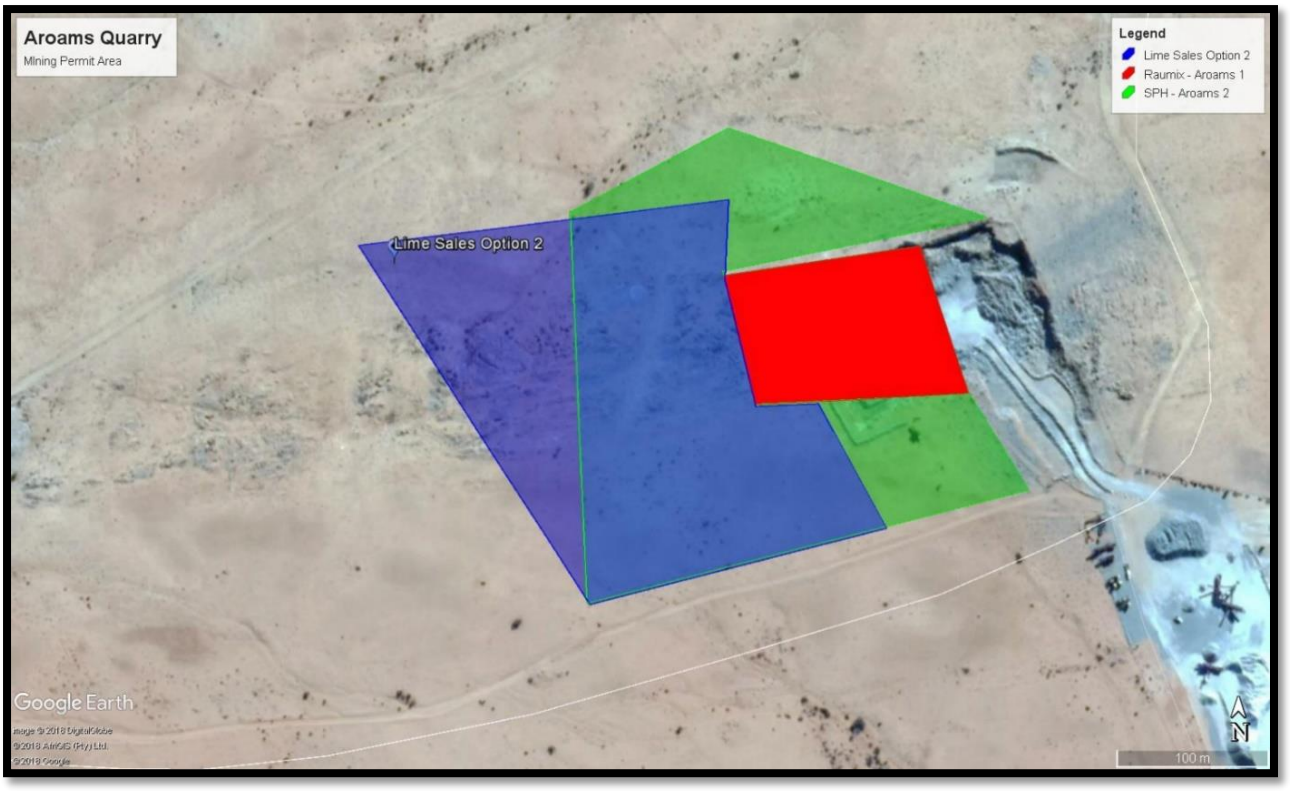

Figure 6: Lime Sales – Alternative 2

The applicant investigates the possibility of establishing the proposed mining area next to the old mining area. This alternative was however found **not** to be the **preferred** alternative due to the following reasons:

- The site has not been previously disturbed before; thus the natural area needs to be cleared and is not preferred with regards to sustainable development; and
- In the light of the above the impacts associated with establishing another quarry pit in a greenfield site on the property is believed to have a higher significance without the need or motivation to justify it.
- The area will not encapsulate the Raumix mining permit area.

ALTERNATIVE SITE DESCRIPTION 3

The following alternative site was assessed for the proposed mining but found not environmentally and practically suitable. The site still has a green status and the natural area will need to be disturbed for the quarry to be established. A whole new area needs to be cleared for mining to proceed.

Site Alternative 3
Decimal Degrees
A,-29,169714,18.991503 B,-29.169424,18.993927 C,-29.169963,18.993924 D,-29.169816,18.994834 E,-29.170214,18.994001 F,-29.170657,18.994091

Site Alternative 3
G,29.170624,18.994532 H,29.171368,18.994995 I,-29.171830,18.992989 A,-29,169714,18.991503

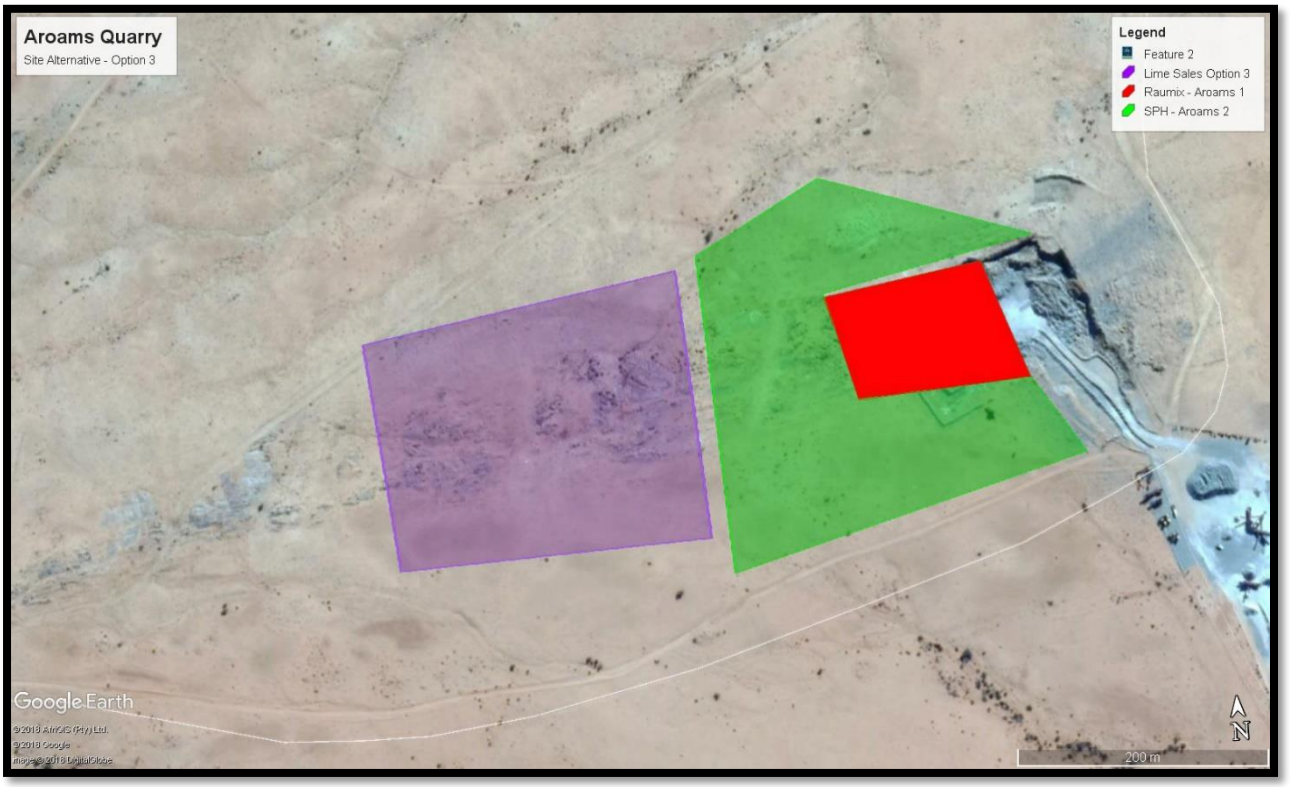

Figure 7: Lime Sales – Option 3

The applicant investigates the possibility of establishing the proposed mining area next to the old mining area. This alternative was however found **not** to be the **preferred** alternative due to the following reasons:

- The site has not been previously disturbed before; thus the natural area needs to be cleared and is not preferred with regards to sustainable development; and
- In the light of the above the impacts associated with establishing another quarry pit in a greenfield site on the property is believed to have a higher significance without the need or motivation to justify it.
- The area will not encapsulate the Raumix mining permit area.

2. No-go Alternative:

The no-go alternative entails no change to the status quo and is therefore a real alternative that needs to be considered. The granite to be stockpiled at the site will be used for road and construction industries, if however, the no-go alternative is implemented the applicant will not be able to utilize the mineral present in the area.

This could have major impacts on aspects such as transporting of material to construction sites from far off mining areas, cost effectiveness of material, impact on roads and road users due to long distance hauling of gravel and loss of income to the Aggeneys business area due to the multiplier effect.

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

- The applicant will not be able to supply in the demand of road or construction contractors,
- The application, if approved, would allow the applicant to utilize the available granite as well as provide employment opportunities to local employees. Should the no-go alternative be followed these opportunities will be lost to the applicant, potential employees and clients,
- The applicant will not be able to diversify the income of the property.

ii) Details of the Public Participation Process Followed

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

Lime Sales Limited has previously, 31st October 2018, applied for a mining permit (10714 MP) for the mining of aggregate, 5ha, on a portion of Portion 2 (Remaining Extent) of the farm Aroams 57, Registration Division of Namaqualand RD, Northern Cape. This application was subsequently rejected by the DMR. (Comment submitted during Aggregate Application, due to validity and applicability of comment this has been left in the report. Additional comments will be worked into the FBAR).

The stakeholders and I&AP's were again informed of the project by means of I&AP comment/notification letters that were either delivered by hand or sent directly to the contact persons. A 30 days commenting period were allowed which extended from the 17th of May 2019 to 18th June 2019. The following I&AP's and stakeholders were contacted to obtain their comments:

INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
Mr. Piet Carstens Mr. Pieter Jan van den Heever Mr. Deon Pieterse Mr. Abrie van Niekerk	Mr. Quincy (Khâi-Ma Local Municipality Ward 4) Mr. Obegang (Khâi-Ma Local Municipality) Mr Christiaan Fortuin (Namakwa District Municipality) MR W.V.D MOTHIBI (Department of Agriculture, Land Reform and Rural Development) Mr S Mabilo (Department of Economic Development, Environment and Tourism) Mr Denver van Heerden (Department of Environment and Nature Conservation) Mr. Kholekile Nogwili (Department of Public Works, Roads and Transport, South African Heritage Resource Agency Zolile Albanie (Department of Labour) Mr A Abrahams (Department of Water and Sanitation) Katie Smuts (South African Heritage Resource Agency)

The property is owned by Mr. GA Gerber. No land claim has been lodged against the property, and Mr Gerber is the only lawful occupier of the land concerned.

On-site notices were placed at the site entrance on the N14 and in town at the local OK Grocer. The project was also advertised in the Gemsbok on the 21st May 2019.

The stakeholders and I&AP's was notified of the availability of the Draft Basic Assessment Report for their perusal. A 30 days commenting period was allowed for the perusal of the document. Comments received on the document will be added to the Final Basic Assessment Report to be submitted to DMR for review. See attached as Appendix F proof that the stakeholders and I&AP's were contacted.

i) Summary of issues raised by I&AP's

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

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**	**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES				
Landowner/s				
Mr. D.A Gerber	X	No comments received. Please refer to **Error! Reference source not found.** for the andowner agreement and comments letter.	No objections	N/A
Lawful occupier/s of the land				
N/A	N/A	N/A	N/A	N/A
Landowners or lawful occupiers on adjacent properties				
Mr. Piet Carstens	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter.	N/A	N/A
Mr. Pieter Jan van Heerden	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A
Mr. Deon Pieterse	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A
Mr. Abrie van Niekerk	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A
Mr. Rheon Muller	22 October 2018	(Comment submitted during Aggregate Application, due to validity and applicability of comment this has been left in the report. Additional comments will be worked into the FBAR). I WR Muller owner of the farm Aroams 57 agree in principle that this area could be used for repair of road ways, I however have the following stipulations: 1. There has to be a rental or use agreement in place prior to commencing any activities on the premises. 2. I insist on a fence to fence the area off from the rest of the farm. 3. I insist on a full waste management system as per DMR requirements. 4. The additive sprayed on the road will be specified. It has to be environmentally friendly and hydrophobic when dry. 5. The crushing process produces a -6mm material, usually referred to as Crusher Dust. The storage and cover of this material will have to be done as agreed, it is a potential source of dust long after the area has been rehabilitated.	Noted. 1. The land owner agreement is in place with Mr. D.A Gerber who currently owns a portion of portion 2 (Remaining Extent) of the Farm Aroams 57. Please find this land owner agreement attached as Appendix F1. 2. There is currently a fence around the mining permit area. 3. Please refer to the DBAR that is provided on our Greenmined Environmental website for the waste management that is currently in place at the Aroams quarry. 4. The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. If dust allaying agents are to be used, these agents will be environmental friendly and hydrophobic when dry. However, in the past since Aroams Quarry was established in 2012 water spraying was deemed sufficient for this area. 5. Noted. Water sprayers are located on the crushing plants where the sprayers are switched on when the crushing plant is running. Stockpiles are wetted various times during the day to minimise dust in the area. All roads on the mining permit area are sprayed with the water trucks to minimise the dust in the area.	Please refer to Part A, h) iv) and the Management and mitigation measures of dust as stated in Part B, e)
Municipal councillor				
Mr. Quincy (Khâi-Ma Local Municipality Ward 4)	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A
Municipality				
Mr. Obegang (Khâi-Ma Local Municipality)	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A
Mr Christiaan Fortuin (Namakwa District Municipality)	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWS				
Mr. Kholekile Nogwili (Department of Public Works, Roads and Transport, South African Heritage Resource Agency	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**	**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Mr A Abrahams (Department of Water and Sanitation)	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A
Natasha Higgitt (South African Heritage Resource Agency)	3 October 2018	(Comment submitted during Aggregate Application, due to validity and applicability of comment this has been left in the report. Additional comments will be worked into the FBAR). As the proposed development is undergoing an EA Application process in terms of the National Environmental Management Act, 107 of 1998 (NEMA), NEMA Environmental Impact Assessment (EIA) Regulations for activities that trigger the Mineral and Petroleum Resources Development Act, No 28 of 2002 (MPRDA)(As amended), it is incumbent on the developer to ensure that a **Heritage Impact Assessment** (HIA) is done as per section 38(3) and 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA). This must include an archaeological component, paleontological component and any other applicable heritage components. The HIA must be conducted **as part of the** EA Application in terms of NEMA and the NEMA EIA Regulations. The quickest process to follow for the archaeological component would be to contract a specialist (see www.asapa.org.za or www.aphp.org.za to provide an Archaeological Impact Assessment (AIA). The AIA must comply with the SAHRA 2007 Minimum Standards: Archaeological and Paleontological Component of Impact Assessments. The proposed prospecting area is located within an area of insignificant sensitivity in terms of paleontological resources. No further assessment of the impact to paleontological resources is required. Any other heritage resources as defined in section 3 of the NHRA that may be impacted, such as maritime archaeology, built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed. The draft Basic Assessment Report (BAR) and appendices must be submitted so that an informed comment can be issued.	*A desktop Heritage Impact Assessment and recommendation for exemption from further Paleontological studies was submitted to SAHRA for their perusal. SAHRA subsequently responded that the development is unlikely to impact significant heritage resources and that the SAHRA Archaeology, Palaeontology and Meteorites Unit has no objection to the development on condition that, if any new evidence of archaeological sites or artefacts, paleontological fossils, graves or other heritage resources are found during development, constructing or mining, SAHRA and an archaeologist and/or palaeontologist, depending on the nature of the finds, must be alerted immediately"* A heritage specialist study was commissioned for Aroams Quarry as per the SAHRA recommendations. Please refer to the Heritage assessment that was conducted as included in Appendix K	Please refer to Part A, h) iv) and the Management and mitigation measures of archaeological and cultural aspects as stated in Part B, e)
Communities				
N/A	N/A	N/A	N/A	N/A
Dept. Land Affairs				
MR W.V.D MOTHIBI (Department of Agriculture, Land Reform and Rural Development)	X	N/A	N/A	N/A
Traditional Leaders				
N/A	N/A	N/A	N/A	N/A
Dept. Environmental Affairs				
Mr S Mabilo (Department of Economic Development, Environment and Tourism)	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A
Mr Denver van Heerden (Department of Environment and Nature Conservation)	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**	**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
Mr. Brian Fisher (Department of Environment and Nature Conservation)	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A
Other Competent Authorities affected				
Zolile Albanie (Department of Labour)	X	No comments received. Please refer to **Error! Reference source not found.** for nd comments letter	N/A	N/A
OTHER AFFECTED PARTIES				
INTERESTED PARTIES				

ii) The Environmental attributes associated with the alternatives.

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

(1) **Baseline Environment**

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

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

(i) Climate

According to SA Explorer, Aggeneys normally receives about 34 mm of rain per year, with most of the rainfall occurring mainly during autumn. Figure 8 shows the average rainfall values for Aggeneys per month. It receives the lowest rainfall (0 mm) in December and the highest (9 mm) in March. The monthly distribution of average daily maximum temperatures in Figure 9 shows the average midday temperatures for Aggeneys range from 17.7 ºC in July to 31.6 ºC in January. The region is coldest during July when temperatures drops to 3 ºC on an average during the night. Refer to Figure 10 below for an indication of the monthly variation of average minimum daily temperatures (Explorer, 2018).

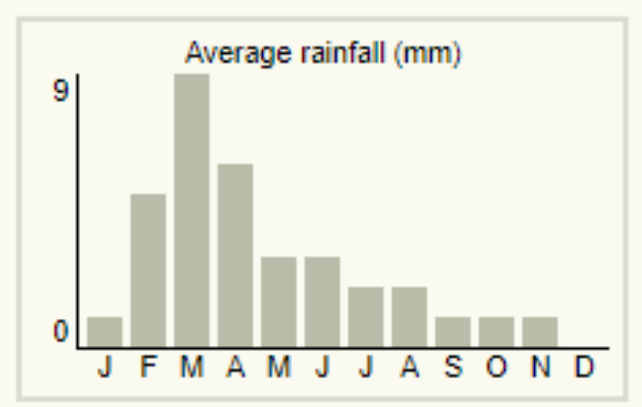

Figure 8:Average rainfall for Aggeneys

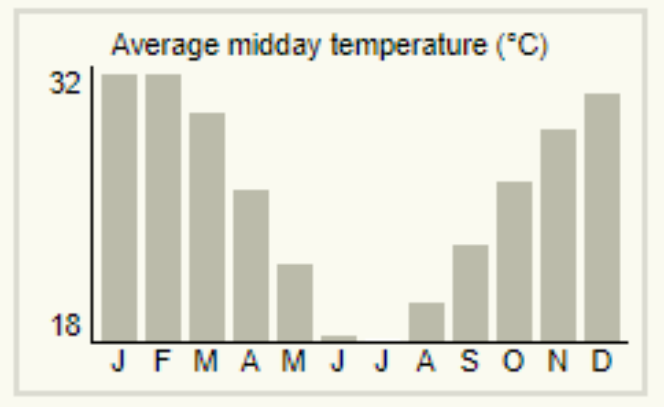

Figure 9:Average midday temperature

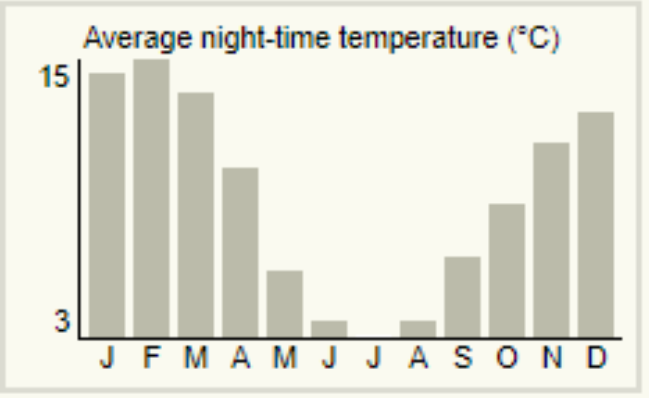

Figure 10: Average night-time temperature

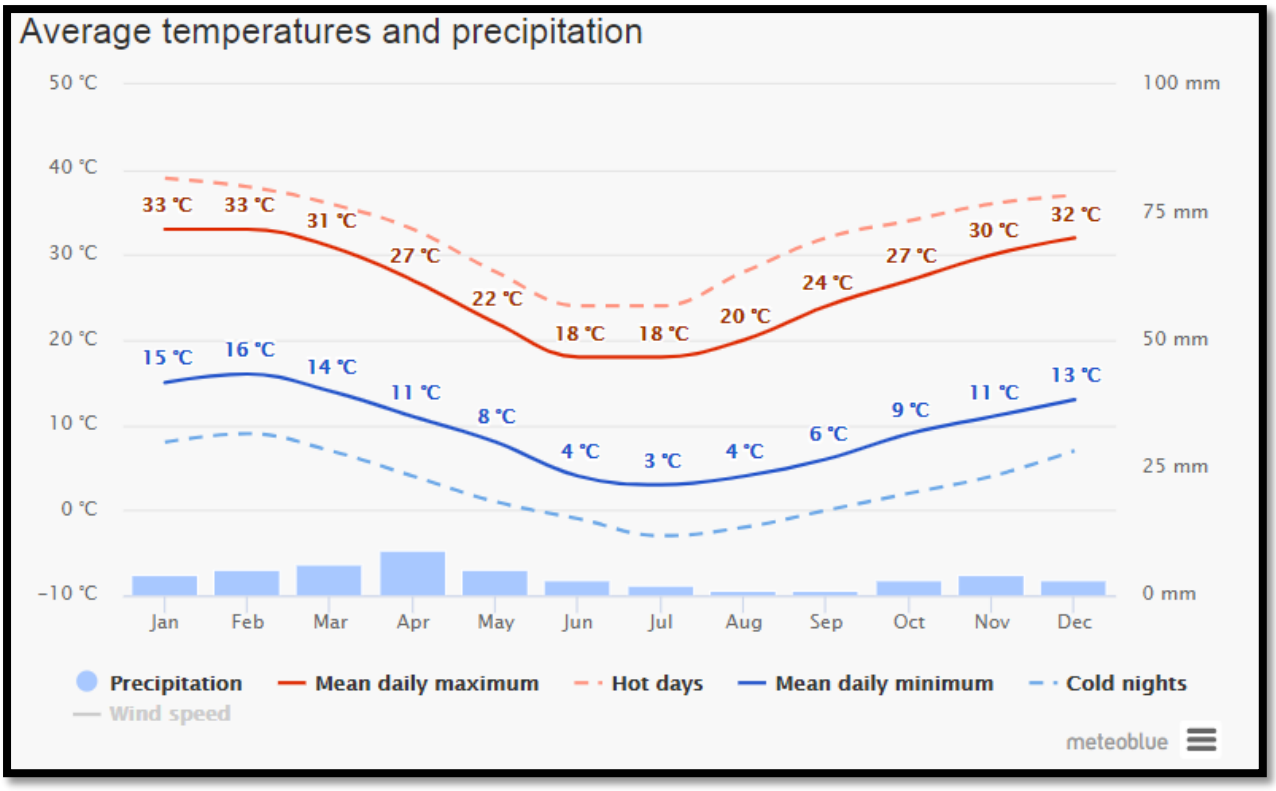

Figure 11: Average rainfall and Temperature for Aggeneys

Figure 12 shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-80% cloud cover as partly cloudy and with more than 80% as overcast. As indicated in the figure below, sunny days are in June-July during winter, with overcast and precipitation days occurring in the summer season in March (Meteoblue, 2018).

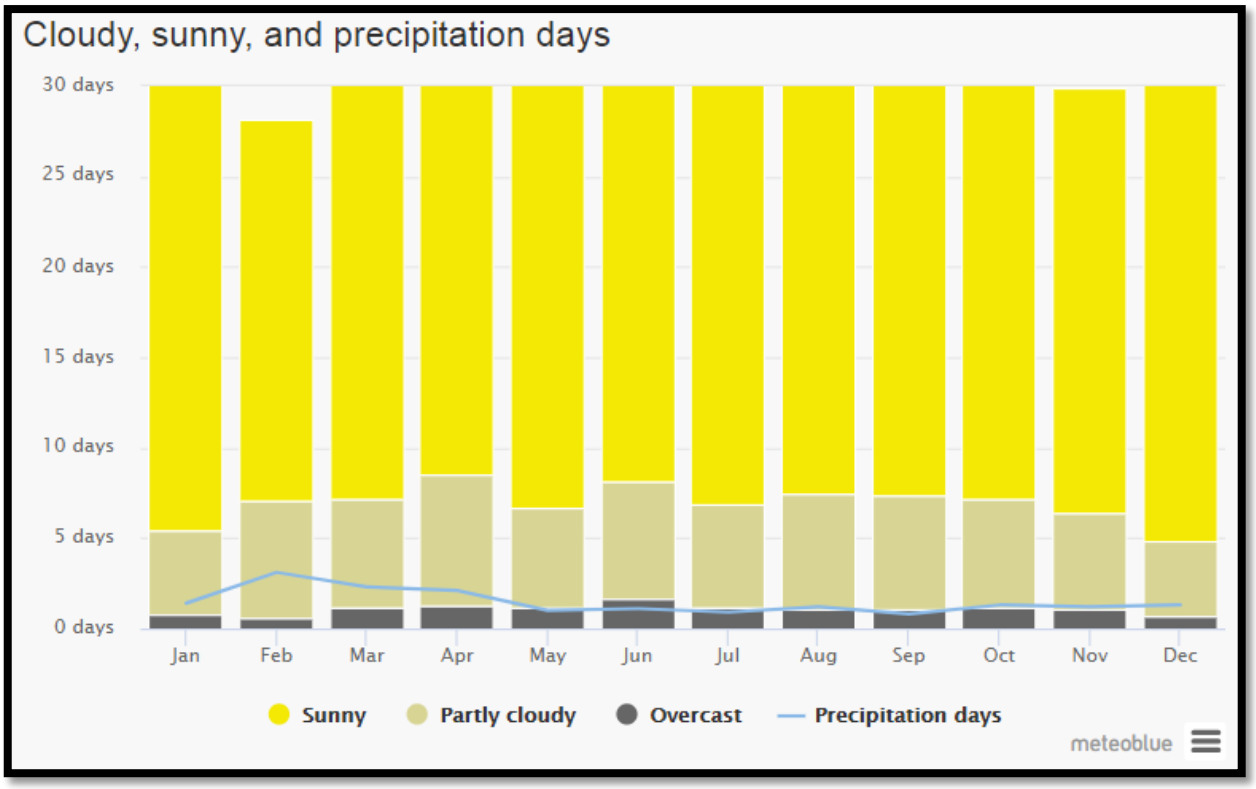

Figure 12: Cloudy, sunny and precipitation days of Aggeneys.

The maximum temperature diagram for Aggeneys displays how many days per month reach certain temperatures. As indicated in the figure below, the hottest temperatures occur during the summer season with temperatures reaching from 17.9 °C in June to 32.7 °C in January and the coldest during July when the mercury drops to 1.3 °C on average during the night when frost can occur. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Aggeneys range from 19.1 °C in June to 33.2 °C in January. The region is the coldest during July when the mercury drops to 1 °C on average during the night. Consult the figure below for an indication of the monthly variation of average minimum daily temperatures (Explorer, 2018) (Meteoblue, 2018).

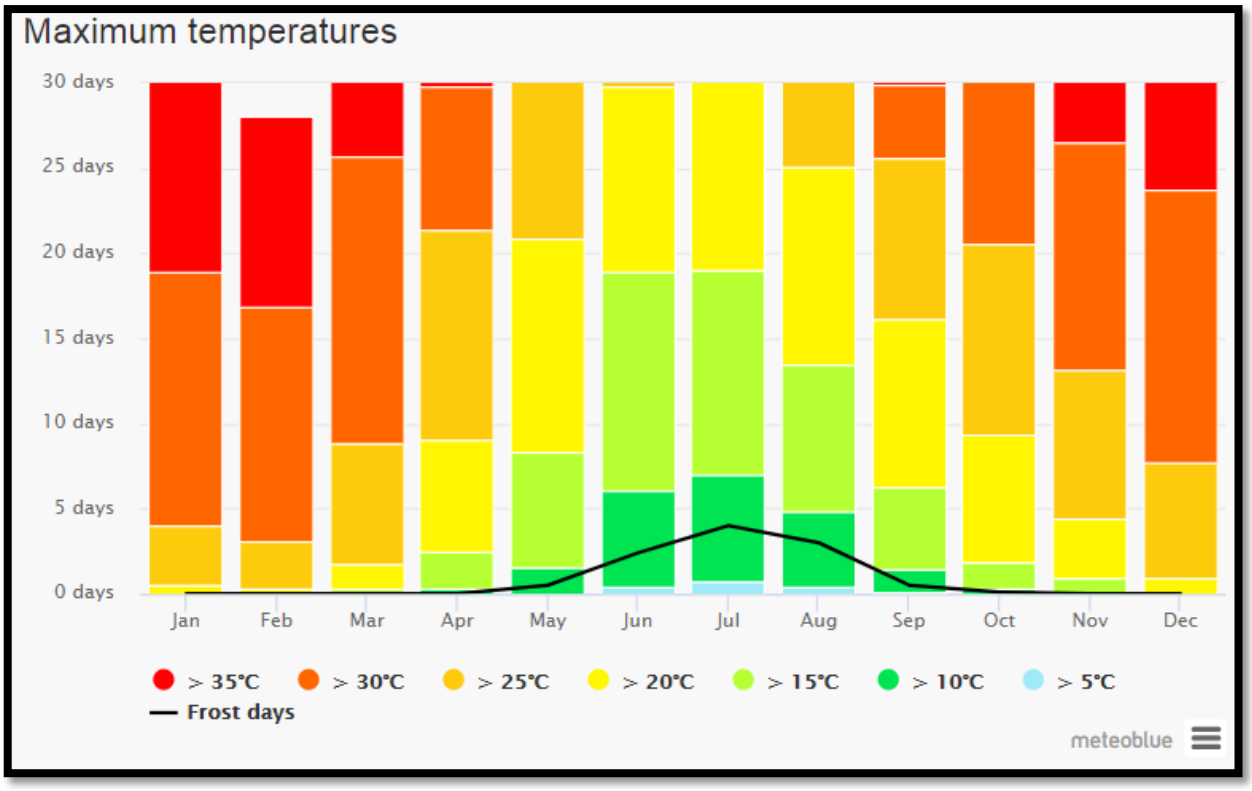

Figure 13: Maximum temperatures of Aggeneys.

The precipitation diagram for Aggeneys shows on how many days per month, certain precipitation amounts are reached. In tropical and monsoon climates, the amounts may be underestimated. Aggeneys normally receives about 132 mm of rain per year, with most rainfall occurring mainly during autumn. It receives the lowest rainfall in July and the highest in (38 mm) in March (Meteoblue, 2018) (Explorer, 2018).

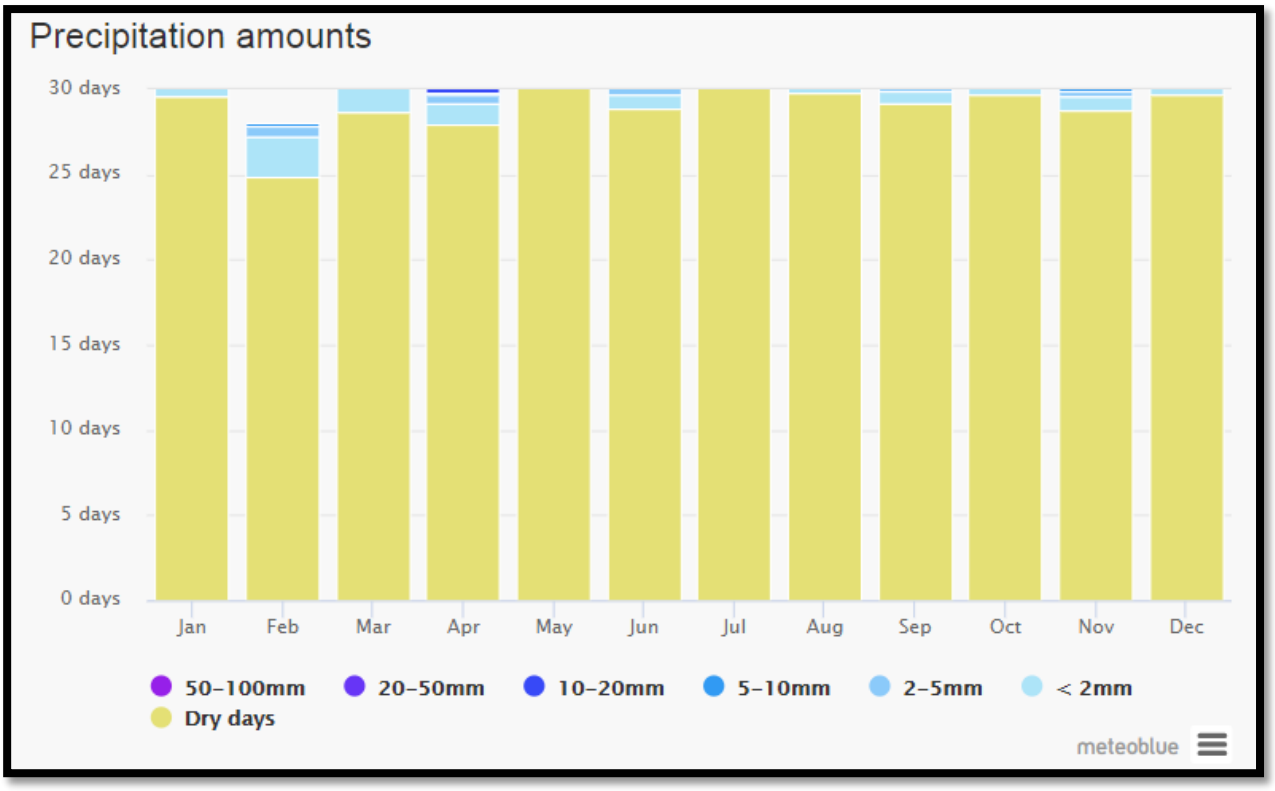

Figure 14: Precipitation amounts for Aggeneys.

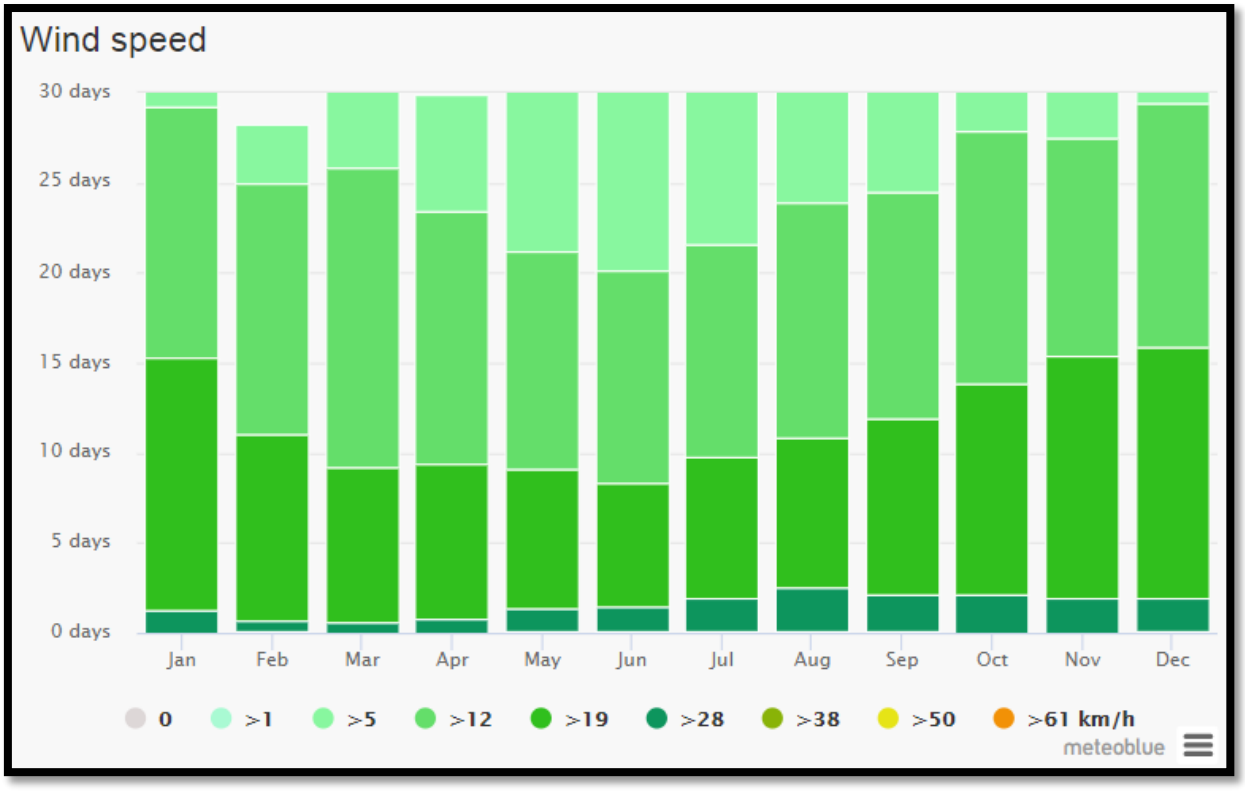

Figure 15: Average wind speeds in Aggeneys.

The diagram for Aggeneys shows the days per month, during which the wind reaches a certain speed. As seen from the figure above, the average wind speeds over the summer season is calculated to be about 19 km/h whereas in the winter season in drops to 5km/h.

The wind rose for Aggeneys shows how many hours per year the wind blows from the indicated direction. As seen from the figure below, the average wind rose in Aggeneys is a Southerly and South-South Easterly wind, this can be during winter and summer times.

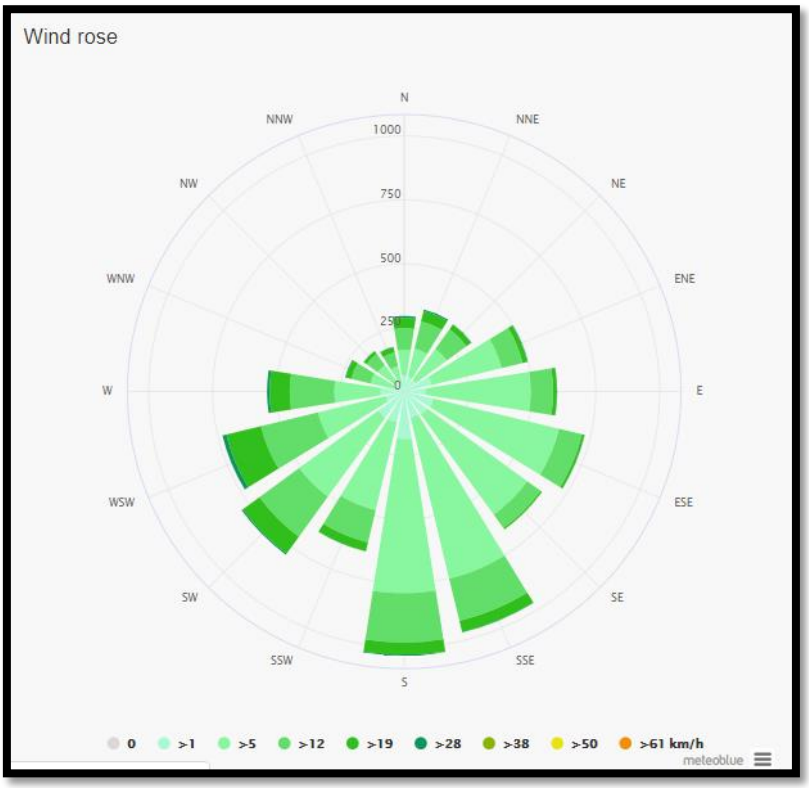

Figure 16: Wind rose for Aggeneys.

(ii) Geology

According to Mucina and Rutherford, 2006 a third of the geology of the area is covered by recent (Quaternary) alluvium and calcrete. Superficial deposits of the Kalahari group are present in the east. The extensive Palaeozoic Diamictite of the Dwyka group outcrops in the area as do gneisses and metasediments of Mokolain age.

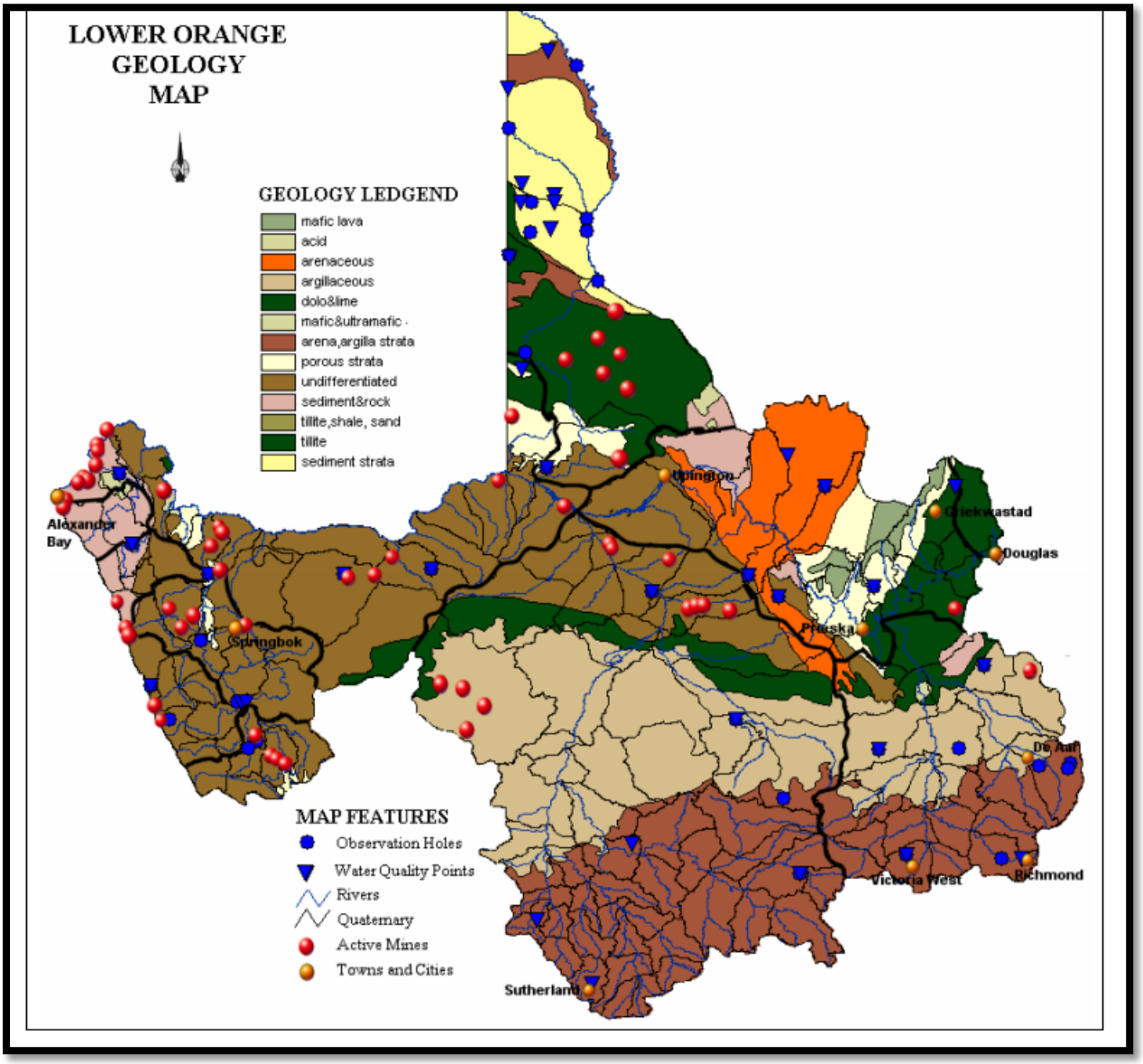

Figure 17: Simplified Geology of the WMA

(iii) Topography

The area is characterized by an expansive or extensive to irregular plains in a slightly sloping plateaus sparsely vegetated by, dry grasslands with scattered ancient rocky outcrops, named Inselbergs. The altitude varies mostly from 600-1200m above sea level.

(iv) Soil, Land Use and Land Capability

Soils with minimal development, usually shallow, on hard or weathering rock, with or without intermittent diverse soils. Lime generally present in part or most of the landscape. Freely drained, structureless soils

The soils of most of the area are red-yellow apedal soils, with a high base status and <300mm deep, typical of Ag and Ae land types. The soils are typically weakly structured with low organic content. These soils drain freely which results in a soil surface susceptible to erosion, especially wind erosion when the vegetation cover is sparse and gulley erosion in areas where storm-water is allowed to concentrate. The soils in the area are generally not suitable for dry land crop production therefore the pre-mining land capacity is categorized as Class III grazing land. The productivity of the area is very low at 8 – 10 Ha/SSU.

Portion 2 of the farm Aroams 57 is situated in an agricultural setting, with the land mainly used for small stock grazing purposes. Approximately 90% of the region is used for livestock grazing and production, with the remainder comprising of agriculture and mining.

The Gamsberg zinc mine will be established to the south approximately 6 km from the site, and the N14 passes the proposed mining site approximately 2.5 km to the south.

The proposed project will entail the establishment of a mining area adjacent to the existing quarry being used for the winning of aggregate by SPH Kundalila (Pty) Ltd. Raumix Aggregates (Pty) Ltd (MP 006/2012) and SPH Kundalila (Pty) Ltd (MP 003/2015) currently holds a mining permit (MP 006/2012) for the existing quarry at the farm; Lime Sales Limited intends to establish their proposed mining area adjacent to this quarry. An agreement between SPH Kundalila (Pty) Ltd and Lime Sales Limited with regard to technical arrangements made for the co-existence of the respective operations is attached as Appendix D. The agreement also includes a distinction between the respective environmental liabilities and management responsibilities.

Mining at the quarry will only be temporary where after land use will revert back to grazing. As the productivity of the land with regard to land use is very low, mining will have no negative impact on the production of the area.

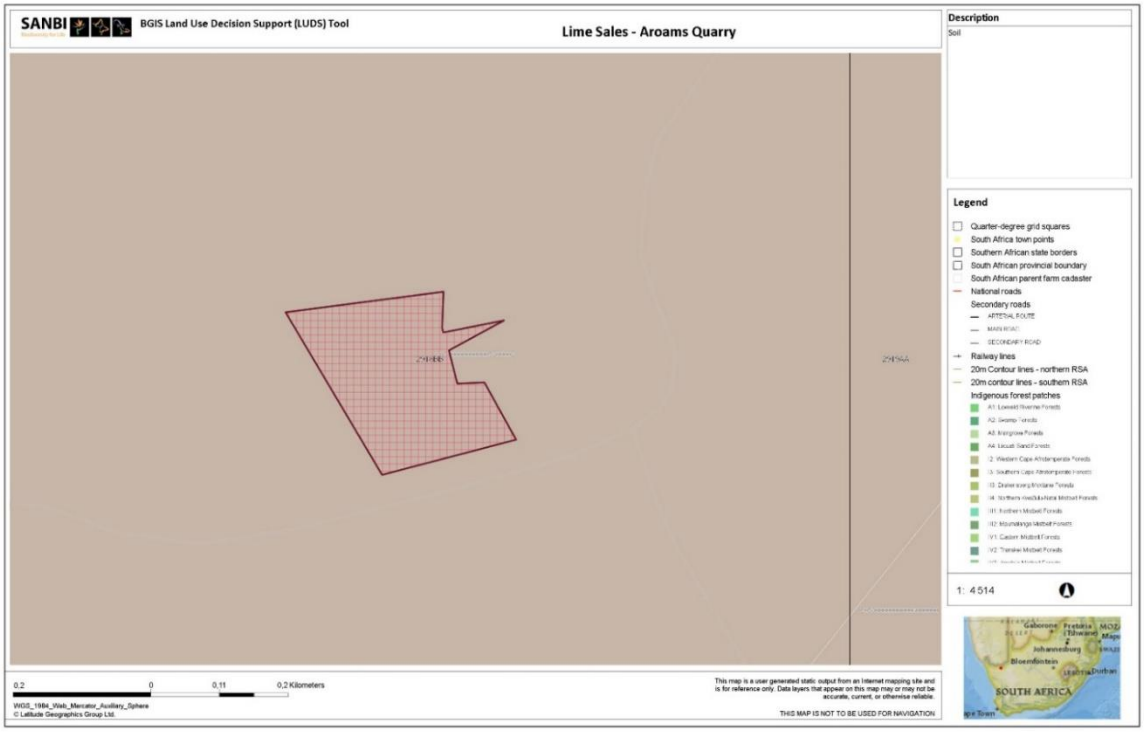

Figure 18: Soils of the proposed site.

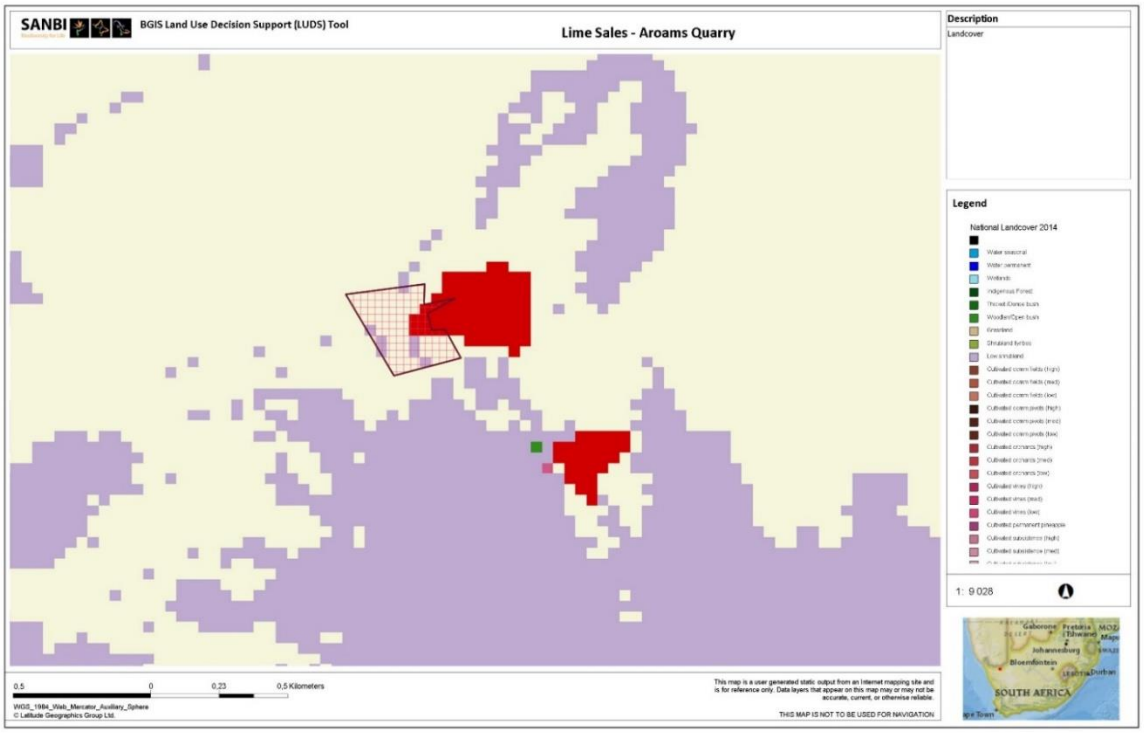

Figure 19: Landcover

(v) Natural Vegetation

The mining area is situated within the Nama-Karoo Biome. The vegetation consists of Bushmanland Arid Grassland vegetation type (NKb 3 according to Mucina and Rutherford, 2006) covering an area of 45478.96ha that is rated as least threatened with little of the area transformed. Erosion in this vegetation type is deemed to range from very low (60%) to low (33%).

A large amount of pioneer species occurs within the proposed mining area due to previous disturbance dominated by *Galenia fruticosa* and *Tetragonia arbuscula*.

The dominant species outside the disturbed area is covered by sparse open grassland, with prominent *Stipagrostis* grass species, along with scattered drought resistant dwarf shrubs. No protected plant species could be identified at the time of the site inspection.

Prominent species are as follow:

Dwarf shrubs

Aridaria noctiflora	*Eriocephalus microphyllus*	*Galenia fruticosa*
Lycium bosciifolium	*Pentzia spinescens*	*Plinthus karroicus*
Pteronia mucronata	*Rhigozum trichotomum*	*Rosenia humilis*
Sarcostemma viminale	*Tetragonia arbuscula*	

Grasses

Aristida adscensionis	*Aristida congesta*	*Centropodia glauca*

Enneapogon desvauxii *Schmidtia kalahariensis* *Stipagrostis brevifolia*
Stipagrostis ciliate *Stipagrostis obtusa*

Forbs

Barleria rigida *Berkheya spinosissima* *Crassula muscosa*
Dicoma capensis *Gazania lichtensteinii* *Grielum humifusum*
Hermannia spinosa *Hirpicium echinus* *Manulea nervosa*
Monechma incanum *Peliostomum leucorrhizum* *Requienia sphaerosperma*
Ruschia robusta *Salsola tuberculata* *Senecio cotyledonis*
Sesamum capense *Tribulus zeyheri* *Zygophyllum flexuosum*
Zygophyllum microphyllum

The mining area is situated within the Nama-Karoo Biome. The vegetation consists of Bushmanland Arid Grassland vegetation type (NKb 3 according to Mucina and Rutherford, 2006) covering an area of 45478.96 ha that is rated as least threatened with little of the area transformed. Erosion in this vegetation type is deemed to range from very low (60%) to low (33%).

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The area is the least threatened with a target of 21%. Only small patches statutory conserved in Augrabies Falls National Park and in the Goegap Nature Reserve. The alien shrub *Prosopis sp* can be seen as a threat. Very little area has been transformed. Erosion is very low 82%.

According to the Mining and Biodiversity guidelines (as presented in

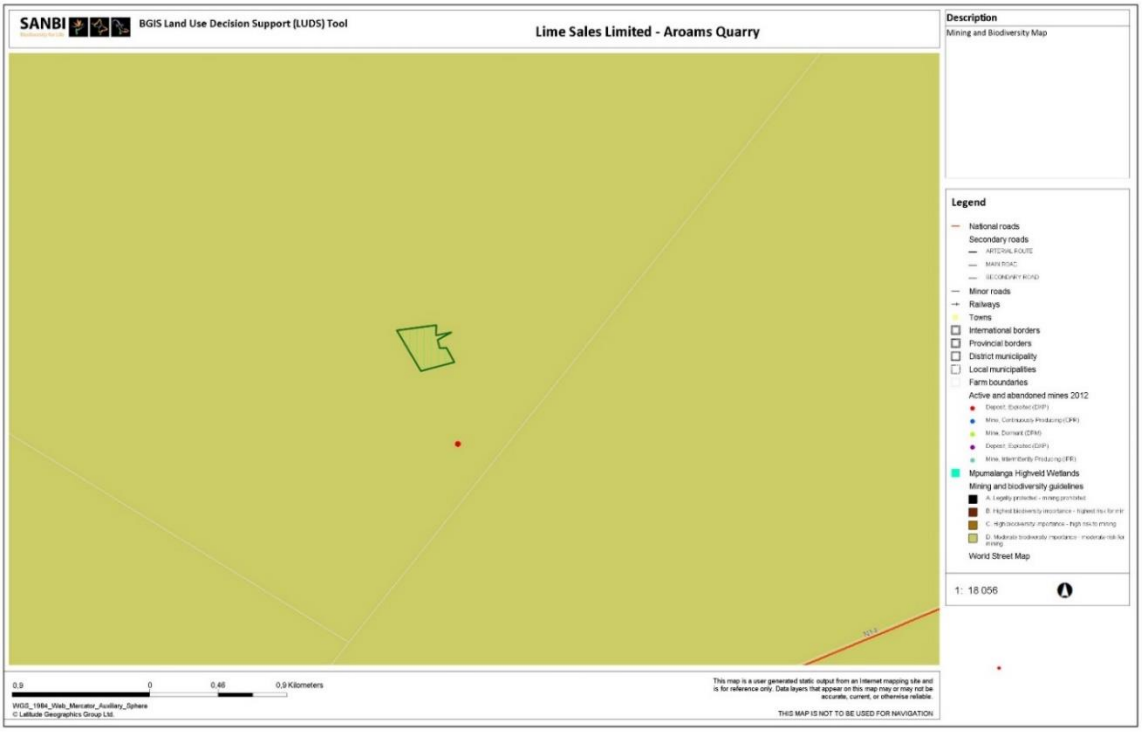

Figure 20) the mining area does not fall within the Mining and Biodiversity area. Areas that are highlighted in green falls within the Moderate biodiversity importance area which have a moderate risk for mining. These areas are not in close proximity to the propose mining area (DEA, 2013).

From the guideline, as mentioned above the area outside the mining area falls within a moderate biodiversity importance area. Please refer to the table below:

Moderate Biodiversity Importance	• Ecological support area • Vulnerable ecosystem • Focus areas for protected areas expansion	Moderate risk for mining	These areas are of moderate biodiversity value. EIAs and their associated specialist studies should focus on confirmed the presence and significance of these biodiversity features. Identifying features (e.g. threatened species) not included in the existing datasets, and on providing site-species information to guide the application of the mitigation hierarchy. Authorisations may set limits and specify biodiversity offset that would be written into licence agreements and/or authorisations.

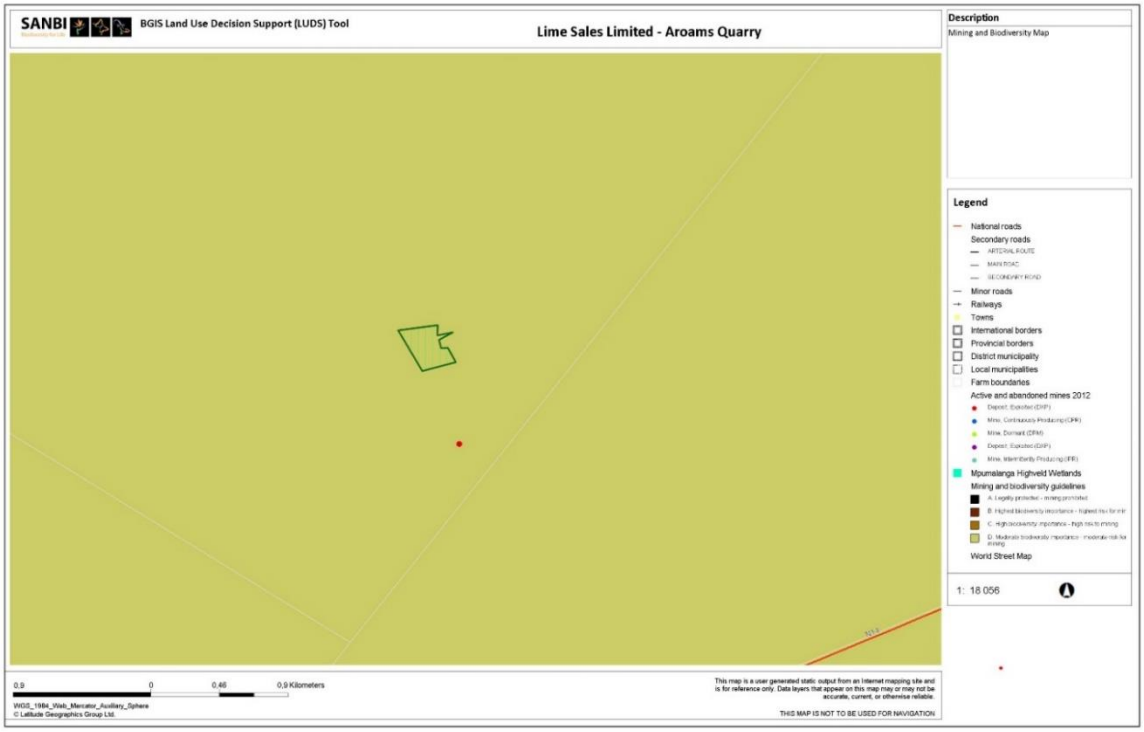

Figure 20: Mining and Biodiversity Guidelines Map (SANBI) (DEA, 2013).

Biodiversity priority areas	Description	Information sources
Ecological support areas	These are areas identified in spatial biodiversity plans areas that play an important role in supporting the ecological functioning Critical Biodiversity Areas or protected areas and/or in ecosystem services. The management objective for a functional state	Data: No data available for Free state
Vulnerable ecosystems	Threatened ecosystems are identified in the NBA and may be listed in terms of the Biodiversity Act55. Vulnerable ecosystem types have experienced significant loss of natural area but are not yet critically endangered or endangered. In areas where biodiversity planning has occurred, the best areas to meet targets for vulnerable ecosystem types are generally included in will also be viewable on CBAs. However, where this planning has not yet occurred (e.g. Free State, and part of the Northern Cape), remaining intact areas of vulnerable habitat types should be avoided where possible.	Data: Terrestrial vulnerable ecosystems and currently viewable on the SANBI website. Associated legislation: Section 52 of Biodiversity Act, 2004
Focus areas for land based protected area expansion and focus areas for offshore protection	Focus areas for land-based protected area expansion are large, relatively intact (in terms of natural vegetation cover) and fragmented areas of high biodiversity importance, suitable expansion for the creation or expansion of large protected areas, were identified by the Offshore Marine identified in the National Protected Area project (OMPA; for offshore Protected Area Expansion Strategy 2008. They were identified through a systematic biodiversity planning process, taking into account the need to represent both terrestrial and freshwater biodiversity in the protected area network as well as to contribute to climate change resilience. They represent the best remaining large areas of natural habitat that still have low levels of fragmentation and form a key part of our ecological infrastructure network. Focus areas for offshore protection were identified through a systematic biodiversity planning process to direct MPA expansion and other types of spatial management to ensure sustainable resource use and a representative protected area network. They identify spatial priorities for representing offshore biodiversity, protecting sensitive ecosystems, contributing to fisheries sustainability and reducing by-catch. These areas will be refined in the future.	Data: focus areas for land based protected area expansion available on SANBI website. Associated legislation: these areas support further implementation of the protected areas act.

The primary threats to Biodiversity, ecosystem goods and services are habitat transformation and degradation, and invasive alien species. The concern regarding threats to biodiversity is borne out of the recognition that our natural resources base provides a variety of goods and services on which life depends. In Khâi-Ma this natural resource base is directly threatened by mining developments. The management of these is critical in ensuring effective conservation and sustainable use of the biodiversity. Again making the need for Environmental Conservation and Management Plans as well as Plans to eradicate and monitor Alien Invasive Species very important for Khâi-Ma.

(vi) Fauna:

Various small mammals and reptiles occur on the property. Larger herbivore species are very scares or absent due to the conflicting land use.

(vii)Surface Water

The proposed site falls within the Lower Orange Water Management Area (WMA), specifically in the Orange Sub Water Management Area (Boegoeberg Sub Catchment), in the D81G quaternary catchment area.

The Lower Orange WMA is the lowest WMA in the Orange River Basin and as such is affected by upstream activities. The area is arid with rainfall varying from 400 mm in the east to 50 mm on the west coast. The topography of the area is flat with large pans or (endoreic areas that do not contribute runoff to the Orange River system.

The Orange River, which forms a green strip in an otherwise arid landscape, also forms the border between South Africa and Namibia over about 550 km to the west of the 20-degree longitude. The Vaal River, the main tributary to the Orange River, has its confluence with the Orange River about 13 km west of Douglas. Other tributaries are the Ongers and Hartebeest Rivers from the south, and the Molopo River and Fish River (Namibia) from the north. There are a number of highly intermittent water courses along the coast which drain directly to the ocean.

Sheep and goat farming is practised over most of the area. Large parts of the WMA also include conservation areas. Cultivation is restricted to isolated patches where somewhat higher rainfall occurs, and extensive irrigation is practised in the narrow ribbon of fertile alluvial soils along the Orange River valley. This irrigation is supplied by releases from the Vanderkloof Dam. Large mining operations occur in various parts of the water management area. There are no large urban developments or power stations. Groundwater plays a major role in meeting the water requirements of the towns and rural settlements along the tributaries of the Orange.

Less than 1% of the Gross Domestic Product (GDP) of South Africa originates from the Lower Orange WMA. The largest economic sectors (in 1997) in the water management, in terms of GGP, were:

- Government 19,4%
- Mining 17,4%
- Agriculture 15,9%
- Trade 15,1%

Economic activity is largely concentrated along the Orange River, with several towns located on the banks of the river, and at mining developments. The two major storage dams Gariep and Vanderkloof, which are both used to supply all the irrigation, urban, mining and environmental requirements along the Lower Orange River are located in the Upper Orange WMA, but are of vital importance to the Lower Orange. There are no large storage dams in the WMA, with only a few smaller dams on some of the main tributaries.

These include:

- Smartt Syndicate Dam on the Ongers River.
- Van Wyksvlei on the Carnarvonleegte.

There are also several diversion weirs of which Boegoeberg is the largest.

The Lower Orange WMA is the lowest WMA in the Orange/Vaal River Basin and as such is affected by upstream activities, both in terms of the Upper Orange and the Vaal System. The area is arid with rainfall varying from 400 mm in the east to 50 mm on the west coast. The topography of the area is flat with large pans or endoreic areas that do not contribute runoff to the Orange River system. The Orange River, which forms a green strip in an otherwise arid landscape, also forms the border between South Africa and Namibia over about 550 km to the west of 20 degrees' longitude. The Vaal River, the main tributary to the Orange River, has its confluence with the Orange River about 13 km west of Douglas. Other tributaries are the Ongers and Hartebeest Rivers from the south, and the Molopo River and Fish River (Namibia) from the north. There are a number of highly intermittent water courses along the coast which drain directly to the ocean. Refer to Figure C1 in Appendix C for the location and general layout of the water management area.

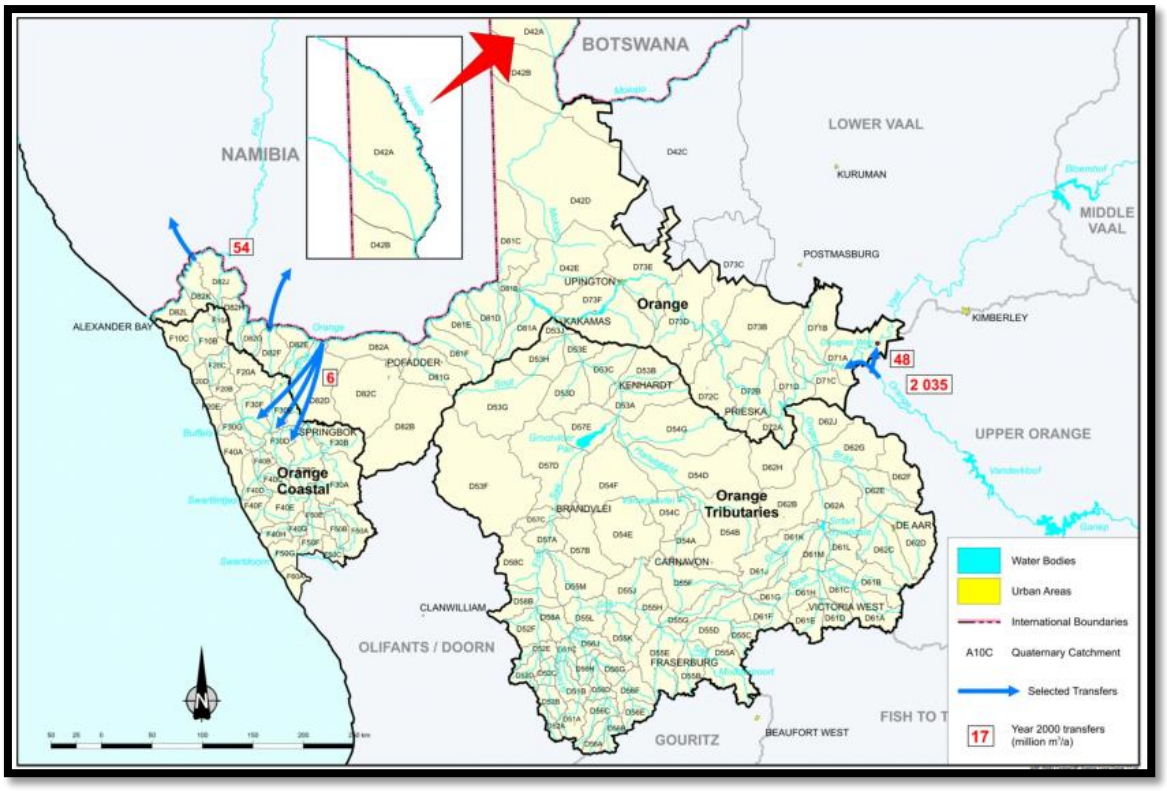

Figure 21: Lower Orange transfers

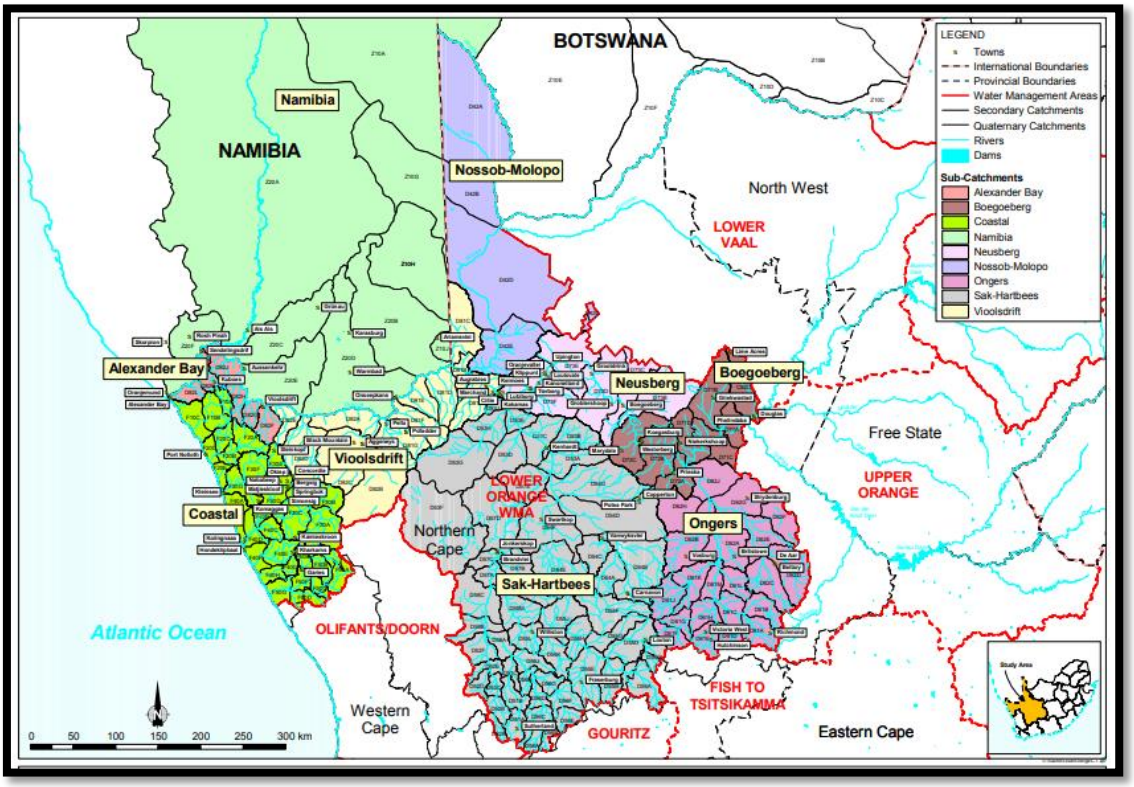

Figure 22: Sub Catchments in the WMA

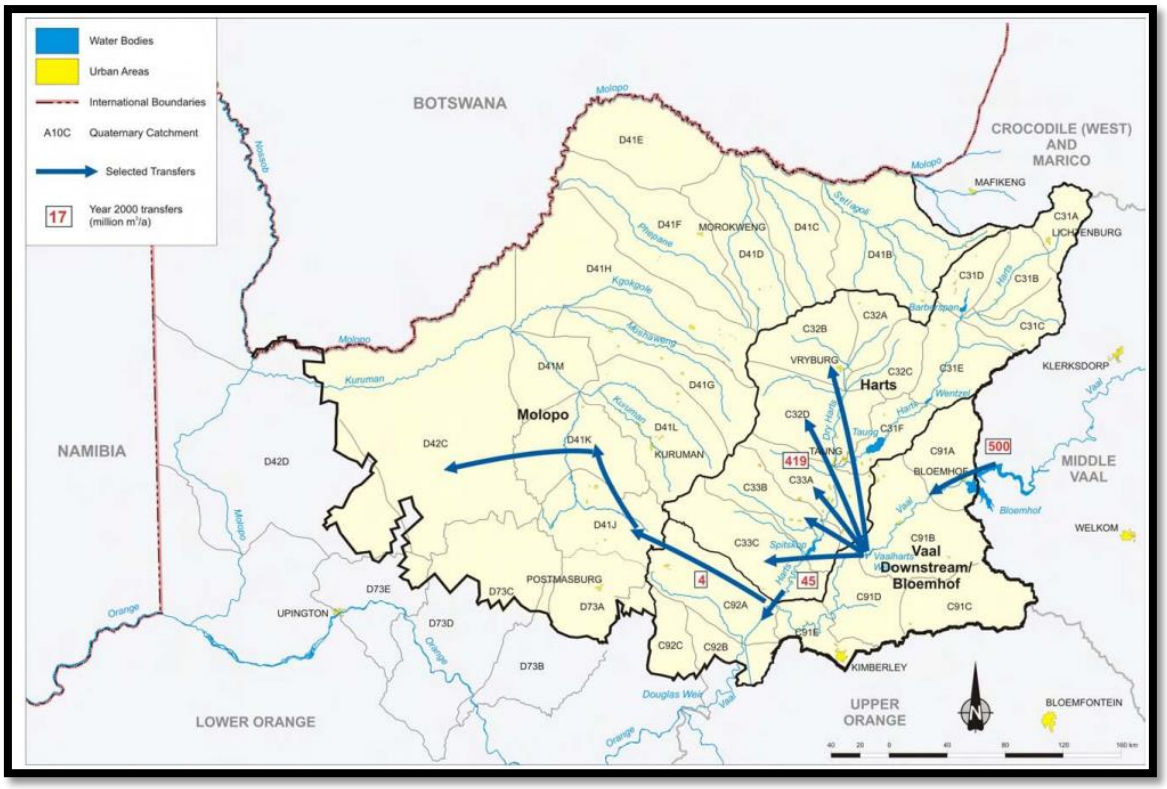

Figure 23: Layout and location of the Lower Vaal WMA

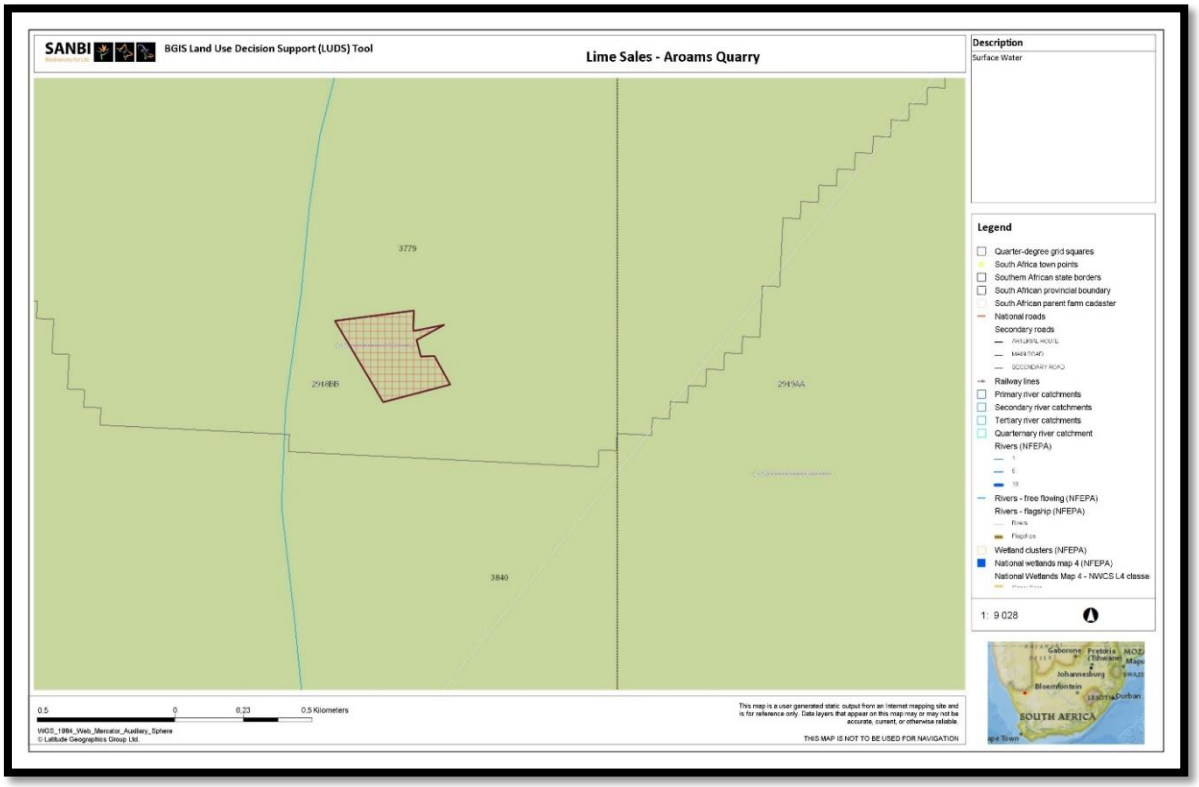

Figure 24: Map showing surface water features.

In its historical natural state, the quality of water in the Orange River was good, although of high turbidity during flood flows. Water from the tributary streams tends to be of high salinity. Both the flow regime and water quality in the Orange River has, however, been severely impacted upon by extensive upstream developments. Salinity in the Orange River has increased due to the transfer of high quality water out of the Orange River (in Lesotho and the Upper Orange WMA) and as a result of high salinity irrigation return flows along the Orange River. Poor quality water from the Vaal River, which contains a high proportion of irrigation return flows as well as treated urban effluent, also enters the Orange River. Salinity is at present still moderate and acceptable along the main stem of the Orange River. Deterioration can be expected with increased upstream irrigation and the situation must be closely monitored. There are algal blooms experienced in the main stem due largely to irrigation return flows, diffuse sources and poor quality water from the upstream Vaal WMAs. The algal blooms are of particular concern as they are potentially toxic. An algal monitoring programme along the Orange River as well as management and communication protocols have been developed by DWAF if the algal blooms are identified as toxic. Studies and monitoring programmes are underway to understand the current algae behaviour. (DWAF, ISP Lower Orange WMA, 2004)

Ninety percent of the runoff generated in the two Orange River WMAs is generated in the Upper Orange WMA. The bulk of the runoff generated in the Lower Orange comes from the Fish River in Namibia (approximately 60% of the Lower Orange runoff) but this only enters the main Orange River close to the river mouth. The bulk of the surface water in the Lower Orange Water Management Area is therefore found in the main stem of the Orange River, with virtually all the surface water flowing into the Orange River from the Upper Orange and Lower Vaal WMAs.

The two major storage dams, Gariep and Vanderkloof, which are both used to supply all the irrigation, urban, mining and environmental requirements along the Lower Orange River, are located in the Upper Orange WMA, but both are of vital importance to the Lower Orange. There are no large storage dams in the WMA, with only a few smaller dams on some of the main tributaries. These include:

- Smartt Syndicate Dam (101 million m^3 gross storage) on the Ongers River.
- Van Wyksvlei (143 million m^3 storage) on the Carnarvonleegte.

There are also several diversion weirs in the Orange River of which Boegoeberg (20 million m^3 storage) is the largest. Reliable estimates of the surface water resources in the Upper Orange and Vaal River catchment are therefore of extreme importance for the Lower Orange. There is a fairly high confidence in the yield estimates of the surface water in the main system although some of the hydrology is relatively old. The hydrology for the Lower Orange is however not at an acceptable level for the planning or operation of any local water supply schemes outside the Orange River. For more detail the reader is also referred to the Upper Orange ISP (DWAF, 2004b) and Orange River Overarching ISP (DWAF, 2004a) documents.

The total water available for use in the Lower Orange water management area at the year 2000 development levels summarised in Table 1.

Table 1: Available water in year 2000 (million m^3/a)

Sub-area	Natural resource		Usable return flow			Total local yield (1)	Transfers in	Grand Total
	Surface water	Ground-water	Irrigation	Urban	Mining and bulk			
Orange	(1 092)	9	96	1	0	(986)	2 083	1 097
Orange Tributaries	9	13	0	0	0	22	0	22
Orange Coastal	0	3	0	0	0	3	6	9
Total	**(1 083)**	**25**	**96**	**1**	**0**	**(961)**	**2 083**	**1 122**

The negative yield for the Orange River within the Lower Orange water management area, as shown in Table 1, is as a result of evaporation losses and evapotranspiration by riparian vegetation along this reach of the river, which by far exceed the run-of-river yield contributed by local inflows. It also includes a component for losses associated with insufficient management of releases from Vanderkloof Dam.

Potential for a dam in the Lower Orange River has been identified for the re-regulation of releases from Vanderkloof Dam as well as the storage of flood flows mainly from the Upper Orange and Vaal Rivers and to a lesser extent also from the flows generated in the Lower Orange. This would contribute to the improved management of the Orange/Vaal River System, and facilitate more water being made available for use.

No meaningful potential for surface water regulation exists in the Orange Coastal sub-area. Factors that could have a significant impact on the available surface water resources include:

- Saving in operational losses with regards to releases from Vanderkloof Dam (See Orange River Overarching ISP; DWAF, 2004a).
- Implementation of the Reserve on the Orange River (See Orange River Overarching ISP; DWAF, 2004a). Indications are that the reserve can vary significantly from the current environmental flows released from Vanderkloof and will therefore significantly impact on the current surplus available in the system.
- Utilising inflows from the Vaal River.
- Irrigation Return Flows. Very little data is available but return flows commonly amount to 10% of irrigation water. Yield analysis assessments for local surface water resources beyond the Orange River main stem can, with the current available hydrology, only be undertaken on a cursory level (using WR90 data).

This should be carried out only when the need exists and will be the responsibility of the specific towns or towns in need. (DWAF, ISP Lower Orange WMA, 2004)

(viii) Ground Water

The prospecting processes should not have any influence on the quality or quantity of ground water. A negative impact on groundwater usually occurs where subsurface water is pumped out of an excavation pit. This can lower the water table in the immediate surroundings of the excavation, which can negatively impact upon surrounding wetlands (specifically hill slope or seepage wetlands) and boreholes. The proposed method of prospecting will not entail deep excavations from which groundwater will need to be removed and there are no known wetlands on the farm.

Groundwater quality is one of the main factors affecting the development of available groundwater resources. Although there are numerous problems associated with water quality, some of which are easily corrected, total dissolved solids (TDS), nitrates (NO3 as N) and flourides (F) are thought to represent the majority of serious water quality problems. The water quality was evaluated in terms of TDS and potability.

The information was obtained from DWAF Geohydrology. The potability evaluation done was based on the evaluation of chloride, fluoride, magnesium, nitrate, potassium, sodium, sulfate and calcium using the Quality of Domestic Water Supplies, Volume 1 (DWAF, 1998). The portion of the groundwater resources considered to be potable has been calculated as the portion classified as ideal, good and marginal (Class 0 -blue, 1- green and 2 - yellow). Water classified as poor and unacceptable (Class 3 - red and 4 - purple) is considered not to be potable (See Point and diffusive pollution Agricultural activities are a source of diffuse water contamination.

The contribution of each farm on a local scale is often fairly small but the contribution on a catchment scale needs to be included in assessing any pollution situation. Most findings regarding this issue can only be assessed in a generic way due to the lack of data in the WMA. Nitrates are the contaminant of most concern, since they are very soluble and do not bind to soils, nitrates have a high potential to migrate to groundwater. Because they do not evaporate, nitrates/nitrites are likely to remain in water until consumed by plants or other organisms.

Generally, on a local scale the areas of intense cultivation are the major contributors in terms of inorganic nitrates. The primary inorganic nitrates, which may contaminate drinking water, are potassium nitrate and ammonium nitrate both of which are widely used as fertilizers. Where feedlots are operated the contribution of organic nitrates to groundwater contamination can be far more problematic. For most farming activities organic nitrate is not a severe problem in South Africa. High-density cultivation at surface water irrigation schemes along the Orange River contributes to the nitrate load of localized aquifers in the WMA. Other contaminants of concern are pesticides and herbicides. The contribution of these to groundwater contamination is very difficult to quantify on catchment scale. Site-specific data relating to likely loading/application volumes and history, soil profile and local geohydrology are required. The mineralogical groundwater quality in the Lower Orange Water Management Area is not particularly good in terms of its TDS rating.

In general, the groundwater quality is rated as class 2 to class 4, marginal to completely unacceptable. The southern portion of the inland region, De Aar, Victoria West and Sutherland has a class 2 rating, together with the areas surrounding Prieska, Griekwastad, Upington and Springbok. The rest of the WMA, particularly north of Brandvlei and Carnarvon and the coastal strip are rated as class 3 and 4. The Sutherland, De Aar, Upington belt has a varying range of potable groundwater from a moderate 50% to approximately 90%. The balance of the WMA, has a predominant potable usage of less than 4 30%, with the occasional improvement to 50% (V3, 2002).

See Figure 25 for average TDS values for the area under investigation as mapped by Simonic (1999). Natural occurring radioactivity is found in some of the groundwater resources associated with geological formations such as granites and gneisses. Fortunately, the values are mostly low except at Kotzerus, Kharkams, Bulletrap, Fonteintjie, Kenhardt and Riemvasmaak, which fall into Class 2 according to the potable water classification (Van Dyk, 2003).

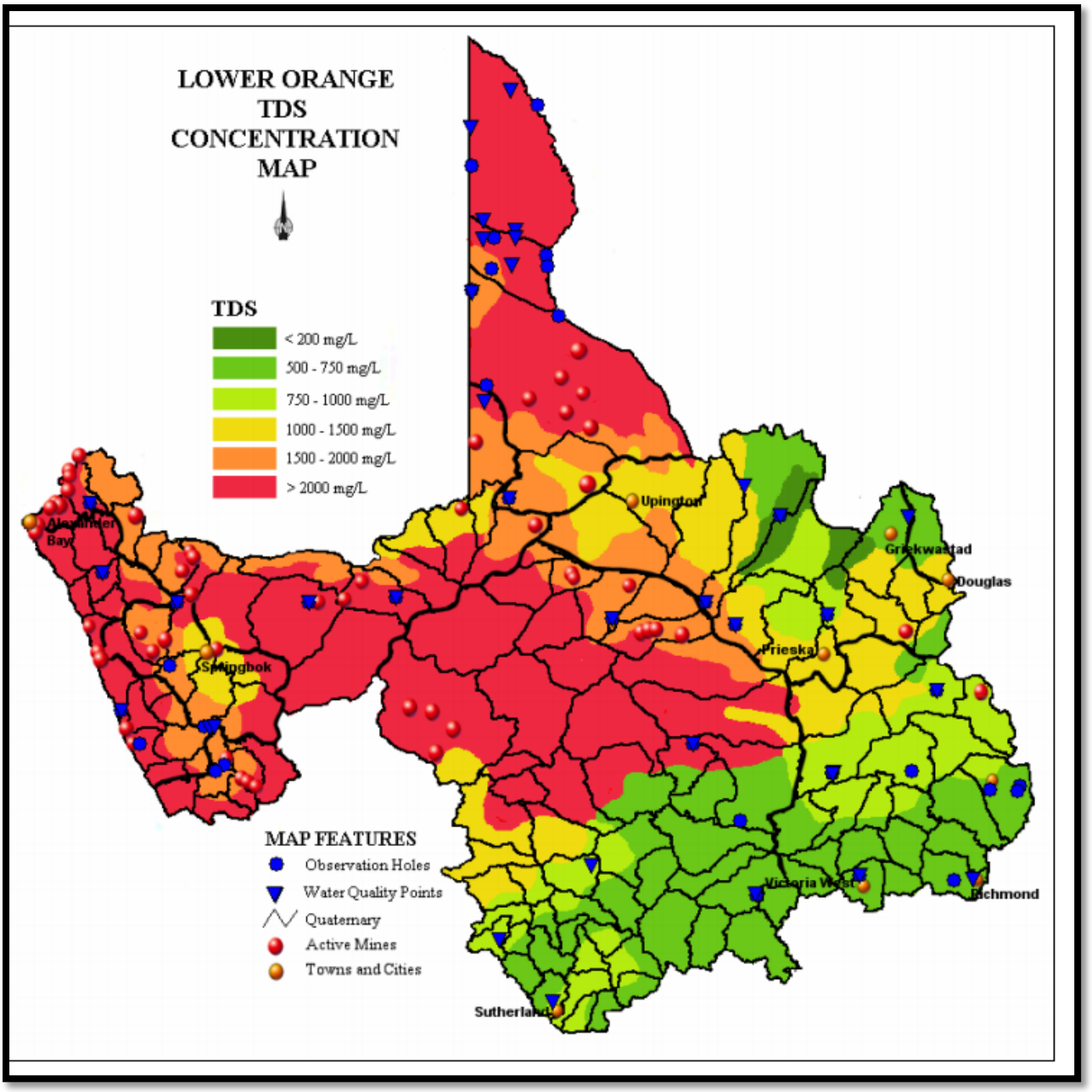

Figure 25: Total dissolved solids for the WMA with main abstraction and water quality monitoring points (DWAF, 2004).

Agricultural activities are a source of diffuse water contamination. The contribution of each farm on a local scale is often fairly small but the contribution on a catchment scale needs to be included in assessing any pollution situation. Most findings regarding this issue can only be assessed in a generic way due to the lack of data in the WMA. Nitrates are the contaminant of most concern, since they are very soluble and do not bind to soils, nitrates have a high potential to migrate to groundwater. Because they do not evaporate, nitrates/nitrites are likely to remain in water until consumed by plants or other organisms.

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Activities related to urban areas can also result in localized or even diffuse pollution of groundwater. Poor management of sewage treatment works can contribute to the groundwater pollution as can landfill sites, on-site sanitation (especially in informal settlements) and spills resulting from accidents or leaking underground tanks. Uncontrolled dumping and accidents related to the transport industry also contribute to localized pollution in the WMA. Often goods that contain hazardous substances or perishables are confiscated by authorities and these are then dump at illegal sites. A need for incinerators has been identified. Mining activities that impact on the groundwater quality include the Okiep Copper mine and the Black Mountain lead, zinc, copper and silver mine. Mineralisation in the O'okiep area tends to occur in basic rocks intruded in the form of 'steep structures' into granitic terrain of the Namaqualand Metamorphic Complex, and may extend to depths of over 1000 m (www.metorexgroup.com/Ookiep.htm). The major copper minerals are bornite (Cu5 FeS4) with 62% copper, and chalcopyrite (CuFeS2) with 32.5% copper. Open stoping is employed at the mine, together with backfilling at times at O'okiep. Ore is concentrated by flotation and transported to the nearest available smelter. O'okiep smelts its own concentrates. The Black Mountain Mine is situated in the Northern cape near Aggeneys. The facility produces zinc concentrate together with lead and copper concentrates, from which silver is also recovered.

Development of the nearby Gamsberg zinc deposit, is currently under consideration (http://www.dwaf.gov.za/orange). There are many impacts on the environment dealing with the water quality and waste disposal from copper mining. These adverse water quality impacts are caused primarily by land disposal practices that fail to contain wastes, by run-on and run-off controls that are inadequate to prevent surface water from flowing through impoundments, or by groundwater infiltrating surface impoundments. These open-pit mining methods also can cause disturbances that can lower the water table in an area, causing water shortages, land subsidence, and fracturing.

However due to the low rainfall in area the impacts on the groundwater quality are less than expected and very localized. Acid Mine Drainage, elevated TDS, SO4, and low pH with associated higher trace metal concentrations have been found at tailings dumps. A radioactive waste disposal site for low- and intermediate level waste generated at the Koeberg Nuclear Power Plant, is located north of Springbok on the flat plains of the Bushmanland plateau. Waste is buried in metal drums and solidified in concrete in the trenches. Up to date no significant contamination of the groundwater has occurred (Van Blerk, 2000). Sprinkbok Hard Chrome is an industry located in Springbok, an incident has occurred where Cr+6 was released into the environment but no data is available on the impact the incident had on the groundwater resource. As discussed impacts on groundwater quality from the diamond mining industry in the WMA is negligible.

The Lower Orange WMA, is underlain by very diverse lithologies. Several broad lithostratigraphic units fall within the boundaries. A simplified geological map of the WMA is presented in Figure 17.

From oldest to youngest these units comprise the following (V3, 2002):

- Namaqualand-Natal Basement Complex. Rock of this complex, ranges from homogenous granites through to migmatites and gneisses. The area underlain by the Namaqualand-Natal Complex is situated in the vicinity of the Orange River between Upington and Springbok. The area is an assembly of compact sedimentary, extrusive and intrusive rocks.
- Ventersdorp Supergroup, represented by andesitic lavas and occasional sedimentary rocks related to post extensive erosion, are encountered in very small 2-5 isolated inliers between Prieska and Douglas.
- Dolomitic and related carbonate rocks of the Postmasberg Group, Campbell and Griquatown Sequence, all forming part of the Griqualand West Sequence, occupy the north-eastern lobe of the WMA. Dolomites, limestones and related sedimentary rocks (often iron or manganiferous ore bearing) make up this broad lithostratigraphic unit.
- Abbabis and Kheis Groups are represented by relatively small inliers of diverse sedimentary successions consisting of shales, sandstones, banded iron formations and conglomerates. These rocks are encountered in the vicinity of Upington and are not widespread.
- Damara Sequence encountered in the immediate vicinity of Alexander Bay and Port Nolloth, is represented by the Fish River, Schwarzrand, Kuibis, Malmesbury, Gariep, Swakop, Otavi, Nosib, Rehoboth and Sinclair Groups. Lithologies in these various groups are very diverse, ranging from shales, sandstones, diamictites, banded iron formation through to limestones and calcareous sedimentary formations.
- Karoo Sequence represented by the Ecca Group and Dwyka Formation, and to a lesser extent the Beaufort Group, occupy the southern lobe of the WMA, and comprises thick successions of sedimentary rocks. Sedimentary rocks range from mudrocks through coarser varieties (sandstones, conglomerates) to diamictites and rhythmites (pleistocene deposits). Karoo or Jurassic dolerite is fairly common throughout the sequence and also frequently intrudes older rocks.
- Quaternary and Tertiary dune deposits, consisting of “Kalahari red sands”, occupy the extreme northern part of the WMA bordering on Namibia. These dune deposits are of considerable thickness and comprise fine aeolian sands with occasional coarser gravel deposits.

The geohydrology is just as complex as the geology in the area but can be simplified to four main aquifers namely the Karoo sediments, the weathered granites and gneisses from the Basement complex, dolomites and associated formations and the primary aquifers such as the Kalahari sands and the alluvial deposits along streams and rivers and the coastal plains north of the Buffelsrivier. The first three of these aquifer types are typical dual porosity or secondary aquifers water associated with weathering and fracturing of the matrix. Primary aquifers are found in Kalahari sands and alluvial deposits associated with rivers and coastal plains.

At small scale a number of these aquifers are utilized mostly along dry riverbeds, Buffelsriver, Saaipoort along Carnarvon leegte, along Gamagara river, Driekop Kanhardt. In the drier west almost all abstractions from boreholes associated with a proximate riverbed. Along the Orange River some abstraction along riverbeds is also taking place (Van Dyk, 2003).

General characteristics of riverbed aquifers can be summarized as:

- Coarse gravels and sands are more typical of alluvial deposits. However, flood plains consist mainly of fine silt. Towards the end of a river's course, the river slows down dumping some of the heavier materials on these flood plains. Boreholes drilled into these types of formations normally have higher yields. It is important to note that borehole design is plays an important role in the yield of boreholes drilled into riverbed aquifers.
- Alluvial deposits grain size varies considerably, fine and coarse materials are intermixed. The hydraulic conductivities vary between 10-3 to 103 m/d and their porosities vary 12 between 25 – 70%. However, flood plain porosities usually range 35 – 50% and the hydraulic conductivities vary between 10-8 – 10-1 m/d.
- In general riverbed aquifers are high recharge areas and often recharge deeper underlying aquifers and are unconfined in nature. The surface-water groundwater interaction is often intermittent (depending on the elevation of the water level, groundwater may recharge the surface water body or the surface water may recharge groundwater). This is normally dependent on the rainfall cycle. Therefore, boreholes drilled into these aquifers are almost always successful.

<u>Groundwater-Surface Water Linkage</u>

Groundwater-surface water interaction has not been studied sufficiently in the Northern Cape due to the limited surface water. According to records documented by Van Tonder and Dennis (2003), under natural conditions there is seldom a connection between surface water and groundwater. However, observed surface water recharge in normally dry riverbeds. Current quality problems experienced in the Vaal and Orange rivers, waterlogging experienced with irrigation along these riverbanks indicate interaction. Therefore, a study is currently motivated by DWAF Geohydrology to investigate Groundwater-surface water interaction in the Vaal and Orange rivers (Van Dyk, 2003).

Groundwater quality varies from good to unacceptable in terms of potable standards. The groundwater quality is one of the main factors affecting the development of available groundwater resources. Although there are numerous problems associated with water quality, some of which are easily corrected, total dissolved solids (TDS), nitrates (NO3 as N) and fluorides (F) represent the majority of serious water quality problems that occur (DWAF, ISP Lower Orange WMA, 2004)

Summarised information on groundwater is given in this section. Groundwater utilisation is of major importance across wide areas in the Lower Orange WMA and often constitutes the only source of water. It is mainly used for rural domestic supplies, stock watering and water supplies to towns off the main stem of the Orange. These resources must be properly managed and developed.

As a result of the low rainfall, recharge of groundwater is limited and only small quantities can be abstracted on a sustainable basis. Artificial recharge of groundwater is practised in some areas where water from small dams is transferred through pipelines into boreholes located in the area of recharge of the main production boreholes. Aquifer characteristics (borehole yields and storage of groundwater) are also typically unfavourable because of the hard geological formation underlying most of the water management area. In the Orange Tributaries sub-area 60% to 70% of the available water is supplied from groundwater sources.

Groundwater also constitutes an important source of water for rural water supplies in the Orange River, although only a small proportion of the total available water. Much of the groundwater abstracted near the river (Orange sub-area), is actually recharged from the river and could also be accounted for as surface water. Groundwater availability in the coastal region is extremely limited as a result of the lack of rainfall. Close to the sea there is a strong risk of seawater intrusion into coastal aquifers.

The interaction between the mining activity and groundwater is managed through the EMPR and the water use licensing process. Some impacts do exist with regard to localized dewatering of aquifers. These impacts are however localized and very little data exist in this regard. The information from the compliance monitoring systems at the mines needs to be integrated into the DWAF monitoring systems and regularly reviewed. Mines utilise the groundwater available but are still largely dependent on surface water, which is in most cases supplied from the Orange River. Boreholes and abstraction from boreholes are seldom managed properly and therefore the failure of boreholes is experienced. Borehole siting needs to be based on proper geo-technical work to limit the drilling of unsuccessful boreholes. As result of this some towns have drilled many boreholes without much success.

From the list of towns and related water resources given it is evident that shortages in the supply from groundwater are experienced at Vanwyksvlei, Strydenburg, Carnarvon and Garies. Proper management and monitoring of groundwater sources by municipalities and other users are of vital importance. There is a need to provide groundwater information and to create an improved understanding of groundwater at a local level.

Municipalities should also investigate groundwater potential outside town boundaries as a possible source. Groundwater monitoring and data on the availability of groundwater in general is insufficient (DWAF, ISP Lower Orange WMA, 2004)

No drainage channels occur within the mining area and there is no dendritic system which could be disturbed. Given the variability of semi-arid rainfall, the calculation of the mean annual runoff (MAR) would be of no use. The MAR is very low given the low rainfall (less than 250 mm/year) occurring mainly in the winter months, high evaporation rates, and shallow grade of the slope toward the drainage channels and the permeability of the soils. The surface water quality (when available after severe rainstorms) is suitable for animal consumption but not as potable water. No natural wetlands exist in the area.

- The proposed mining area will be further than 100m from any natural water source.
- The proposed activities are not expected to have a negative impact on the ground water of the area.

Less than 20 m^3 process water will be used per day. Water will be obtained from a borehole of the landowner. The taking and storing of water is covered by a General Authorisation in terms of section 39 of the National Water Act, 1998 (Act No. 36 of 1998). According to the authorisation no “groundwater taking zones” are excluded for “small industrial users”. This mining activity classifies as a “small industrial users” as it qualify as a work creating enterprise that do not use more than 20 cubic metres per day. Mining and quarrying are also a category identified in the Standard Industrial Classification of All Economic Activities (5^{th} edition), published by the Central Statistics Service, 1993, as amended and supplemented as a small industry.

The applicant will however in accordance with the general authorisation adhere to Record-keeping and disclosure of information.

The authorisation states that the water user must ensure the establishment of monitoring programmes to measure the quantity of water taken and/or stored, as follows -

a) the quantity of groundwater or surface water abstracted must be metered or gauged and the total recorded as at the last day of each month,

b) the quantity of water stored must be recorded as at the last day of each month.

(ix) Air Quality

The background air quality of the surrounding area is very good due to low industrial activity and very low population density. Given the surrounding extent of semi-desert, dust generation is high under windy conditions (dust storm) however under normal conditions no extreme dust conditions were noted on site. The mining operations at the existing quarry contribute to the dust levels of the immediate area. Dust to be generated by the proposed mining activities will imitate the dust levels generated by the current mining activities at the site, and are therefore seen as a cumulative impact. It is expected that the generation of dust will be localised within the confines of the mining area, and can be mitigated through the implementation of dust suppression measures.

(x) Ambient Noise

The background noise level of the surrounding area is highly impacted on by traffic travelling along the N14 road passing the property. The background noise level of the surrounding area is the same as for other agricultural areas and at present such noise levels are below 55dBA. The surrounding areas are characterised by an agricultural setting in which vehicles and farm equipment operate. The traffic on the N14 also contributes to the ambient noise of the area. The mining activities at the existing quarry increase the natural noise levels at the proposed mining site. Due to the remote setting of the mining area noise generated by the activities at the site is not anticipated to have a negative impact on any surrounding landowner.

The limit for the air blast or "noise" generated by a blasting event is 134dB. Blasting noise is instantaneous and of short duration. If the blast is designed so that the maximum amount of energy released by the explosive goes into breaking and displacing the rock, the air blast is limited. Blasting of rock and secondary blasting could occur more than once a month. Site management has to notify the surrounding landowners in writing prior to blasting occasions. In order to minimise the noise impact, blasting has to occur between 8:00 and 15:00 Monday – Fridays.

The nuisance value of noise generated by heavy earthmoving equipment for residence in the near vicinity is deemed to be of low – medium significance, as the mine is expected to be operational 24 hours a day for 6 days a week. The distance of residents from the mining area (>2 km) will however assist in the mitigation of the noise impact. All mining vehicles will also be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93. of 1996).

(xi) Archaeological and Cultural Interest:

No sites of archaeological or cultural importance were identified during the site inspection. As the proposed mining activity will take place within an area previously utilized for mining purposes, the activity is not anticipated to have a negative impact on any archaeological or cultural aspects.

During the mining permit application of Raumix Aggregates (Pty) Ltd (10052 MP), SAHRA requested that a Heritage Impact Assessment and Paleontological study be done to confirm that the mining activity will not have an impact on any archaeological or cultural aspects. A desktop Heritage Impact Assessment and recommendation for exemption from further Paleontological studies was submitted to SAHRA. SAHRA subsequently responded that the development is unlikely to impact significant heritage resources and that the SAHRA Archaeology, Palaeontology and Meteorites Unit has no objection to the development on condition that, if any new evidence of archaeological sites or artefacts, paleontological fossils, graves or other heritage resources are found during development, constructing or mining, SAHRA and an archaeologist and/or palaeontologist, depending on the nature of the finds, must be alerted immediately.

As the proposed mining area applied for by Lime Sales Limited falls within the study area surveyed during the abovementioned archaeological and paleontological desktop studies, the potential impact on archaeological or cultural aspects is deemed to be insignificant. Should any new evidence of archaeological sites or artefacts, paleontological fossils, graves or other heritage resources be found during development, constructing or mining, SAHRA and an archaeologist and/or palaeontologist, depending on the nature of the finds, will be alerted immediately.

SAHRA requested in October 2018 that an Archaeological study be conducted fr the new mining permit area. The following conclusion was made during this assessment.

HCAC was appointed to conduct a Heritage Impact Assessment to determine the presence of cultural heritage sites and the impact of the proposed 5 ha Aroams quarry on non-renewable heritage resources. The study area was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the mining right footprint.

The farm and the surrounding properties are mostly commercial farms and the area earmarked for the proposed mining falls on a section of the farm that is used as an existing quarry. The general area is characterised by an expansive, undulating landscape of red sandy soils dominated by scattered rocky outcrops.

Within the study area several rocky outcrops occur, these were inspected for the presence of grinding hollows but none was noticed. The only recorded finds consists of a single broken Stone Age blade that snapped on the proximal end and it is not possible to ascribe the artefact to a time period. At the same location a broken lower grinder was recorded. These finds are isolated, located on the periphery of the proposed quarry and out of context. Although these artefacts attest to early human archaeological occurrences on the landscape, they do not constitute an archaeological site and is classified as a find spot and is of no significance apart from noting their presence in this report. The SAHRA paleontological sensitivity map indicated that the footprint as a whole is located on a paleontologically insignificant area and is not considered paleontologically vulnerable. No further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed. In terms of the built environment of the area (Section 34), no structures older than 60 years occur in the study area. In terms of Section 36 of the Act no graves or burial sites were recorded. If any additional graves are located in future they should ideally be preserved or alternatively relocated according to existing legislation. No public monuments are located within or close to the study area. The study area is characterised by an existing quarry and associated infrastructure and the proposed development will not impact negatively on significant cultural landscapes or viewscapes. During the public participation process conducted for the project no heritage concerns was raised.

The impact on heritage resources in the study area is low and it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- Implementation of a chance find procedure as outlined in below.

Chance Find Procedures

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below.

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

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

Reasoned Opinion

The impact on heritage resources in the study area can be mitigated to an acceptable level and it is recommended that the proposed project can commence on the condition that the recommendations in this report are implemented as part of the EMPr and based on approval from SAHRA. Furthermore, the socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the project.

(xii)Visual Exposure

The mining area was identified to constitute the lowest possible visual impact on the surrounding environment. Due to the current mining disturbance nearby the area the site has a low aesthetic value. The proposed prospecting area will visible from the surrounding farms and will therefore have a visual impact on the immediate surrounding area.

The applicant should ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the stockpile area. Upon closure of the prospecting area and decommissioning of the site, the area should be fully rehabilitated and all exposed areas should be seeded to enhance vegetation recovery should natural vegetation not establish within six months of completion of rehabilitation.

The proposed mining area will be operated within the vicinity of an existing quarry. All stockpiling will be done on previously disturbed areas within the processing area, which will be rehabilitated upon closure of the mining area. Although the proposed mining at the site will have a visual impact the establishment of the quarry in an already disturbed area will help to mitigate this impact.

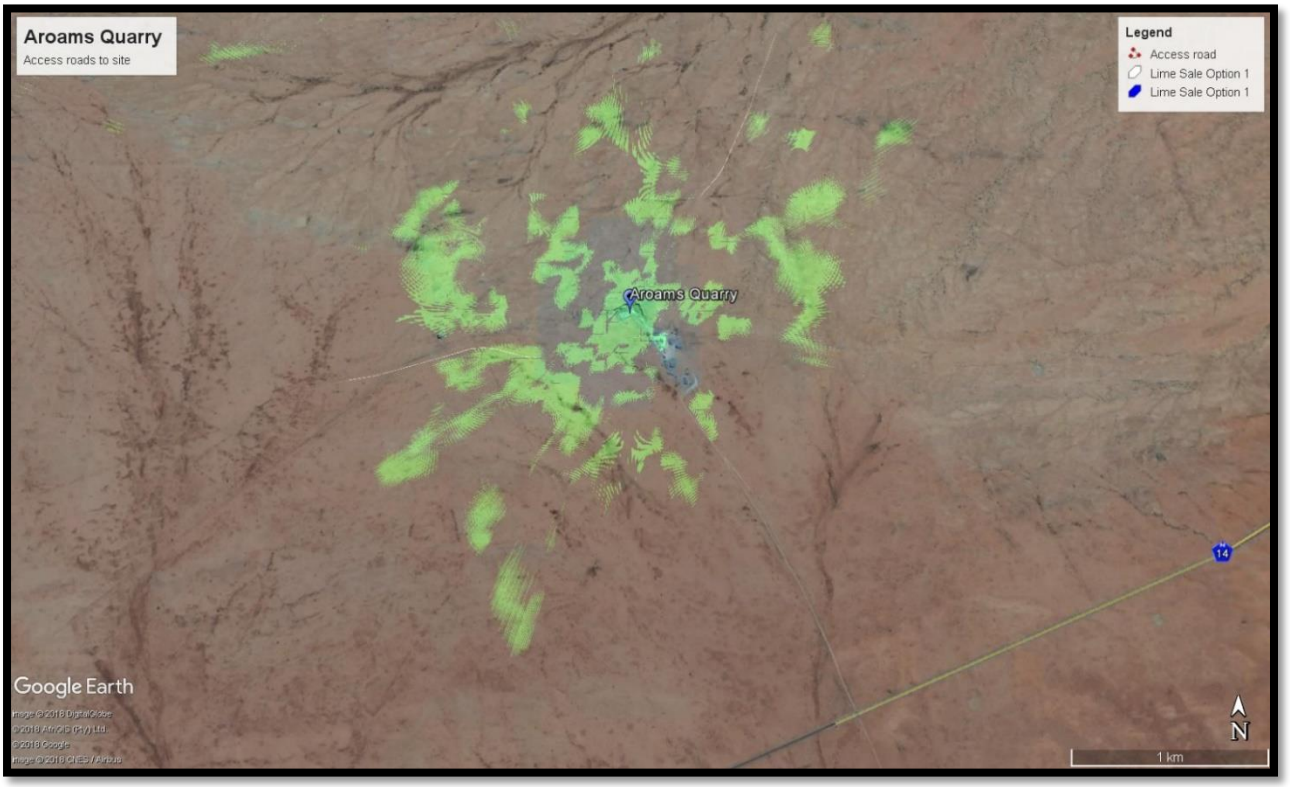

Figure 26: Visual Exposure

From the above figure, the green areas indicated the areas that will be visible from the surrounding area. From the above figure it is indicated that the mining area will be visible from the surrounding properties.

(xiii) Regional Socio Economic Structure:

The Khâi-Ma Municipality has been classified as a Category B municipality, and was proclaimed as a local municipality with a council combined with a ward participatory system. The Khâi-Ma Municipality is deemed to be a low capacity municipality, and shares executive and legislative authority with the Namakwa District Municipality. The municipal area is demarcated into four wards (Khai-Ma, 2017).

The situational analysis and statistics presented in this chapter indicate the developmental challenges facing Khâi-Ma Municipality, such as poverty, unemployment, and service delivery backlogs. The programmes and projects in this IDP are informed by this scenario (Khai-Ma, 2017).

Khâi-Ma Local Municipality falls within the Namakwa District of the Northern Cape Province. The Northern Cape is spatially the largest province in the country, but also has the lowest population and some of the least

developed areas in terms of its economic and social development. Khâi-Ma lies in the central north region of the Namakwa District, which is the furthest north in terms of the provincial boundaries. Khai-Ma Local Municipality is part of Namakwa District Municipality.

Up to 45 workers will be employed at the site. The workers will be sourced from the local community as far as practicable and depending on skill and expertise. Workers will daily be transported to the site. The establishment of the mining area on the farm will also assist the property owner in the diversification of his income. The material to be sourced from the mining area can be used for the upgrading of the road infrastructure in the vicinity of the site, and can therefore contribute to infrastructure development and indirectly to the economy of the area.

(a) Demographic Profile

The population for Khâi-Ma is estimated at 11 340 people (2001). The municipality is sparsely populated (+/- 1 person/km2); most people are settled in its five (5) towns. The municipality is characterized by vast tracts of land, pristine natural environment, unique mountains and its limited cell phone reception, which can be regarded as a unique attraction by some urban dwellers who wish to escape the rush of the cities. This inherent potential for eco-tourism needs to be exploited and managed in a sustainable manner in order to retain this unique setting.

(b) Population Distribution

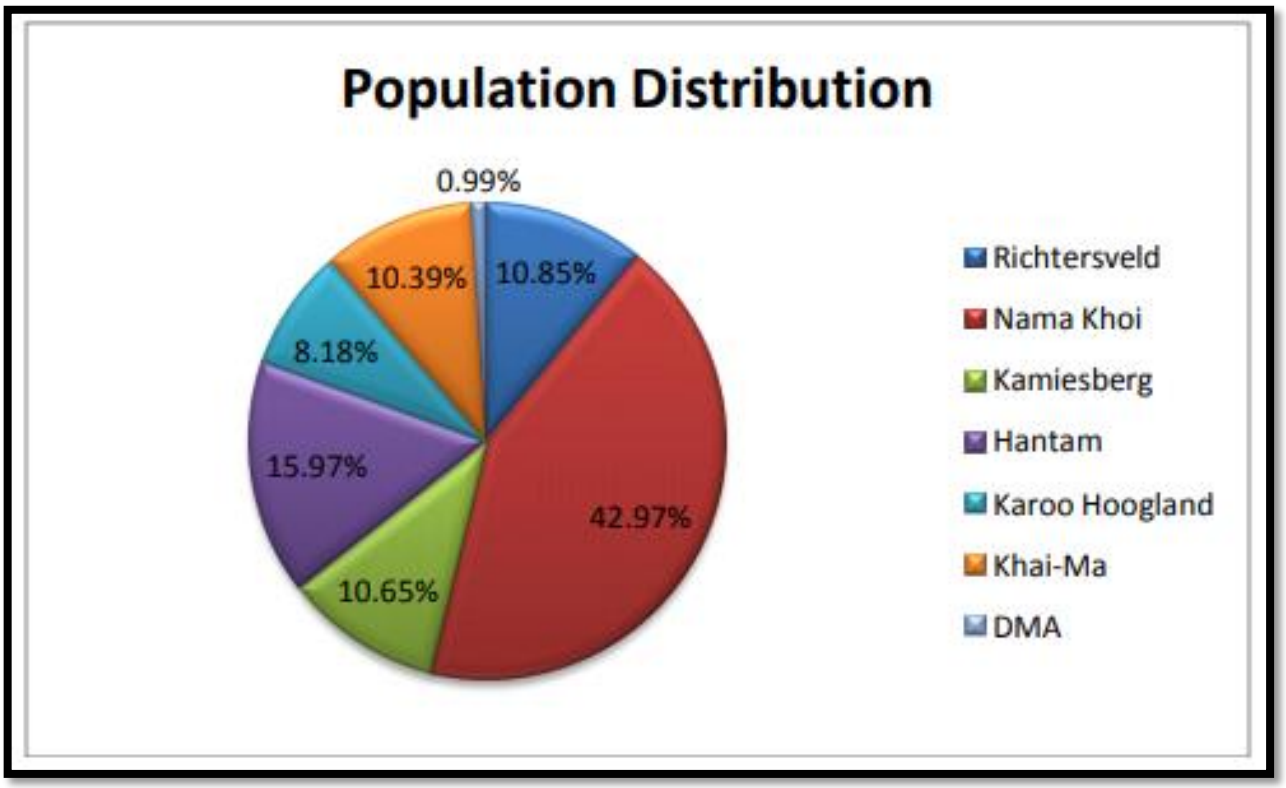

Figure 27: Population Distribution

(c) Households per town

Table 2: Household figures

Household figures per urban area.		
Towns	Population	Current households
Aggeneys	2053	666
Khâi-Ma rural	4035	1404
Onseepkans	912	204
Pella	1425	355
Pofadder	2919	733
TOTALS	**11344**	**3362**

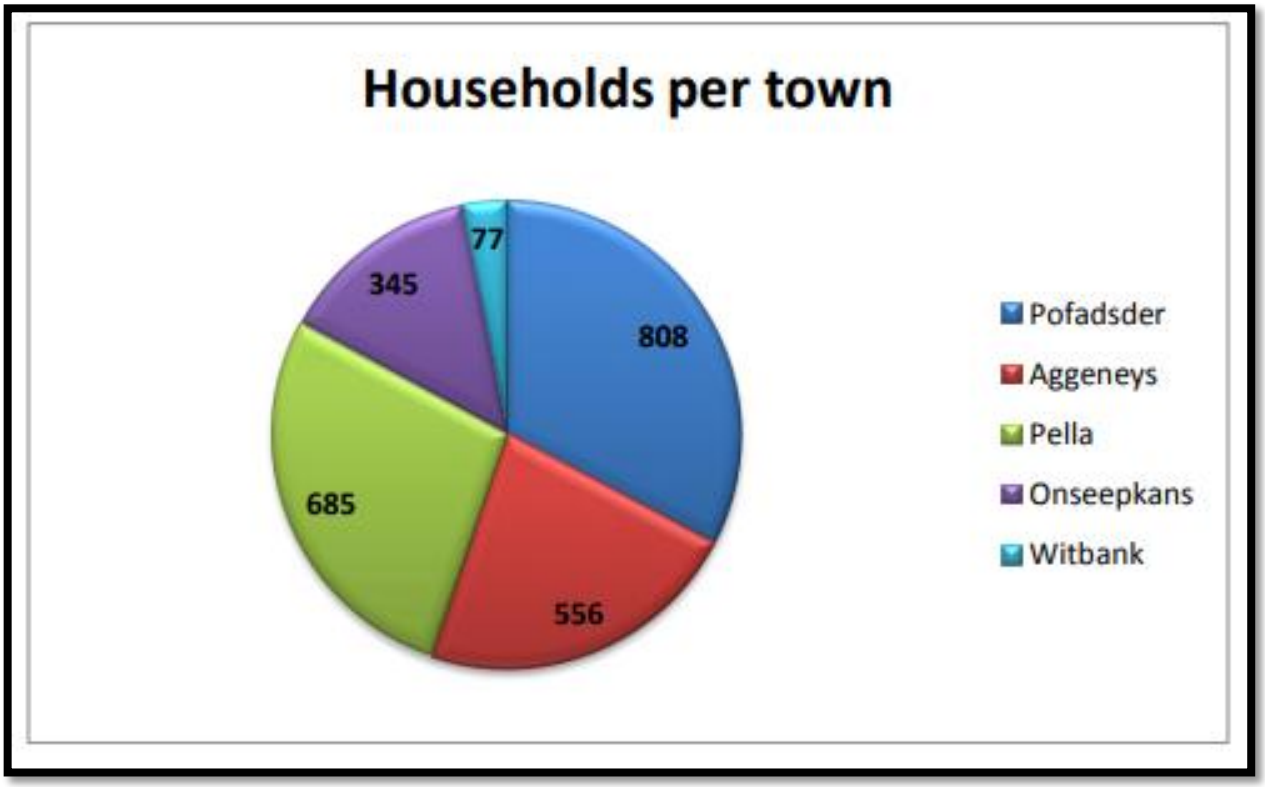

Figure 28: Households per town

Table 3: Population and Household trends.

Population and Household trends						
Khâi-Ma	Population			Households		
	1996	2001	2007	1996	2001	2007
	Statistics SA	Statistics SA	Community Survey	Statistics SA	Statistics SA	Community Survey
	9355	11344	12571	2223	3362	3787
% Increase/Decrease	n/a	21.26%	10.82%	n/a	51.24%	12.64%

CURRENT REALITY: BASIC FACTS & FIGURES

The Municipal Area is divided into 4 wards	
Ward 1	Onseepkans and it includes: Vrugbaar, Raap & Skraap, Pella Brak and Rooiklippe.
Ward 2	Blyvooruitsig and Pofadder.
Ward 3	Pella and it includes: Witbank, Klein Pella.
Ward 4	Aggeneys includes Pofadder town area and Dwaggasoutpan.

The Municipal Council of Khâi-Ma consists of 7 members. 4 represents wards and three (3) are proportional representatives of political parties. The ruling party in all the wards is the ANC.

(d) Age and Gender

Table 4: Age

Age	Male	Female
0 to 4	567	493
5 to 14	1157	1083
15 to 34	2208	1844
35 to 64	1652	1646
Over 65	254	333
Total	5838	5399

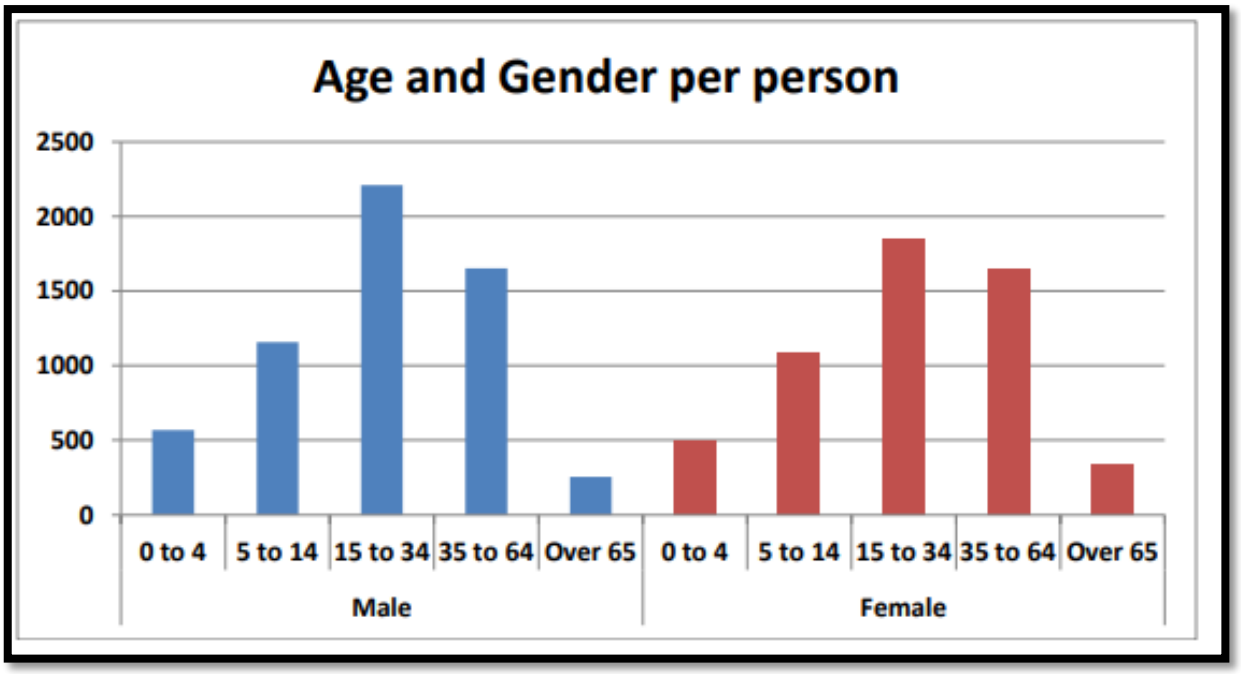

Figure 29: Age and Gender per person

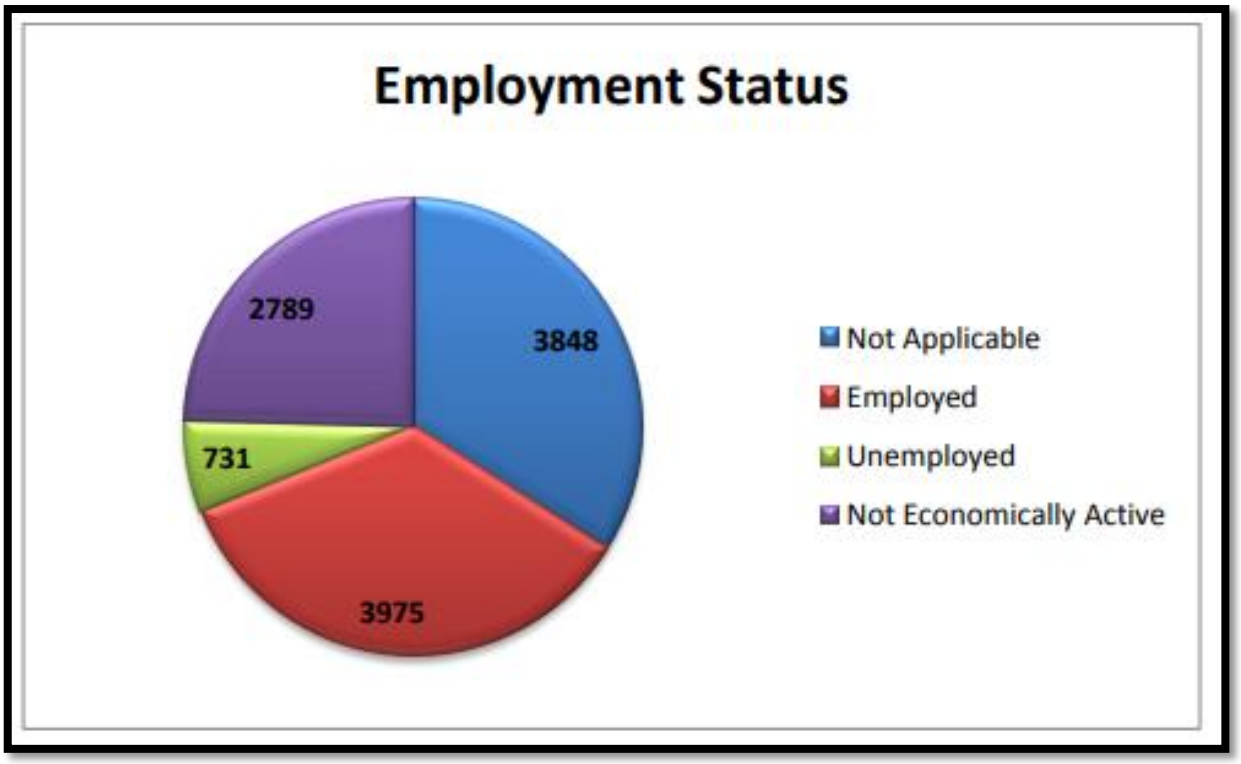

Figure 30: Employment status

(e) Employment status

Table 5: Labour force

Status	Male	Female
Employed	2589	1386
Unemployed	331	400
Not Economically Active	960	1829
Total Labour Force	3880	6315

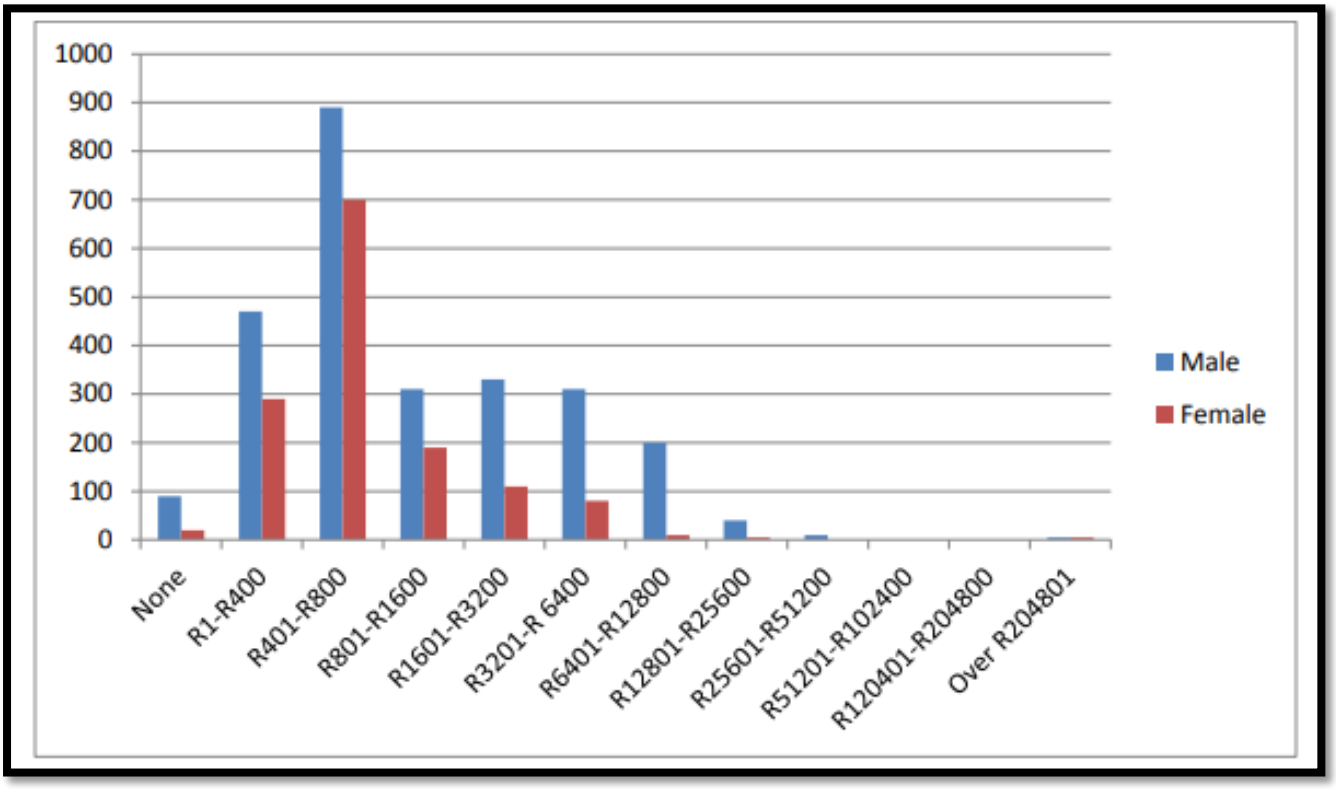

Figure 31: Salary per income.

(f) Education

Table 6: Industry monthly income

Income	Male	Female
None	76	23
R1 – 400	462	285
R401 – 800	882	688
R801 – 1600	301	179
R1601 – 3200	324	116
R3201 – 6400	313	80
R6401 – 12800	188	13
R12801 – 25600	40	3
R25601 – 51200	12	0
R51201 – 102400	0	0
R102401 – 204800	0	0
Over R204801	6	3

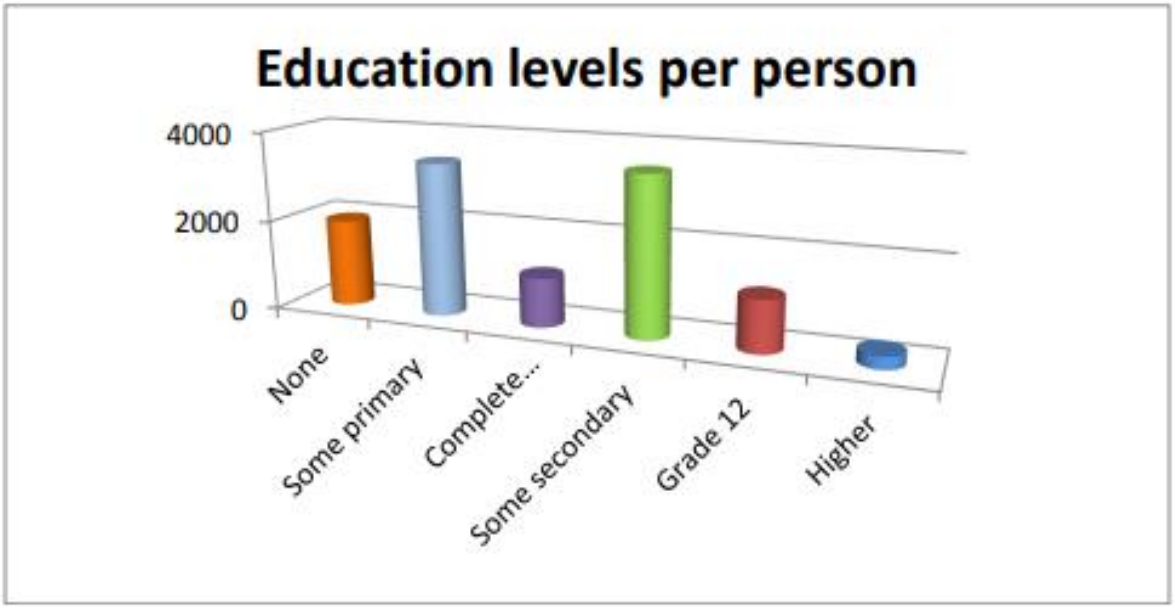

Figure 32: Education levels for person

Table 7: Education

Education Level	Persons
None	1942
Some primary	3399
Complete primary	1091
Some secondary	3497
Grade 12	1141
Higher	274

(g) Employment per industry

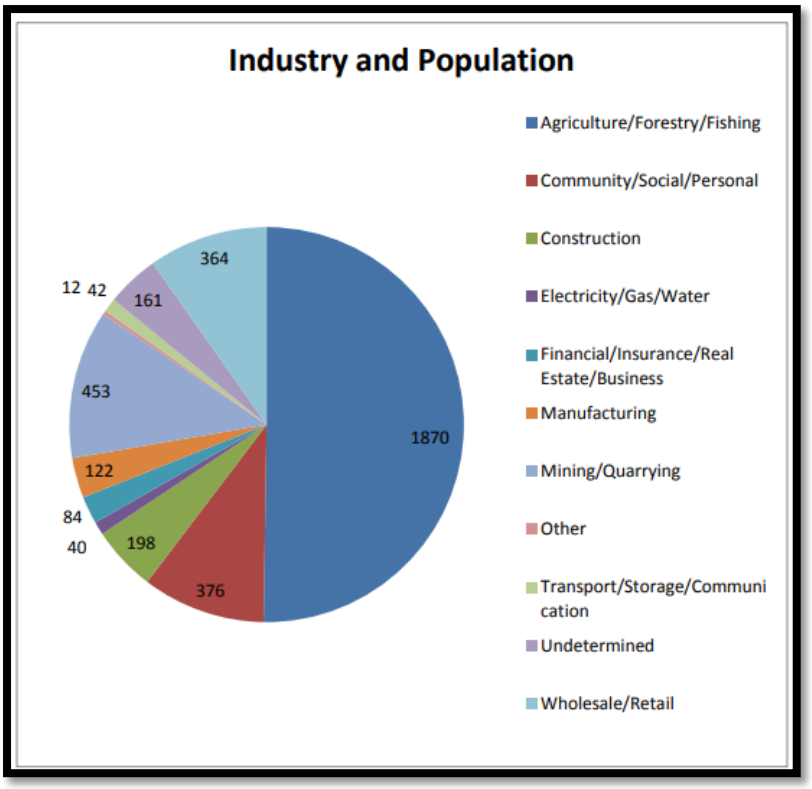

Figure 33: Industry and Population

Table 8: Employment distribution per person

Industry	Population
Agriculture/Forestry/Fishing	1870
Community/Social/Personal	376
Construction	198
Electricity/Gas/Water	40
Financial/Insurance/Real Estate/Business	84
Manufacturing	122
Mining/Quarrying	453
Other	12
Transport/Storage/Communication	42
Undetermined	161
Wholesale/Retail	364

(b) Description of the current land uses.

Portion 2 of the farm Aroams 57 is situated in an agricultural setting, with the land mainly used for small stock grazing purposes. Approximately 90% of the region is used for livestock grazing and production, with the remainder comprising of agriculture and mining.

The Gamsberg zinc mine is located to the south approximately 6 km from the site, and the N14 passes the proposed mining site approximately 2.5 km to the south.

The proposed project will entail the establishment of a mining area adjacent to the existing quarry being used for the winning of aggregate by SPH Kundalila (Pty) Ltd. Raumix Aggregates (Pty) Ltd (MP 006/2012) and SPH Kundalila (Pty) Ltd (MP 003/2015) currently holds a mining permit (MP 006/2012) for the existing quarry at the farm; Lime Sales Limited intends to establish their proposed mining area adjacent to this quarry. An agreement between SPH Kundalila (Pty) Ltd and Lime Sales Limited with regard to technical arrangements made for the co-existence of the respective operations is attached as Appendix D. The agreement also includes a distinction between the respective environmental liabilities and management responsibilities.

Mining at the quarry will only be temporary where after land use will revert back to grazing. As the productivity of the land with regard to land use is very low, mining will have no negative impact on the production of the area.

The land use of the property comprises of the following:

- Agriculture – Mainly grazing, small stock
- Mining – Currently being mined. The Gamsberg zinc mine is located to the south approximately 6 km from the site.

The land use of the surrounding properties comprises of the following:

- Industrial – NONE
- Transport – N14 passes the proposed mining site approximately 2.5 km to the south
- Agriculture – Grazing

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

The proposed mining area is approximately 5 ha in extent and the applicant, Lime Sales Limited (Pty) Ltd, intents to win material from the area for at least 2 years with a possible extension of another 3 years. The granite to be removed from the quarry will be used for road construction and various other projects in the vicinity

EXISTING INFRASTRUCTURE:

As stated above, the proposed mining area will be established adjacent to an existing quarry

The following structures are present within a 3 km radius from the proposed mining area:

- ±150m from site: Borehole with pump
- ±890 m from site: Cement dam with water pipe line
- ±2.5 km from site: N14 national road

The impact of the proposed mining area on the infrastructural features of the surrounding area is deemed to be of low significance as the impact of the mining activity will be concentrated within the 5ha footprint area of the mine.

In order to mitigate the potential impact on the surface or ground water. Storm water management will be implemented on-site. Storm water will be channelled around the mining area to prevent possible contamination of clean water flowing over dirty areas. If this is implemented the proposed activity is not expected to have a negative effect on the surface or ground water in the vicinity.

(a) Environmental and current land use map.

(Show all environmental and current land use features)

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

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

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

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

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
CONSTRUCTION / SITE ESTABLISHMENT PHASE												
ACTIVITY:	**DEMARCATION OF SITE WITH VISIBLE BEACONS.**											
	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	Neg										Low
ACTIVITY:	**ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.**											
	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	Neg										Low
Social & Safety	Influx of unsuccessful job seekers which may informally settle in area. Potential danger to surrounding communities	Neg	Reversible	1	3	5	3	3	5	4	12	Med
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Geology	Disturbance of geological strata	Neg	Irreversible	1	3	5	3	5	5	5	15	Medium - High
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	1	2	4	2,3	3	5	4	9,333	Low-Med
Topography	Alteration of topography	Neg	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Neg	Reversible	1	2	2	1,7	3	5	4	6,667	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	1	5	5	3,7	1	5	3	11	Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Air quality	Dust nuisance caused by the disturbance of soil.	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	2	2	4	2,7	3	5	4	10,67	Med
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
SUB ACTIVITY: ABLUTION FACILITIES												
Groundwater	Portable Toilets Potential harm through sewage leaks	Neg	Reversible	2	3	5	3,3	3	5	4	13,33	Med
Surface water	Portable Toilets Potential harm through sewage leaks	Neg	Reversible	2	3	5	3,3	3	5	4	13,33	Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Soils	Portable Toilets Potential harm through sewage leaks	Neg	Reversible	1	3	5	3	3	5	4	12	Med
SUB ACTIVITY: ACCESS ROADS												
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
	Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.											
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Air quality	Dust nuisance caused by the disturbance of soil.	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
SUB ACTIVITY: SITE OFFICES												
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
SUB ACTIVITY: VEHICLE SERVICE AREA												
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
SUB ACTIVITY: WASH BAY												
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
SUB ACTIVITY: WORKSHOP												
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	1	2	4	2,3	3	5	4	9,333	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
SUB ACTIVITY: SALVAGE YARD												
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
SUB ACTIVITY: BUNDED DIESEL AND OIL STORAGE FACILITIES												
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
SUB ACTIVITY: GENERATOR AREA (BUNDED)												
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
SUB ACTIVITY: WEIGH BRIDGE												
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Air quality	Dust nuisance caused by the disturbance of soil.	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
SUB ACTIVITY: PARKING AREA												
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
SUB ACTIVITY: WASTE AREA												
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	2	2	4	2,7	3	5	4	10,67	Med
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
ACTIVITY:	**STRIPPING AND STOCKPILING OF TOPSOIL**											
Geology	Disturbance of geological strata	Neg	Irreversible	1	3	5	3	5	5	5	15	Medium - High
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	1	2	4	2,3	3	5	4	9,333	Low-Med
Topography	Alteration of topography	Neg	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Neg	Reversible	1	2	2	1,7	3	5	4	6,667	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	1	5	5	3,7	1	5	3	11	Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	1	2	4	2,3	5	5	5	11,67	Medium
Air quality	Dust generation	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Medium
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	2	2	4	2,7	3	5	4	10,67	Med
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	3	2,7	3	5	4	10,67	Med
OPERATIONAL PHASE												
ACTIVITY:	**DRILLING AND BLASTING**											
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Noise	Noise nuisance generated by drilling equipment and blasting	Neg	Reversible	2	2	1	1,7	1	3	2	3,333	Low
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	1	4	2	2,3	2	5	3,5	8,167	Low-Med
Topography	Alteration of topography	Neg	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-Med
Geology	Disturbance of geological strata	Neg	Irreversible	1	3	5	3	5	5	5	15	Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Neg	Reversible	1	2	2	1,7	3	5	4	6,667	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	1	5	5	3,7	1	5	3	11	Med
Noise	Noise nuisance generated by drilling equipment and blasting	Neg	Reversible	2	2	1	1,7	1	3	2	3,333	Low
Air quality	Dust generation	Neg	Reversible	1	2	1	1,3	1	3	2	2,667	Low
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators.	Neg	Reversible	2	2	4	2,7	3	5	4	10,67	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
	New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.											
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	3	3	4	3,3	2	1	1,5	5	Low-Med
Social & Safety	Health and Safety Risk by Blasting Activities. Potential danger to surrounding communities	Neg	Reversible	1	3	1	1,7	1	3	2	3,333	Low
ACTIVITY:	**EXCAVATION**											
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	2	2	4	2,7	3	5	4	10,67	Med
Geology	Disturbance of geological strata	Neg	Irreversible	1	3	5	3	5	5	5	15	Med
Topography	Alteration of topography	Neg	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-Med
Hazardous Waste	Dust nuisance due to loading and transportation of the material	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Neg	Reversible	1	2	2	1,7	3	5	4	6,667	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	1	5	1	2,3	1	1	1	2,333	Low
Noise	Noise nuisance generated by excavation equipment	Neg	Reversible	1	1	3	1,7	2	5	3,5	5,833	Low-Med
Air quality	Dust generation	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Med
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Med
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	2	2	4	2,7	3	5	4	10,67	Med
Social & Safety	Unsafe working conditions for employees	Neg	Reversible	1	2	4	2,3	3	3	3	7	Low-Med
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	2	2,3	2	5	3,5	8,167	Low-Med
ACTIVITY:	**CRUSHING AND SCREENING OF GRANITE**											
Noise	Noise nuisance caused by crushing plant.	Neg	Reversible	2	2	4	2,7	4	5	4,5	12	Med
Hazardous Waste	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Air quality	Dust generation	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	2	2	4	2,7	3	5	4	10,67	Med
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	2	2,3	2	5	3,5	8,167	Low-Med
ACTIVITY:	**TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS**											
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Hazardous Waste	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Noise	Noise nuisance caused by vehicles	Neg	Reversible	2	2	4	2,7	3	2	2,5	6,667	Low-Med
Air quality	Dust generation	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med
Traffic and Safety	Road degradation. Increased potential for road incidences Potential distraction to road users	Neg	Reversible	2	2	4	2,7	3	2	2,5	6,667	Low-Med
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	2	2,3	2	5	3,5	8,167	Low-Med
DECOMMISSIONING PHASE												
ACTIVITY:	**SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)**											
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Soils	Soils replaced and ameliorated	Pos	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	1	4	2	2,3	2	5	3,5	8,167	Low-Med
Topography	Alteration of topography	Neg	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-Med
Topography	Eradication of trenches and berms. Re-contouring of area for free surface water drainage. Eradication of stockpiles	Pos	Irreversible	1	2	5	2,7	2	5	3,5	9,333	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Neg	Reversible	1	2	2	1,7	3	5	4	6,667	Low-Med
Visual aspect	Improved aesthetics through rehabilitation	Pos	Reversible	2	1	3	2	2	5	3,5	7	Low-Med
Noise	Noise nuisance caused by machinery	Neg	Reversible	2	2	4	2,7	4	3	3,5	9,333	Low-Med
Air quality	Dust nuisance caused during reshaping activities	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	2	2	1	1,7	2	5	3,5	5,833	Low-Med
Fauna	Reintroduction of fauna attracted to flora to the area	Neg	Reversible	2	2	4	2,7	3	5	4	10,67	Med
Fauna	Reintroduction of fauna attracted to flora to the area	Pos	Reversible	2	1	3	2	1	5	3	6	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Social & Safety	Health and safety risk posed by un-sloped areas	Neg	Reversible	1	3	4	2,7	3	3	3	8	Low-Med
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
Surface water	Containment of dirty water. Improve response to issues relating to deterioration of surface water quality or quantity. free drainage resorted to area. Revegetation of disturbed areas reduces risk of silt loading on downstream water bodies. Large area of surface water runoff return to catchment	Pos	Reversible	2	3	2	2,3	2	5	3,5	8,167	Low-Med
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	1	3	4	2,7	3	5	4	10,67	Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	2	3	2	2,3	2	5	3,5	8,167	Low-Med
Groundwater	Improve response to issues relating to deterioration of groundwater quality or quantity	Pos	Reversible	2	1	2	1,7	2	5	3,5	5,833	Low-Med
ACTIVITY: Application for Closure Certificate												

iv) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;
(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which the initial site layout needs revision.)

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

DEFINITIONS AND CONCEPTS:

Environmental significance:

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

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

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

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

Impact

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

Consequence

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

Likelihood

A qualitative term covering both probability and frequency.

Frequency

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

Probability

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

Environment

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

Methodology that will be used

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

Environmental Significance = Overall Consequence X Overall Likelihood

Determination of Overall Consequence

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

Determination of Severity / Intensity

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

Table 9 will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Table 9: Rating of Severity

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignifiant / Non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

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

Rating of Duration:

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

Determination of Extent/Spatial Scale

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

Rating of Extent / Spatial Scale:

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

Determination of Overall Consequence

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

Example of calculating Overall Consequence

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

Determination of Likelihood:

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

Determination of Frequency

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

Rating of Frequency:

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

Determination of Probability

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

Rating of Probability:

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

Overall Likelihood

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

Example of calculating Overall Likelihood

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

Determination of Overall Environmental Significance:

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

Determination of Overall Environmental Significance

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

Qualitative description or magnitude of Environmental Significance

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

Description of Environmental Significance and related action required

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

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

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

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

Medium — Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.

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

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

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

Site Alternative 1 (S1) (Preferred Alternative):

Positive Impacts:

- The mining site offers the mineral sought after;
- The proposed footprint area was previously used for mining therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area;
- The mining site is more than 8.84 km away for the town of Aggeneys, and will not affect the community with regards to dust and noise;
- The mining area can be reached by an existing farm access road and existing mine road that connects to N14. No new road infrastructure need to be constructed;
- The proposed Lime Sales quarry will be located over a section of the current SPH Kundalila Quarry whereby these mining permits will overlay each other. SPH Kundalila will no longer be mining in the area that is to be allocated for the proposed Lime Sales Quarry. When proceeding with option 1 (preferred alternative), a smaller “Greenfields” area is to be disturbed having minimal impacts on the natural receiving environment.
- Lime Sales will be using the existing processing area that SPH Kundalila have been using Potential expansion (less than 1ha) of this proposed processing area will take place
- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and

- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site. The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

Negative Impacts:

- Due to the remote location of the mining area very little negative impacts on the community could be identified that were deemed to be of significant importance. The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the surrounding community if the mitigation measures proposed in this document is not implemented and managed on-site; and
- Negative impacts with regard to the environment include potential contamination of the area due to spillage of hydrocarbon products.

Site Alternative 2 (S2)

Positive Impacts:

- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and
- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site. The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

Negative Impacts:

- The area will not encapsulate the Raumix mining permit area;
- The site has not been previously disturbed before; thus the natural area needs to be cleared and is not preferred with regards to sustainable development;
- The site still has a green status and a larger area of the natural area will need to be disturbed for the quarry to be established;
- In the light of the above the impacts associated with establishing another quarry pit in a greenfield site on the property is believed to have a higher significance without the need or motivation to justify it;
- The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the surrounding land users if the mitigation measures proposed in this document is not implemented and managed on-site; and
- Negative impacts with regard to the environment include potential contamination of the area due to spillage of hydrocarbon products.

Site Alternative 3 (S3)

Positive Impacts:

- Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with mining is deemed to be of low significance; and
- No residual waste as a result of the mining activity will be produced that needs to be treated on site. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site. The amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

Negative Impacts:

The applicant investigates the possibility of establishing the proposed mining area next to the old mining area. This alternative was however found **not** to be the **preferred** alternative due to the following reasons:

- The site has not been previously disturbed before; thus the natural area needs to be cleared and is not preferred with regards to sustainable development; and
- In the light of the above the impacts associated with establishing another quarry pit in a greenfield site on the property is believed to have a higher significance without the need or motivation to justify it.
- The area will not encapsulate the Raumix mining permit area.

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

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

Visual Mitigation:

The risk of the proposed mining activity having a negative impact on the aesthetic quality of the surrounding environment can be reduced to a low – medium risk through the implementation of the mitigation measures listed below:

- The site needs to have a neat appearance and be kept in good condition at all times.
- Upon closure the site needs to be rehabilitated to insure that the visual impact on the aesthetic value of the area is kept to a minimum.

Dust Handling:

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

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents.
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the access roads to site (farm road) is limited to 70 km/h, access roads on site must be limited to 20 km/h to prevent the generation of excess dust.
- Roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.

Noise Handling:

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

- The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.

Management of weed or invader plants:

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

- A weed and invader plant control management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.
- 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 with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide."
    - The temporary topsoil stockpiles need to be kept free of weeds.

Storm water Handling:

The risk of contamination through dirty storm water escaping from work areas, or erosion or loss of stockpiled topsoil caused due to uncontrolled storm water flowing through the mining area can be reduced to being low through the implementation of the mitigation measures listed below:

- Storm water must be diverted around the topsoil heaps, and access roads to prevent erosion and loss of material.

- 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:
    - Runoff water should be diverted around the site areas with trenches and contour structures to prevent erosion of the work areas.
    - 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.
    - The storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns).
    - The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management plan.

Handling of Hazardous Materials and Substances:

- All hazardous materials or substances should be stored in a closed storage facility with an impermeable floor.
- The storage area should meet the following conditions:
    - The storage area should be constructed on a level area to prevent offsite migration of any spilled product.
    - The floor of the storage area should be impermeable to prevent seepage of spilled products into the ground or ground water.
    - The storage area should be out of the 1:100-year flood line or further than 100m from the edge of a watercourse, whichever is greatest.
    - The facility should be such that access to the materials/substances can only take place with the prior notification of an appropriate staff member.
- All fuel storage tanks should have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. This bund capacity should be sufficient to contain 110% of the tank's maximum capacity.
- The distance and height of the bund wall relative to that of the tank should also be taken into consideration to ensure that any spillage does not result in oil spouting beyond the confines of the bund.
- The site manager should 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 should be inspected at least weekly and any accumulated rainwater removed. All valves and outlets should be checked to ensure that they are intact and closed securely.
- The bund base must slope towards a rainwater sump of sufficient size.

- Contaminated water may not be allowed to mix with clean water, and contained until it can be collected by a registered hazardous waste handling contractor or be disposed of at a registered hazardous waste handling facility.
- Drip trays should be available to be place underneath all stationary equipment or vehicles.
- The layer of material at the vehicle service area should be removed and if contaminated with hazardous substances such as hydrocarbons should be disposed of as hazardous waste by an appropriately qualified waste handling contractor. The compacted areas should be ripped and the topsoil returned over the area.
- The site should be cleared of all hazardous substances once decommissioning has been completed and should be disposed of by an appropriately qualified waste handling contractor.

Waste Management:

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

- No waste stockpile area may be established outside the boundaries of the mining area.
- Vehicle maintenance may only take place within the service bay area of the workshop.
- The diesel bowser needs to be equipped with a drip tray at all times. Drip trays have to be used during each and every refuelling event.
- The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.
- Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing it at a recognised facility. Proof should be filed.
- Suitable covered receptacles should be available at all times and conveniently placed for the disposal of waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc, should be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognised landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area.
- Biodegradable refuse generated should be handled as indicated above.
- Water from the wash bay should drain into the oil sump from where it should be removed by an approved contractor.
- Drip trays should be available to be place underneath all stationary equipment or vehicles.
- Waste material of any description, including receptacles, scrap, rubble and tyres, should be removed entirely from the mining area and disposed of at a recognized landfill facility once decommissioning has been completed. It will not be permitted to be buried or burned on the site.

Management of Health and Safety Risks:

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

- Workers must have access to the correct personal protection equipment (PPE) as required by law.
- All operations must comply with the Occupational Health and Safety Act.

Protection of fauna and flora:

The risk on the fauna and flora of the footprint area as well as the surrounding environment, as a result of the proposed mining activity, can be reduced to being low through the implementation of the mitigation measures listed below:

- The site manager should ensure that no fauna is caught, killed, harmed, sold or played with.
- Workers should be instructed to report any animals that may be trapped in the working area.
- No snares may be set or nests raided for eggs or young.
- No plants or trees may be removed without the approval of the ECO.
- Clearing of vegetation has to be restricted to the smallest possible area.

Management of Access Roads:

The risk on the condition of the roads, as a result of the proposed mining activities, can be reduced to being low-medium through the implementation of the mitigation measures listed below:

- Storm water should be diverted around the access roads to prevent erosion.
- Erosion of access road: Vehicular movement must be restricted to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Rutting and erosion of the access road caused as a result of the mining activity should be repaired by the applicant.
- On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, should be scarified to a depth of at least 300mm and graded to an even surface condition and the previously stored topsoil should be returned to its original depth over the area.

Topsoil Handling:

The risk of loss of topsoil can be reduced to being low through the implementation of the mitigation measures listed below:

- Where applicable the first 300 mm of topsoil should be removed in strips and stored along the boundary of the mining area. Stockpiling of topsoil must be done to protect it from erosion, mixing with overburden or other material. The topsoil must be used to cover the rehabilitated area and improve the establishment of natural vegetation.
- The temporary topsoil stockpiles should be kept free of weeds.
- Topsoil stockpiles should be placed on a levelled area and measures should be implemented to safeguard the piles from being washed away in the event of heavy rains/storm water.

- Topsoil heaps should not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- Should natural vegetation not establish on the heaps within 6 months of stockpiling it should be planted with an indigenous grass species.
- Storm- and runoff water should be diverted around the topsoil stockpiles and access roads to prevent erosion.

vii) Motivation where no alternative sites were considered.

Not applicable.

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

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

Lime Sales Limited identified the need for granite in the area due to an increase in building, construction and road maintenance projects. As mentioned earlier the quarry pit on the property of the applicant has previously been used for mining purposes. In this light the applicant identified the proposed (site alternative 1) area as preferred and only viable site alternative. The facts that the two existing quarries have not yet been mined out and will be extended were found to be the best option contrary to sustainable development in terms of site alternative 2 and 3.

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

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

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

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

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
CONSTRUCTION / SITE ESTABLISHMENT PHASE													
ACTIVITY:	**DEMARCATION OF SITE WITH VISIBLE BEACONS.**												
	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	Neg		Demarcation of the site will ensure that all employees are aware of the boundaries of the processing area and that work stay within approved area.									Low
ACTIVITY:	**ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.**												
	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	Neg		None.									Low
Social & Safety	Influx of unsuccessful job seekers which may informally settle in area. Potential danger to surrounding communities	Neg	Reversible	Ensure advertising is limited to local and regional areas, and only specifically advertise for Jobs nationally if skills are not available. Ensure that all power-related structures are adequately marked with relevant signs and warnings and fenced off.	1	2	5	3	2	5	4	9,33	Low-Med
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	1	3	4	3	2	5	4	9,33	Low-Med
Geology	Disturbance of geological strata	Neg	Irreversible	None.	1	3	5	3	5	5	5	15	Medium-High

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	1	4	2	2	2	3	3	5,83	Low-Med
Topography	Alteration of topography	Neg	Irreversible	Keep mining in footprint	1	2	5	3	2	3	3	6,67	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Neg	Reversible	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA.	1	2	2	2	3	3	3	5	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
				Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.									
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity.	1	5	5	4	1	3	2	7,33	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low
Air quality	Dust nuisance caused by the disturbance of soil.	Neg	Reversible	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly ,especially during times of high dust generation.	2	2	1	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with.	2	2	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
				• Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.									
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	2	1	2	2	2	3	3	4,17	Low
SUB ACTIVITY: ABLUTION FACILITIES													
Groundwater	Portable Toilets Potential harm through sewage leaks	Neg	Reversible	Portable toilets will be managed by reputable contractors and inspected daily for potential leaks	2	2	5	3	2	5	4	10,5	Med
Surface water	Portable Toilets Potential harm through sewage leaks	Neg	Reversible	Portable toilets will be managed by reputable contractors and inspected daily for potential leaks	2	2	5	3	2	5	4	10,5	Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Soils	Portable Toilets Potential harm through sewage leaks	Neg	Reversible	Portable toilets will be managed by reputable contractors and inspected daily for potential leaks	1	2	5	3	2	5	4	9,33	Low-Med
SUB ACTIVITY: ACCESS ROADS													

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	1	3	4	3	2	5	4	9,33	Low-Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low
Air quality	Dust nuisance caused by the disturbance of soil.	Neg	Reversible	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly ,especially during times of high dust generation.	2	2	1	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	2	1	2	2	2	3	3	4,17	Low
SUB ACTIVITY: SITE OFFICES													
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be	1	3	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
				stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.									
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road	1	1	3	2	2	3	3	4,17	Low

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
				worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.									
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	2	1	2	2	2	3	3	4,17	Low
SUB ACTIVITY: VEHICLE SERVICE AREA													
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	1	3	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	2	1	2	2	2	3	3	4,17	Low
SUB ACTIVITY: WASH BAY													
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	1	3	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	2	1	2	2	2	3	3	4,17	Low
SUB ACTIVITY: WORKSHOP													
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	1	3	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	1	4	2	2	2	3	3	5,83	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	2	1	2	2	2	3	3	4,17	Low
SUB ACTIVITY: SALVAGE YARD													
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the	1	3	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
				disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.									
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	2	1	2	2	2	3	3	4,17	Low
SUB ACTIVITY: BUNDED DIESEL AND OIL STORAGE FACILITIES													

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	2	1	2	2	2	3	3	4,17	Low
SUB ACTIVITY: GENERATOR AREA (BUNDED)													
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	2	1	2	2	2	3	3	4,17	Low
SUB ACTIVITY: WEIGH BRIDGE													
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	1	3	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low
Air quality	Dust nuisance caused by the disturbance of soil.	Neg	Reversible	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly ,especially during times of high dust generation.	2	2	1	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions	2	2	1	2	2	3	3	4,17	Low
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	2	1	2	2	2	3	3	4,17	Low
SUB ACTIVITY: PARKING AREA													

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
SUB ACTIVITY: WASTE AREA													

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	1	3	4	3	2	5	4	9,33	Low-Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	4	3	8	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment.	2	1	3	2	2	3	3	5	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
				• Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.								
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.	2	2	4	3	2	5	4	9,33	Low-Med
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	2	1	2	2	2	3	3	4,17	Low
ACTIVITY:	**STRIPPING AND STOCKPILING OF TOPSOIL**												
Geology	Disturbance of geological strata	Neg	Irreversible	None.	1	3	5	3	5	5	5	15	Medium-High

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	1	3	4	3	2	5	4	9,33	Low-Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	1	3	4	3	2	4	3	8	Low-Med
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	1	4	2	2	2	3	3	5,83	Low-Med
Topography	Alteration of topography	Neg	Irreversible	Keep mining in footprint	1	2	5	3	2	3	3	6,67	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Neg	Reversible	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	1	2	2	2	3	3	3	5	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity.	1	5	5	4	1	3	2	7,33	Low-Med
Noise	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low
Air quality	Dust generation	Neg	Reversible	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly ,especially during times of high dust generation.	2	2	1	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area:	2	2	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
				• The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.								
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	3	2	4	3	1	1	1	3	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	2	1	2	2	2	3	3	4,17	Low
OPERATIONAL PHASE													
ACTIVITY:	**DRILLING AND BLASTING**												

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	3	3	6,67	Low-Med
Noise	Noise nuisance generated by drilling equipment and blasting	Neg	Reversible	Blasting alternatives will be considered to reduce noise and associated vibrations	2	1	1	1	1	3	2	2,67	Low
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	1	3	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	1	4	2	2	2	3	3	5,83	Low-Med
Topography	Alteration of topography	Neg	Irreversible	Keep mining in footprint	1	2	5	3	2	3	3	6,67	Low-Med
Geology	Disturbance of geological strata	Neg	Irreversible	None.	1	3	5	3	5	1	3	9	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Neg	Reversible	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	1	2	2	2	3	3	3	5	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity.	1	5	5	4	1	3	2	7,33	Low-Med
Noise	Noise nuisance generated by drilling equipment and blasting	Neg	Reversible	Blasting alternatives will be considered to reduce noise and associated vibrations	1	1	1	1	1	3	2	2	Low
Air quality	Dust generation	Neg	Reversible	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly ,especially during times of high dust generation.	1	1	1	1	1	3	2	2	Low

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.	2	2	4	3	2	5	4	9,33	Low
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	2	1	2	2	2	3	3	4,17	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	3	3	4	3	1	1	1	3,33	Low
Social & Safety	Health and Safety Risk by Blasting Activities. Potential danger to surrounding communities	Neg	Reversible	Ensure baseline photographs are taken of all structures which may be impacted for photographic evidence prior to any blasting. Ensure procedures in place to compensate for damage. All neighbours need to be notified of each blasting activity. The R33 roads needs to be beacons off during the blasting event. Ensure that all power-related structures are adequately marked with relevant signs and warnings and fenced off.	1	3	1	2	1	3	2	3,33	Low
ACTIVITY:	**EXCAVATION**												

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	3	3	6,67	Low-Med
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	1	4	2	2	2	3	3	5,83	Low-Med
Geology	Disturbance of geological strata	Neg	Irreversible	None.	1	3	5	3	5	1	3	9	Low-Med
Topography	Alteration of topography	Neg	Irreversible	Keep mining in footprint	1	2	5	3	2	3	3	6,67	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Hazardous Waste	Dust nuisance due to loading and transportation of the material	Neg	Reversible	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly ,especially during times of high dust generation.	1	3	4	3	2	5	4	9,33	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Neg	Reversible	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	1	2	2	2	3	3	3	5	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Archaeological & cultural sites	Loss of and disturbance to surface archaeological sites	Neg	Irreversible	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity.	1	4	1	2	1	1	1	2	Low
Noise	Noise nuisance generated by excavation equipment	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	1	1	3	2	2	3	3	4,17	Low
Air quality	Dust generation	Neg	Reversible	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	2	2	1	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.	2	2	4	3	2	5	4	9,33	Low
Social & Safety	Unsafe working conditions for employees	Neg	Reversible	Ensure that all stuff are made aware of all working conditions on site	1	2	4	2	2	3	3	5,83	Low-Med
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	2	1	2	2	2	3	3	4,17	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	2	1	2	2	2	3	3	4,17	Low
ACTIVITY:	**CRUSHING AND SCREENING OF GRANITE**												
Noise	Noise nuisance caused by crushing plant.	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	2	1	4	2	3	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Hazardous Waste	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	1	3	4	3	2	5	4	9,33	Low-Med
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	3	3	6,67	Low-Med
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received.	2	1	3	2	2	3	3	5	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
				Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.									
Air quality	Dust generation	Neg	Reversible	Dust will be contained within the property boundaries and will therefore affect only the landowner.	2	2	1	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
Fauna	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Neg	Reversible	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.	2	2	4	3	2	5	4	9,33	Low-Med
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	2	1	2	2	2	3	3	4,17	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	2	1	2	2	2	3	3	4,17	Low
ACTIVITY:	**TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS**												

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	3	3	6,67	Low-Med
Hazardous Waste	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	1	3	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Visual aspect	Deterioration in visual aesthetics of the area	Neg	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Noise	Noise nuisance caused by vehicles	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	2	1	4	2	2	2	2	4,67	Low
Air quality	Dust generation	Neg	Reversible	Dust will be contained within the property boundaries and will therefore affect only the landowner.	2	2	1	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
Traffic and Safety	Road degradation. Increased potential for road incidences Potential distraction to road users	Neg	Reversible	All intersections with main tarred roads will be clearly signposted. drivers will be enforced to keep to set speed limits. Trucks will be road-worthy condition. A fund will be set aside to maintain the serviceability of the road verge where the trucks approach or depart from the main road. Ensure directional floodlights are utilized that focus light on the necessary areas and reduce light pollution to surrounding environment.	2	1	4	2	2	2	2	4,67	Low
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	2	1	2	2	2	3	3	4,17	Low
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will	2	1	2	2	2	3	3	4,17	Low

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
				have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.									
DECOMMISSIONING PHASE													
ACTIVITY:	**SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)**												
Soils	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Neg	Reversible	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management.	1	3	4	3	2	3	3	6,67	Low-Med
Soils	Soils replaced and ameliorated	Pos	Reversible	Ensure activities occur only within the designated areas and stockpile and revegetated soil as soon as possible. Topsoil will be removed before mining activities commence and stored outside of the active mining cell.	1	3	4	3	2	3	3	6,67	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Flora	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Neg	Reversible	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	1	4	2	2	2	3	3	5,83	Low-Med
Topography	Alteration of topography	Neg	Irreversible	Keep mining in footprint. Excavation areas will be sloped during rehabilitation to even out depressions.	1	2	5	3	2	3	3	6,67	Low-Med
Topography	Eradication of trenches and berms. Re-contouring of area for free surface water drainage. Eradication of stockpiles	Pos	Irreversible	Monitor, especially after first heavy rain falls to ensure adequate surface water drainage	1	2	5	3	2	3	3	6,67	Low-Med
Land Use	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Neg	Reversible	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	1	2	2	2	3	3	3	5	Low-Med
Visual aspect	Improved aesthetics through rehabilitation	Pos	Reversible	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	2	1	3	2	2	3	3	5	Low-Med
Noise	Noise nuisance caused by machinery	Neg	Reversible	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	2	1	4	2	3	3	3	7	Low-Med
Air quality	Dust nuisance caused during reshaping activities	Neg	Reversible	Dust will be contained within the property boundaries and will therefore affect only the landowner.	2	2	1	2	2	3	3	4,17	Low
Air quality	Emissions caused by vehicles and equipment	Neg	Reversible	Emission Handling: All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	2	2	1	2	2	3	3	4,17	Low
Fauna	Reintroduction of fauna attracted to flora to the area	Neg	Reversible	Inform staff, contractors and visitors to not harm fauna in the area. Conduct annual surveys to monitor faunal biodiversity.	2	2	4	3	2	5	4	9,33	Low-Med

Nature of Impact	Impact	Positive/Negative/ Neutral Impact	Reversibility	Mitigation	Extent	Severity	Duration	Consequence	Probability	Frequency	Likelihood	Significance	Mitigation Rating
Fauna	Reintroduction of fauna attracted to flora to the area	Pos	Reversible	Inform staff, contractors and visitors to not harm fauna in the area. Conduct annual surveys to monitor faunal biodiversity.	2	1	3	2	1	3	2	4	Low
Social & Safety	Health and safety risk posed by un-sloped areas	Neg	Reversible	Ensure that all stuff are made aware of all working conditions on site	2	1	3	2	1	3	2	4	Low
Surface water	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Neg	Reversible	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	2	1	2	2	2	3	3	4,17	Low
Surface water	Containment of dirty water. Improve response to issues relating to deterioration of surface water quality or quantity. free drainage resorted to area. Revegetation of disturbed areas reduces risk of silt loading on downstream water bodies. Large area of surface water runoff return to catchment	Pos	Reversible	Specialist must be consulted f issues with surface water are observed and qualities do not fall within the DWS target qualities or water qualities for livestock watering. Any affected registered water user must be compensated if levels a quality are impacted by the mining activities. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Monitor area for erosion and pooling and rehabilitate if necessary. Continue with Surface water monitoring.	2	1	2	2	2	3	3	4,17	Low
Hazardous Waste	Contamination of area with hydrocarbons or hazardous waste materials	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	1	3	4	3	2	5	4	9,33	Low-Med
Groundwater	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Neg	Reversible	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	2	1	2	2	2	3	3	4,17	Low
Groundwater	Improve response to issues relating to deterioration of groundwater quality or quantity	Pos	Reversible	Specialist must be consulted f issues with groundwater are observed and qualities do not fall within the DWS target qualities or water qualities for livestock watering. Any affected registered water user must be compensated if levels an quality are impacted by the mining activities	2	1	2	2	2	5	4	5,83	Low-Med
ACTIVITY: Application for Closure Certificate													

j) Assessment of each identified potentially significant impact and risk

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

NAME OF ACTIVITY whether listed or not listed	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts)	ASPECTS AFFECTED	PHASE In which impact is anticipated	SIGNIFICANCE if not mitigated	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)	SIGNIFICANCE if mitigated
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc. Etc.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)		(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))		E.g. Modify through alternative method. Control through noise control. Control through management and monitoring. Remedy through rehabilitation.	
DEMARCATION OF SITE WITH VISIBLE BEACONS.	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	N/A	Construction / Site Establishment phase	Low	N/A	Low
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	N/A	Construction / Site Establishment phase	N/A	N/A	N/A
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Groundwater	Construction / Site Establishment phase	Med	Control through proper site management	Med
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Surface Water	Construction / Site Establishment phase	Med	Control through proper site management	Med
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Soils	Construction / Site Establishment phase	Med	Control through proper site management	Low-Med
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Social	Construction / Site Establishment phase	Med	Control through proper site management	Low-Med
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Low-Med	Control: Implementation of proper housekeeping	Low-Med
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Medium	Control: Dust suppression	Low
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Medium	Control: Emissions	Low
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Medium	**Control:** Noise control measures	Low
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Operational phase	Low-Med	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Low-Med
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	Med	**Control:** Storm water management Site Management Soil Management	Low – Medium
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Med	Control: Waste management	Low-Med

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Alteration of topography	Topography	Operational phase	Medium -High	Control: Surface water Monitoring	Medium-High
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Loss of and disturbance to surface archaeological sites	Artefacts or graves	Operational phase	Med	**Control:** Survey area before site clearance	Low-Med
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Med	Control: Proper site management.	Low
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Low-Med	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Low
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Med	Control: Implementation of fauna protection measures	Low-Med
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Operational phase	Low-Med	Control: Fire	Low-Med
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Influx of unsuccessful job seekers which may informally settle in area. Potential danger to surrounding communities	Social	Construction / Site Establishment phase	Med	Control through proper site management	Low-Med
STRIPPING AND STOCKPILING OF TOPSOIL	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Low-Med	Control: Implementation of proper housekeeping	Low-Med
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Medium	Control: Dust suppression	Low
STRIPPING AND STOCKPILING OF TOPSOIL	Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Medium	Control: Emissions	Low
STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Medium	**Control:** Noise control measures	Low
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Operational phase	Low-Med	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Low-Med
STRIPPING AND STOCKPILING OF TOPSOIL	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil	Loss of topsoil will affect the rehabilitation of the processing	Operational phase	Med	**Control:** Storm water management	Low – Medium

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	area and the future agricultural potential of the site.			Site Management Soil Management	
STRIPPING AND STOCKPILING OF TOPSOIL	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Medium	Control: Waste management	Low-Med
STRIPPING AND STOCKPILING OF TOPSOIL	Alteration of topography	Topography	Operational phase	Low-Med	Control: Surface water Monitoring	Low-Med
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of and disturbance to surface archaeological sites	Artefacts or graves	Operational phase	Med	**Control:** Survey area before site clearance	Low-Med
STRIPPING AND STOCKPILING OF TOPSOIL	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Med	Control: Proper site management.	Low
STRIPPING AND STOCKPILING OF TOPSOIL	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Low-Med	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Low
STRIPPING AND STOCKPILING OF TOPSOIL	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Med	Control: Implementation of fauna protection measures	Low-Med
STRIPPING AND STOCKPILING OF TOPSOIL	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Operational phase	Low-Med	Control: Fire	Low-Med
STRIPPING AND STOCKPILING OF TOPSOIL	Disturbance of geological strata	Geology	Operational phase	Medium -High	N/A	Medium -High
DRILLING AND BLASTING	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Low-Med	Control: Implementation of proper housekeeping	Low-Med
DRILLING AND BLASTING	Dust nuisance due to excavation activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Low	Control: Dust Suppression	Low
DRILLING AND BLASTING	Noise nuisance generated by drilling equipment and blasting	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Low	Control: Noise Control Measures	Low
DRILLING AND BLASTING	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Low-Med	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Low
DRILLING AND BLASTING	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Low-Med	Control: Proper site management.	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
DRILLING AND BLASTING	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	Med	**Control:** Storm water management Site Management Soil Management	Low-Med
DRILLING AND BLASTING	Health and Safety Risk by Blasting Activities. Potential danger to surrounding communities	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational phase	Low	Control: Implementation of safety control measures	Low
DRILLING AND BLASTING	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Low-Med	Control: Implementation of fauna protection measures	Low
DRILLING AND BLASTING	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Operational phase	Low-Med	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Low-Med
DRILLING AND BLASTING	Alteration of topography	Topography	Operational phase	Low-Med	Control: Surface water Monitoring	Low-Med
DRILLING AND BLASTING	Disturbance of geological strata	Geology	Operational phase	Low-Med	N/A	Low-Med
DRILLING AND BLASTING	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Operational phase	Low-Med	Control: Fire	Low-Med
DRILLING AND BLASTING	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Medium	Control: Waste management	Low-Med
DRILLING AND BLASTING	Loss of and disturbance to surface archaeological sites	Artefacts or graves	Operational phase	Med	**Control:** Survey area before site clearance	Low-Med
DRILLING AND BLASTING	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Low-Med	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Low
EXCAVATION	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Med	Control: Implementation of proper housekeeping	Low-Med
EXCAVATION	Dust nuisance due to excavation activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Med	Control: Dust Suppression	Low
EXCAVATION	Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Med	Control: Dust suppression	Low – Medium
EXCAVATION	Noise nuisance generated by excavation equipment	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Low-Med	Control: Noise Control Measures	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
EXCAVATION	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Low-Med	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Low
EXCAVATION	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	Med	**Control:** Storm water management Site Management Soil Management	Low-Med
EXCAVATION	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Low-Med	Control: Proper site management.	Low
EXCAVATION	Unsafe working conditions for employees	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational phase	Low-Med	Control: Implementation of safety control measures	Low-Med
EXCAVATION	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Med	Control: Implementation of fauna protection measures	Low
EXCAVATION	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Operational phase	Med	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Low-Med
EXCAVATION	Alteration of topography	Topography	Operational phase	Low-Med	Control: Surface water Monitoring	Low-Med
EXCAVATION	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Medium	Control: Waste management	Low-Med
EXCAVATION	Loss of and disturbance to surface archaeological sites	Artefacts or graves	Operational phase	Low	**Control:** Survey area before site clearance	Low
EXCAVATION	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Operational phase	Low-Med	Control: Fire	Low-Med
EXCAVATION	Disturbance of geological strata	Geology	Operational phase	Low	N/A	Low
CRUSHING AND SCREENING OF GRANITE	Dust nuisance due to loading and transportation of the material	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Low-Med	Control: Dust suppression	Low
CRUSHING AND SCREENING OF GRANITE	Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Low-Med	Control: Emissions	Low – Medium
CRUSHING AND SCREENING OF GRANITE	Noise nuisance caused by crushing plant.	The noise impact must be contained within the boundaries of the property, and	Operational phase	Med	Control: Noise Control Measures	Low-Med

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
		will represent the current noise levels of the farm.				
CRUSHING AND SCREENING OF GRANITE	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Med	Control: Implementation of fauna protection measures	Low-Med
CRUSHING AND SCREENING OF GRANITE	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Low-Med	Control: Implementation of proper housekeeping	Low-Med
CRUSHING AND SCREENING OF GRANITE	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	Med	**Control:** Storm water management Site Management Soil Management	Low-Med
CRUSHING AND SCREENING OF GRANITE	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Med	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Low
CRUSHING AND SCREENING OF GRANITE	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Low-Med	Control: Proper site management.	Low
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Dust nuisance due to loading and transportation of the material	Should dust levels become excessive it may have an impact on surrounding landowners.	Operational phase	Low-Med	Control: Dust suppression	Low
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Emissions caused by vehicles and equipment	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Low-Med	Control: Dust suppression	Low
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Road degradation. Increased potential for road incidences Potential distraction to road users	All road users will be affected	Operational phase	Low-Med	Control & Remedy: Road management	Low
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Noise nuisance caused by vehicles	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Low-Med	Control: Noise control measures	Low
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	Med	**Control:** Storm water management Site Management Soil Management	Low-Med
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Low-Med	Control: Proper site management.	Low
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies.	Surface water Bodies	Operational phase	Low-Med	Control: Surface water Management Implement storm water control measures.	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.				Measures will be implemented as subscribed by DWS.	
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Low-Med	Control: Implementation of proper housekeeping	Low-Med
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Medium	Control: Waste management	Low
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Decommissioning phase	Med	**Control:** Storm water management Site Management Soil Management	Low-Med
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Soils replaced and ameliorated	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Decommissioning phase	Med	**Control:** Storm water management Site Management Soil Management	Low-Med
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Dust nuisance caused during reshaping activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Decommissioning phase	Low-Med	Control: Dust Suppression	Low
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner.	Decommissioning phase	Low-Med	Control: Emissions	Low
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Noise nuisance caused by machinery	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Decommissioning phase	Low-Med	Control: Noise Management	Low-Med
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Decommissioning phase	Low-Med	Control: Proper site management.	Low
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Decommissioning phase	Medium	Control: Waste management	Low
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Decommissioning phase	Low-Med	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Low-Med
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Improve response to issues relating to deterioration of groundwater quality or quantity	Groundwater improvement	Decommissioning phase	Low-Med	Control: Proper site management.	Low-Med
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Decommissioning phase	Low-Med	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Low
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Containment of dirty water. Improve response to issues relating to deterioration of surface water quality or quantity. free drainage resorted to area. Revegetation of disturbed areas reduces risk of silt loading on	Surface water Bodies	Decommissioning phase	Low-Med	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	downstream water bodies. Large area of surface water runoff return to catchment					
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	The impact on health and safety due to un-sloped areas will be contained within the site boundary.	Decommissioning phase	Medium	Control: Sloping of areas upon decommission	0
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Reintroduction of fauna attracted to flora to the area	Fauna returning to area	Decommissioning phase	Low-Med	Control: Implementation of fauna protection measures	Low
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Alteration of topography	Topography	Decommissioning phase	Low-Med	Control: Surface water Monitoring	Low-Med
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Eradication of trenches and berms. Re-contouring of area for free surface water drainage. Eradication of stockpiles	Topography	Decommissioning phase	Low-Med	Control: Surface water Monitoring	Low-Med
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Improved aesthetics through rehabilitation	The visual impact may affect the aesthetics of the landscape.	Decommissioning phase	Low-Med	Control: Implementation of proper housekeeping	Low-Med
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Decommissioning phase	Low-Med	Control: Fire	Low-Med

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

k) Summary of specialist reports.

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

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Archaeological Study	**No mitigation needed. If graves are located in the future, they should ideally be preserved in-situ or alternatively relocated according to existing legislation (SAHRA).** During the mining permit application of Raumix Aggregates (Pty) Ltd, SAHRA requested that a Heritage Impact Assessment and Paleontological study be done to confirm that the mining activity will not have an impact on any archaeological or cultural aspects. A desktop Heritage Impact Assessment and recommendation for exemption from further Paleontological studies was submitted to SAHRA. SAHRA subsequently responded that the development is unlikely to impact significant heritage resources and that the SAHRA Archaeology, Palaeontology and Meteorites Unit has no objection to the development on condition that, if any new evidence of archaeological sites or artefacts, paleontological fossils, graves or other heritage resources are found during development, constructing or mining, SAHRA and an archaeologist and/or palaeontologist, depending on the nature of the finds, must be alerted immediately. Anarchaeological assessment was conducted once more in December 2018 as per instruction by SAHRA.	HCAC was appointed to conduct a Heritage Impact Assessment to determine the presence of cultural heritage sites and the impact of the proposed 5 ha Aroams quarry on non-renewable heritage resources. The study area was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the mining right footprint. The farm and the surrounding properties are mostly commercial farms and the area earmarked for the proposed mining falls on a section of the farm that is used as an existing quarry. The general area is characterised by an expansive, undulating landscape of red sandy soils dominated by scattered rocky outcrops. Within the study area several rocky outcrops occur, these were inspected for the presence of grinding hollows but none was noticed. The only recorded finds consists of a single broken Stone Age blade that snapped on the proximal end and it is not possible to ascribe the artefact to a time period. At the same location a broken lower grinder was recorded. These finds are isolated, located on the periphery of the proposed quarry and out of context. Although these artefacts attest to early human archaeological occurrences on the landscape, they do not constitute an archaeological site and is classified as a find spot and is of no significance apart from noting their presence in this report. The SAHRA paleontological sensitivity map indicated that the footprint as a whole is located on a paleontologically insignificant area and is not considered paleontologically vulnerable. No further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed. In terms of the built environment of the area (Section 34), no structures older than 60 years occur in the study area. In terms of Section 36 of the Act no graves or burial sites were recorded. If any additional graves are located in future they should ideally be preserved or alternatively relocated according to existing legislation. No public monuments are located within or close to the study area. The study area is characterised by an existing quarry and associated infrastructure and the proposed development will not impact negatively on significant cultural landscapes or viewscapes. During the public participation process conducted for the project no heritage concerns was raised. The impact on heritage resources in the study area is low and it is recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA: • Implementation of a chance find procedure as outlined in below. <u>Chance Find Procedures</u> The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below. This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below. • If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. • it is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. • The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA. <u>Reasoned Opinion</u> The impact on heritage resources in the study area can be mitigated to an acceptable level and it is recommended that the proposed project can commence on the condition that the recommendations in this report are implemented as part of the EMPr and based on approval from SAHRA. Furthermore, the socio-economic benefits also outweigh the possible impacts of the development if the correct mitigation measures are implemented for the project	**PART A – h(iv)(1)(a) t (i)**
No other specialist studies were deemed necessary for this project as the project entails the establishment of the mining area over an area previously used for agriculture and mining.			

l) Environmental impact statement

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

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

- The project entails the excavation mining of granite in an area previously used for mining. Due to the small area used for grazing and mining, mining of granite in the area was identified as a more viable use. As a result of the agricultural activities no natural areas needs to be disturbed.
- The mining procedure will only entail the excavation and transporting of the granite by means of a front-end loader upon which it will be loaded onto trucks and transported from the mining site to the stockpiling site. The clients will then acquire the granite from the stockpiling site.
- The existing roads to the mine area can be used to gain access to the site. No new roads are needed.
- The proposed mining area will be visible from the N14 passing the property and will therefore have a visual impact on the immediate surrounding area.
- Mining activities will be contained within the boundaries of the permitted site. Proper storm water and waste management however needs to be implemented on the site in order to minimise the potential of pollution.

ii) Final Site Map

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

See the map indicating site activities attached as Appendix C.

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

The positive impacts associated with the project include:

- Job creation for up to 45 employees indirectly contributing to the socio-economic status of the Aggeneys area,
- The granite to be mined will be used for the upgrading of roads and construction industry in the vicinity of the mining site, thereby indirectly contributing to infrastructure development,
- The project will assist the landowner and lawful users in diversification of the land use of the property.

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

- Visual intrusion due to the proposed project **Low – Medium**
- Loss of topsoil due to incorrect storm water **Medium**
- Weeds and invader plant infestation of the area **Low – Medium**
- Contamination of area with hazardous waste materials **Medium**
- Dust nuisance stemming from proposed project **Medium**
- Noise nuisance due to proposed activity **Medium**

- Impact on the access roads **Low – Medium**
- Health and safety risk posed by un-sloped areas **Low – Medium**
- Negative impacts of the fauna and flora **Medium**
- Contamination of surface or groundwater due to effluent runoff from excavation area **Medium**

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

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

Management Objectives	Role	Management Outcomes
Dust Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer. Dust monitoring consultant to check dust results and provide guidelines.	• Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. • Assess effectiveness of dust suppression equipment. • Re-vegetate all disturbed or exposed areas as soon as possible to prevent any dust source from being created. • Thoroughly soak all stockpiles to ensure dust suppression on the site. • Conduct formal dust monitoring on a monthly basis.
Noise Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer. Compliance to be monitored by the Noise Monitoring Specialist.	• Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. • Plan the type, duration and timing of the blasting procedures with due cognisance of other land users and structures in the vicinity. • Notify surrounding land owners prior to blasting occasions. • Use soft explosives during blasting. • Compliance with the appropriate legislation with respect to noise will be mandatory. Implement formal noise monitoring on a quarterly basis.

Management Objectives	Role	Management Outcomes
Management of weed/invader plants	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Implement a weed and invader plant control management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.
Surface and Storm water Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Divert storm water around the topsoil heaps and access roads to prevent erosion and loss of material. • Divert runoff water around the stockpile areas with trenches and contour structures to prevent erosion of the work areas. • Ensure that water from the wash bay into the oil sump. • Conduct mining 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.
Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer. Blasting contractor to comply with national blasting requirements.	• Plan the type, duration and timing of the blasting procedures with due cognisance of other land users and structures in the vicinity, • Inform the surrounding landowners and communities of any blasting event, • Use soft explosives during blasting, • Limit fly rock, • Give audible warning of a pending blast at least 3 minutes in advance of the blast, • Remove all fly rock (of diameter 150mm and larger) which falls beyond the working area, together with the rock spill. • Ensure that workers have access to the correct PPE as required by law. • Ensure all operations comply with the Occupational Health and Safety Act.

Management Objectives	Role	Management Outcomes
Handling of Hazardous Materials and Substance	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer	• Store all hazardous materials or substances in a closed storage facility with an impermeable floor. • Storage area to meet the following conditions: • Construct storage area on a level area. • Floor of the storage area should be impermeable. • Storage area should be outside the 1:100-year flood line or further than 100m from the edge of a watercourse, whichever is greatest. • Access to the materials/substances may only take place with the prior notification of the site manager. • Fuel storage tanks should have an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity should be sufficient to contain 110% of the tank's maximum capacity. • Consider the distance and height of the bund wall relative to that of the tank to ensure that oil does not spout beyond the confines of the bund. • Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspection should be at least weekly and any accumulated rainwater should be removed. • All valves and outlets should be checked to ensure that they are intact and closed securely. • Slope the bund base towards a rainwater sump of sufficient size. • Contain contaminated water until it can be collected by a registered hazardous waste handling contractor or be disposed of at a registered hazardous waste handling facility. • Ensure availability of drip trays underneath all stationary equipment or vehicles.

Management Objectives	Role	Management Outcomes
Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Ensure no waste storage area is established outside the boundaries of the mining area. • Ensure vehicle maintenance only take place within the service bay area of the off-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litre closed container/bin inside the emergency service area. • Ensure diesel bowser is equipped with a drip tray at all times. • Use drip trays during each and every refuelling event. • Ensure the nozzle of the bowser rests in a sleeve to prevent dripping after refuelling. • Keep drip trays clean. No dirty drip trays may be used on site. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. File proof on site. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Place all used oils, grease or hydraulic fluids therein and remove these receptacles from the site on a regular basis for disposal at a registered or licensed hazardous disposal facility. • Store non-biodegradable refuse such as glass bottles, plastic bags etc., in a container with a closable lid at a collecting point. Collection should take place on a regular basis and disposed of at the recognised landfill site. Prevent refuse from being dumped on or in the vicinity of the mining area. • Biodegradable refuse to be handled as indicated above. • generated at the site recording the amount of different types of waste generated by the mine in excel spreadsheet format.
Management of access roads	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer.	• Maintain newly constructed access roads so as to minimise dust, erosion or undue surface damage. • Divert storm water around the access roads to prevent erosion. • Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas.
Topsoil handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer.	• Remove the first 300mm of topsoil in strips and store along the boundary of the site. • Keep the temporary topsoil stockpiles free of weeds. • Place topsoil stockpiles on a levelled area and implement measures to safeguard the piles from being washed away in the event of heavy rains/storm water. • Topsoil heaps should not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • Seed the stockpiled topsoil heaps if vegetation does not re-establish within 6 months of mining. • Divert storm- and runoff water around the stockpile area and access roads to prevent erosion.

Management Objectives	Role	Management Outcomes
Blast Monitoring	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Monitoring to be conducted by blasting contractor. Compliance to be monitored by the Environmental Control Officer.	• Monitor ground vibration and air blast levels to USBM standards.
Protection of Cultural or Heritage Artefacts	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage and the ECO immediately.
After care on rehabilitated areas	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Control run-off water via temporary banks to ensure that accumulation of run-off does not cause down-slope erosion. • Only do topsoil spreading 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 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. • Plant a cover crop immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. Fertilize the cover crop for optimum production. • Ensure rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation must not be considered complete until the first cover crop is well established. • Monitor all rehabilitated areas for erosion, and appropriately stabilized if any erosion occurs.
Protection of natural vegetation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Contain all activities within the boundaries of the approved mining permit area. • Demarcate, signpost and manage the 20m buffer area as no-go area around areas with natural vegetation.
Fauna Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.
Visual Aspect	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The management objectives listed in this report under Point m above should be considered for inclusion in the environmental authorisation.

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

(Which relate to the assessment and mitigation measures proposed)

The assumptions made in this document which relate to the assessment and mitigation measures proposed, stem from site specific information gathered from the property owner, as well as site inspections, and background information gathering.

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

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

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

ii) Conditions that must be included in the authorisation

The management objectives listed in this report under Point m should be considered for inclusion in the environmental authorisation.

q) Period for which the Environmental Authorisation is required.

The applicant requests the Environmental Authorisation to be valid for a five-year period.

r) Undertaking

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

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

s) Financial Provision

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

i) Explain how the aforesaid amount was derived

The annual amount required to manage and rehabilitate the environment was estimated to be R 278 724.17 Please see the explanation as to how this amount was derived at attached as Appendix J– Financial and Technical Competence A Bank Guarantee will be provided for the proposed site.

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

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

The mining operation will be self-funded through income generated by sales of the granite mined. Bridging finance, will be supplied where needed by Lime Sales Limited. Bridging finance, will be supplied where needed by Lime Sales Limited.

t) Specific Information required by the competent Authority

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

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

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

Visual exposure:

The mining area was identified to constitute the lowest possible visual impact on the surrounding environment. The surrounding areas have previously been disturbed by mining activities, and this application entails the extension of the existing mining areas. The applicant should however ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the mine.

Upon closure the site will be rehabilitated and sloped to insure that the visual impact on the aesthetic value of the area is kept to a minimum. The site will have a neat appearance and be kept in good condition at all times.

Air Quality:

The background air quality of the surrounding area is relatively good due to low industrial activity. Factors contributing to air pollution are the burning of veld and agriculture in the area. Given the surrounding extent of mostly covered areas, no extreme dust generation under windy conditions is experienced.

Dust will be generated by the proposed operation through blasting and the movement of machinery and vehicles. Dust suppression measures should be implemented to prevent excessive dust on site. Due to the remote setting of the proposed mining area the potential impact of dust nuisance on the surrounding environment is deemed to be of low significance.

Noise:

The surrounding areas are characterised by an agricultural setting in which vehicles and farm equipment operate. The traffic on the N14 surrounding the property contributes to the ambient noise of the area. The noise to be generated at the proposed site (site alternative 1) operation is expected to temporarily increase the noise levels of the area. Blasting noise will be instantaneous and of short duration. Loading and transportation of the material will generate noise daily. The significance of noise on the surrounding environment is therefore deemed to be of low significance. Mitigation measures should be implemented to ensure employees conduct them in an acceptable manner while on site in order to lessen the noise impact of the proposed activity on the surrounding environment.

Existing Infrastructure:

It is expected that the proposed processing activity will have a very low impact on the surrounding environment as activities will be contained within the boundaries of the site. The proposed (Site alternative 1) footprint area will not require the building of any permanent structures. The proposed production of granite on the property will also reduce the amount of trucks delivering granite, from outside sources. This will have a direct positive impact on the traffic volumes of the surrounding roads and price of the granite.

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

No sites of archaeological or cultural importance were identified at the proposed mining area during the site inspection. The area was previously used for mining and no areas of cultural importance could be identified within the footprint area of the site.

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

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

The site and project alternatives investigated during the impact assessment process were done at the hand of information obtained during the site investigation, public participation process as well as desktop studies conducted of the study area. As discussed earlier the following alternatives were considered:

1. Site Alternative 1 – The proposed mining area over a 5ha footprint area (Preferred Alternative).
2. Site Alternative 2 – The proposed mining area over a 5ha footprint area.
3. Site Alternative 3 – The proposed mining area over a 5ha footprint area.
4. No-go Alternative.

PART B: ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme.

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

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

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

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

c) Composite Map

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

The aspects of the activity that are covered by the draft environmental management programme has been described and included in Part A, section (1)(h), this map has been compiled and is attached as Appendix C to this document.

d) Description of impact management objectives including management statements

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

Mining activities are to be undertaken in a manner which facilitates site rehabilitation and the restoration of existing land capabilities. The primary objectives for rehabilitation includes:

a) The facilitation of the re-establishment of the land use and capability to as close as reasonably to the original conditions;
b) Removal of all infrastructure and material introduced to site
c) Removal of all wastes and their and their related disposal; and
d) And promotion of the rapid re-establishment of natural vegetation and the restoration of site ecology.

The disturbed areas shall be rehabilitated to ensure that:

- The biodiversity habitat is encouraged by the new land use after the Mining;
- Future public health and safety are not compromised;
- The site is reversed to almost its original state;
- Environmental and resources are not subject to physical and chemical deterioration;

- The after-use of the site is beneficial and sustainable in the long term;
- Any adverse socio-economic impacts are minimized; and
- All socio-economic benefits are maximized.

This will be done by complying with the conditions in the environmental management program below, and relevant statuary requirements. The contractor and employee will be made aware of their environmental responsibilities and will be empowered to execute the work program in compliance with the requirements of this EMPR.

The following closure objectives are proposed with regard to rehabilitation of the Mining area:

- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):
  - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
  - The topsoil will be placed back as a growth medium and the sides of the excavation will be sloped with acceptable contours (40º) to prevent soil erosion.
- No trees to be removed over areas where Mining is required.
- Rehabilitation will be conducted after the prospect drilling is complete.
- Rehabilitation will be ongoing and conform to 400 m^2 being stripped of topsoil and 400 m^2 being rehabilitated after the oversized and processed soil is worked back into the excavation.
- Thus there will only be 400 m^2 of land open for rehabilitation in operational times.
- Fill and topsoil could be placed over the slopes to provide a suitable medium for the establishment of vegetation.
- No waste will be permitted to be deposited in the excavations.
- 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.
- Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.
- Prior to replacing the topsoil, the material that was removed from these areas will be replaced in the same order as it originally occurred.
- All Temporary Infrastructures, equipment, plant, temporary housing and other items used during the mining period will be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognized landfill facility, proof of this removal will be kept on file at the applicant's office. It will not be permitted to be buried or burned on the site.

- Weed / Alien clearing will be done in a sporadic manner during the life of the Mining activities. Species regarded as the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure. Final rehabilitation shall be completed within a period specified by the Regional Manager.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

Rehabilitation of the excavated area:

Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form slopes (40º) on the benches below, thereby reducing the overall face angle.

Fill and topsoil could be placed over the benches to provide a suitable medium for the establishment of vegetation, especially trees which will break up the line of the faces and enhance their appearance. The floor of the quarry should be capped with suitable soil material and re-vegetated.

Rocks and coarse material removed from the excavation must be dumped into the excavation.

No waste will be permitted to be deposited in the excavations. Once rocks and coarse natural materials has been dumped into the excavated area and profiled with acceptable contours and erosion control measures, topsoil shall be returned over the area.

The area shall be fertilized to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora. If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

Rehabilitation of plant, office and service areas:

Coarse natural material used for the construction of ramps must be removed and dumped into the excavations. Stockpiles will be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium. On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.

- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface.

- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

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

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

Prior to replacing the topsoil, the material that was removed from these areas will be replaced in the same order as it originally occurred. The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

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 seed mix to his or her specification.

Final rehabilitation:

Rehabilitation of the surface area shall entail reshaping, levelling, top dressing, land preparation, seeding and maintenance, and weed / alien clearing.

All infrastructures, equipment, plant, temporary housing and other items used during the mining period will be removed from the site.

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

Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species regarded as the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure. Final rehabilitation shall be completed within a period specified by the Regional Manager.

Seeding of the area:

Once the pit slopes have been shaped and the soil replaced, the initial goal is to establish a good cover of a robust grass that will stabilise the soil and start the accumulation of soil organic carbon. This will be done using a combination of hydro seeding and physical planting of runners to apply a mix of commercial and indigenous species that includes both tufted and creeping species. The plants that were collected during the establishment and operational phases and kept in the designated area will be replanted.

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

Water will be transported to the site on a daily basis. Water in the existing quarry will be pumped out of the quarry and reused for mineral processing and dust suppression purposes. A water truck will be used to spray access roads to alleviate dust generation. It is proposed that the mining activities will require to a maximum of 20 000 – 40 000 l of water per day.

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

Potable water will be brought to site every day for use on site. Process water is supplied by the onsite borehole that is located on the farmer's property, this water is also allocated for dust suppression on site.

iv) Impacts to be mitigated in their respective phases

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

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
whether listed or not listed	**(volumes, tonnages and hectares or m^2)**	**In which impact is anticipated**		**(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)**		
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc... etc. Etc.)		**(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))**		**E.g. Modify through alternative method. Control through noise control. Control through management and monitoring. Remedy through rehabilitation.**		
DEMARCATION OF SITE WITH VISIBLE BEACONS.	5ha	Construction / Site Establishment phase	Demarcation of the site will ensure that all employees are aware of the boundaries of the processing area and that work stay within approved area.	N/A	Processing of the waste rock/stone is only allowed within the boundaries of the approved processing area. • MHSA, 1996 • OHSA, 1993	Beacons need to be in place throughout the life of the activity.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Construction / Site Establishment phase	N/A	N/A	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Construction / Site Establishment phase	Portable toilets will be managed by reputable contractors and inspected daily for potential leaks	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Construction / Site Establishment phase	Portable toilets will be managed by reputable contractors and inspected daily for potential leaks	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Construction / Site Establishment phase	Portable toilets are to be emptied and cleaned regularly. Ensure reputable contractors are utilize for management of facilities. Portable toilets will be managed by a reputable contractor and inspected daily for any potential leaks. Water should not be released into the surrounding environment unless relevant permission obtained from DAW	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Operational phase	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Operational phase	**Dust Handling:** • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly ,especially during times of high dust generation.	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Operational phase	**Emission Handling:** All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	0m^2	Operational phase	**Noise Handling:** The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	**Control:** Noise control measures	**Noise Handling:** NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	0m^2	Operational phase	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	Throughout operational and decommissioning phases

ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	0m^2	Operational phase	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un-vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			considered and incorporated into the storm water management.			
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Operational phase	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	<u>Control:</u> Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Operational phase	Keep mining in footprint	<u>Control:</u> Surface water Monitoring		Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Operational phase	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity. Should graves be observed on site during activity progress then all activity should be ceased and the area demarcated as a no-go zone. A specialists will need to be consulted and responsible action considered, whether grave relocation or ceasing activity	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Operational phase	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Operational phase	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Operational phase	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Operational phase	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	$0m^2$	Construction / Site Establishment phase	Ensure advertising is limited to local and regional areas, and only specifically advertise for Jobs nationally if skills are not available. Ensure that all power-related structures are adequately marked with relevant signs and warnings and fenced off.	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	**Dust Handling:** • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly ,especially during times of high dust generation.	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	**Emission Handling:** All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	**Noise Handling:** The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	**Control:** Noise control measures	**Noise Handling:** NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	Throughout operational and decommissioning phases

STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be	**<u>Control:</u>** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un-vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			considered and incorporated into the storm water management.			
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	Keep mining in footprint	Control: Surface water Monitoring		Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity. Should graves be observed on site during activity progress then all activity should be ceased and the area demarcated as a no-go zone. A specialists will need to be consulted and responsible action considered, whether grave relocation or ceasing activity	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	5ha	Operational phase	None.	N/A	-	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
DRILLING AND BLASTING	5ha	Operational phase	<u>Visual Mitigation:</u> • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	<u>Control:</u> Implementation of proper housekeeping	<u>Land use zoning:</u> • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational and decommissioning phases
DRILLING AND BLASTING	5ha	Operational phase	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly ,especially during times of high dust generation.	<u>Control:</u> Dust Suppression	<u>Dust Handling:</u> • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
DRILLING AND BLASTING	5ha	Operational phase	Blasting alternatives will be considered to reduce noise and associated vibrations	<u>Control:</u> Noise Control Measures	<u>Noise Handling:</u> _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
DRILLING AND BLASTING	5ha	Operational phase	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
DRILLING AND BLASTING	5ha	Operational phase	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases

DRILLING AND BLASTING	5ha	Operational phase	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un-vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases

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			considered and incorporated into the storm water management.			
DRILLING AND BLASTING	5ha	Operational phase	Ensure baseline photographs are taken of all structures which may be impacted for photographic evidence prior to any blasting. Ensure procedures in place to compensate for damage. All neighbour's need to be notified of each blasting activity. The N14 roads needs to be beacons off during the blasting event. Ensure that all power-related structures are adequately marked with relevant signs and warnings and fenced off.	Control: Implementation of safety control measures	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993	Throughout operational and decommissioning phases
DRILLING AND BLASTING	5ha	Operational phase	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.	<u>Control:</u> Implementation of fauna protection measures	<u>Negative impact on fauna that may enter the area:</u> • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases

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DRILLING AND BLASTING	5ha	Operational phase	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	**<u>Control & Remedy:</u>** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	Throughout operational and decommissioning phases
DRILLING AND BLASTING	5ha	Operational phase	Keep mining in footprint	<u>Control:</u> Surface water Monitoring		Throughout operational and decommissioning phases
DRILLING AND BLASTING	5ha	Operational phase	None.	N/A	-	Throughout operational and decommissioning phases
DRILLING AND BLASTING	5ha	Operational phase	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	<u>Control:</u> <u>Fire</u>	<u>• Every precaution must be taken to prevent contamination. The precautionary principal must apply.</u>	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
DRILLING AND BLASTING	5ha	Operational phase	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	<u>Control:</u> Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
DRILLING AND BLASTING	5ha	Operational phase	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity. Should graves be observed on site during activity progress then all activity should be ceased and the area demarcated as a no-go zone. A specialists will need to be consulted and responsible action considered, whether grave relocation or ceasing activity	**<u>Control:</u>** Survey area before site clearance	<u>Loss of Artefacts and Graves:</u> National Heritage Resources Act No. 25 of 1999	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
DRILLING AND BLASTING	5ha	Operational phase	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	<u>Control:</u> Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	<u>NWA, 1998</u>	Throughout operational and decommissioning phases
EXCAVATION	5ha	Operational phase	<u>Visual Mitigation:</u> • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	<u>Control:</u> Implementation of proper housekeeping	<u>Land use zoning:</u> • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
EXCAVATION	5ha	Operational phase	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	Control: Dust Suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
EXCAVATION	5ha	Operational phase	**Emission Handling:** All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
EXCAVATION	5ha	Operational phase	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. Trucks, machinery and equipment will be regularly serviced to ensure acceptable noise levels are not exceeded. Point sources will be enclosed where possible. Silencers will be utilized where possible. Screens will be considered if I&AP complaints are received.	Control: Noise Control Measures	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
EXCAVATION	5ha	Operational phase	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases

EXCAVATION	5ha	Operational phase	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un-vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			considered and incorporated into the storm water management.			
EXCAVATION	5ha	Operational phase	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
EXCAVATION	5ha	Operational phase	Ensure that all stuff are made aware of all working conditions on site	Control: Implementation of safety control measures	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
EXCAVATION	5ha	Operational phase	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.	<u>Control:</u> Implementation of fauna protection measures	<u>Negative impact on fauna that may enter the area:</u> • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
EXCAVATION	5ha	Operational phase	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	**<u>Control & Remedy:</u>** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	Throughout operational and decommissioning phases
EXCAVATION	5ha	Operational phase	Keep mining in footprint	<u>Control:</u> Surface water Monitoring		Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
EXCAVATION	5ha	Operational phase	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
EXCAVATION	5ha	Operational phase	Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity. Should graves be observed on site during activity progress then all activity should be ceased and the area demarcated as a no-go zone. A specialists will need to be consulted and responsible action considered, whether grave relocation or ceasing activity	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999	Throughout operational and decommissioning phases
EXCAVATION	5ha	Operational phase	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
EXCAVATION	5ha	Operational phase	None.	N/A	-	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
CRUSHING AND SCREENING OF GRANITE	±1ha	Operational phase	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. All contractors will enforce speed limits. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. Roads will be sprayed with water regularly ,especially during times of high dust generation.	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
CRUSHING AND SCREENING OF GRANITE	±1ha	Operational phase	**Emission Handling:** All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
CRUSHING AND SCREENING OF GRANITE	±1ha	Operational phase	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	Control: Noise Control Measures	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
CRUSHING AND SCREENING OF GRANITE	±1ha	Operational phase	Inform staff, contractors and visitors to not harm fauna in the area. Consider the use of bird flappers and balls on the power lines to reduce risk of birds colliding with power lines. Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. Utilize directional lighting and use yellow and orange lighting where possible to reduce impacts on insects. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Conduct annual surveys to monitor faunal biodiversity. Negative impact on fauna that may enter the area: • The site manager must ensure that no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.	<u>Control:</u> Implementation of fauna protection measures	<u>Negative impact on fauna that may enter the area:</u> • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases
CRUSHING AND SCREENING OF GRANITE	±1ha	Operational phase	<u>Visual Mitigation:</u> • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	<u>Control:</u> Implementation of proper housekeeping	<u>Land use zoning:</u> • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase

CRUSHING AND SCREENING OF GRANITE	±1ha	Operational phase	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un-vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			considered and incorporated into the storm water management.			
CRUSHING AND SCREENING OF GRANITE	±1ha	Operational phase	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
CRUSHING AND SCREENING OF GRANITE	±1ha	Operational phase	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	±3ha	Operational phase	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1). All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	±3ha	Operational phase	**Emission Handling:** All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	±3ha	Operational phase	All intersections with main tarred roads will be clearly signposted. drivers will be enforced to keep to set speed limits. Trucks will be road-worthy condition. A fund will be set aside to maintain the serviceability of the road verge where the trucks approach or depart from the main road. Ensure directional floodlights are utilized that focus light on the necessary areas and reduce light pollution to surrounding environment.	Control & Remedy: Road management	Degradation of the gravel access road: • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.	Throughout operational and decommissioning phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	±3ha	Operational phase	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	Control: Noise control measures	Noise Handling: • NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases

TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	±3ha	Operational phase	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un-vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			considered and incorporated into the storm water management.			
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	±3ha	Operational phase	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	±3ha	Operational phase	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	±3ha	Operational phase	<u>Visual Mitigation:</u> • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	<u>Control:</u> Implementation of proper housekeeping	<u>Land use zoning:</u> • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	±3ha	Operational phase	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	<u>Control:</u> Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases

SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Waste generated on site should be recycled as far as possible and sold/ given to interested contractors. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality. Vegetate rehabilitated area as soon as possible. Vegetable berms and stockpiles. Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. Re-vegetate any bare soil immediately. Inspect, especially after first heavy rain falls to ensure adequate surface water drainage. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Loss of topsoil due to incorrect storm water management • Storm water must be diverted around the topsoil heaps, processing and stockpile areas to prevent erosion. • Topsoil heaps must be stockpiled along the northern and western boundaries of the study area to divert runoff water away from the processing area. Site management must weekly monitor the stockpiles and should any signs of erosion become apparent soil erosion protection measures must be implemented. • The effectiveness of the storm water infrastructure needs to be continuously monitored. • The activity must be conducted 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 of Mineral Resources may impose: o 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. o Dirty water must be collected and contained in a system separate from the clean water system. o Dirty water must be prevented from spilling or seeping into clean water systems. o Storm water management must apply for the entire life cycle of the site and over different hydrological cycles (rainfall patterns). o The statutory requirements of various regulatory agencies and the interests of stakeholders must be	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un-vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
			considered and incorporated into the storm water management.			
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Ensure soils are replaced to an adequate depth and ensure soil quality is adequate.	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un-vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • During periods of high wind spells, the stockpiles must be dampened to control dust emission. • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. • Gravel roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	Control: Dust Suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	**Emission Handling:** All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions.	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Noise Handling: The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. No loud music may be permitted at the processing area. All project-associated vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	Control: Noise Management	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. All leaks will be cleaned up immediately using an absorbent material. Rigs will be regularly serviced to reduce risk of leaks. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan. Utilize water on site responsibly. Ensure all pipelines and water containment facilities are adequately sealed to prevent leaks. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company.	<u>Control:</u> Proper site management.	<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u>	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Contamination of surface or groundwater due to hazardous spills not cleaned: • Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager of DMR by removing the spillage together with the polluted soil and by disposing it at a recognized facility. Proof must be filed. • Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point, collected on a weekly basis, and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or near the processing area. • Biodegradable refuse generated must be handled as indicated above.	<u>Control:</u> Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. Plan activities carefully so that only vegetation that needs to be impacted is impacted. Incorporate herbaceous vegetation into soil stockpiles to maintain a seed bank. Limit activity to area of disturbance and revegetated impacted areas as soon as possible. Eradicate and control all alien invasive species on site. Rehabilitate and revegetated all areas where alien invasive species were removed. Management of weed- or invader plants: • A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014. • Management must take responsibility to control declared invader or exotic species on the habilitated areas. The following control methods can be used: o "The plants can be uprooted, felled or cut off and can be destroyed completely." o "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." • The temporary topsoil stockpiles needs to be kept free of weeds.	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Specialist must be consulted f issues with groundwater are observed and qualities do not fall within the DWS target qualities or water qualities for livestock watering. Any affected registered water user must be compensated if levels an quality are impacted by the mining activities	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Ensure clean and dirty water separation and storm water management systems are established on site prior to construction taking place. All hydrocarbons will be stored in mobile bunded containers fitted with taps. Bunded area will have adequate capacity to capacity to contain leaks. Large leaks will be cleared by reputable oil recycling company. Inspect area for erosion and pooling and rehabilitate if necessary. Continue with surface water monitoring. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Truck, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated immediately in a reputable manner. For large spills Hazmat will called in. Pans will be placed under potential leak sites. Any leakages should be reported and treated as per the emergency response plan.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Specialist must be consulted f issues with surface water are observed and qualities do not fall within the DWS target qualities or water qualities for livestock watering. Any affected registered water user must be compensated if levels a quality are impacted by the mining activities. Ensure water management facilities are operating adequately. Clean out silt build up over dry season. Monitor area for erosion and pooling and rehabilitate if necessary. Continue with Surface water monitoring.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Ensure that all stuff are made aware of all working conditions on site	Control: Sloping of areas upon decommission	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Inform staff, contractors and visitors to not harm fauna in the area. Conduct annual surveys to monitor faunal biodiversity.	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Keep mining in footprint. Excavation areas will be sloped during rehabilitation to even out depressions.	Control: Surface water Monitoring		Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Monitor, especially after first heavy rain falls to ensure adequate surface water drainage	Control: Surface water Monitoring		Throughout operational and decommissioning phases

NAME OF ACTIVITY	SIZE AND SCALE OF DISTURBANCE	PHASE	MITIGATION MEASURES	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Visual Mitigation: • The site must have a neat appearance and be kept in good condition at all times. • The height of the stockpiles must be controlled to manage the visual impact on the surrounding environment. • Upon rehabilitation of the processing area all infrastructure must be removed and the area must be returned to its prior status. Screens will be considered if I&AP complaints are received. Directional lighting and soft lighting will be utilized to ensure that only areas required to be lit are lit. screens will be considered if I&AP complains are received. Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at the municipality.	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	5ha	Decommissioning phase	Precautionary measures such as fire breaks would be taken into account and the company will join the local FPA. Should it be found that after mining operation have ceased, that the natural vegetation of the area is unacceptable, the area would be re-vegetated with an indigenous s grass seed mix.	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases

e) Impact Management Outcomes

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

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
whether listed or not listed	(Including the potential impacts for cumulative impacts)		In which impact is anticipated	(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)	
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc. Etc.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)		(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))	E.g. Modify through alternative method. Control through noise control. Control through management and monitoring. Remedy through rehabilitation.	
DEMARCATION OF SITE WITH VISIBLE BEACONS.	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	N/A	Construction / Site Establishment phase	N/A	Processing of the waste rock/stone is only allowed within the boundaries of the approved processing area. • MHSA, 1996 • OHSA, 1993
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	N/A	Construction / Site Establishment phase	N/A	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Groundwater	Construction / Site Establishment phase	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Surface Water	Construction / Site Establishment phase	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Soils	Construction / Site Establishment phase	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Social	Construction / Site Establishment phase	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	**Control:** Noise control measures	**Noise Handling:** NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Operational phase	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Alteration of topography	Topography	Operational phase	Control: Surface water Monitoring	
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Loss of and disturbance to surface archaeological sites	Artefacts or graves	Operational phase	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Operational phase	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Influx of unsuccessful job seekers which may informally settle in area. Potential danger to surrounding communities	Social	Construction / Site Establishment phase	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.
STRIPPING AND STOCKPILING OF TOPSOIL	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
STRIPPING AND STOCKPILING OF TOPSOIL	Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	**Control:** Noise control measures	**Noise Handling:** NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Operational phase	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.
STRIPPING AND STOCKPILING OF TOPSOIL	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
STRIPPING AND STOCKPILING OF TOPSOIL	Alteration of topography	Topography	Operational phase	Control: Surface water Monitoring	
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of and disturbance to surface archaeological sites	Artefacts or graves	Operational phase	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999
STRIPPING AND STOCKPILING OF TOPSOIL	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:
STRIPPING AND STOCKPILING OF TOPSOIL	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
STRIPPING AND STOCKPILING OF TOPSOIL	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.
STRIPPING AND STOCKPILING OF TOPSOIL	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Operational phase	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.
STRIPPING AND STOCKPILING OF TOPSOIL	Disturbance of geological strata	Geology	Operational phase	N/A	
DRILLING AND BLASTING	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.
DRILLING AND BLASTING	Dust nuisance due to excavation activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Dust Suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
DRILLING AND BLASTING	Noise nuisance generated by drilling equipment and blasting	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Control: Noise Control Measures	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
DRILLING AND BLASTING	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998
DRILLING AND BLASTING	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
DRILLING AND BLASTING	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.
DRILLING AND BLASTING	Health and Safety Risk by Blasting Activities. Potential danger to surrounding communities	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational phase	Control: Implementation of safety control measures	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993
DRILLING AND BLASTING	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.
DRILLING AND BLASTING	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Operational phase	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004
DRILLING AND BLASTING	Alteration of topography	Topography	Operational phase	Control: Surface water Monitoring	
DRILLING AND BLASTING	Disturbance of geological strata	Geology	Operational phase	N/A	
DRILLING AND BLASTING	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Operational phase	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
DRILLING AND BLASTING	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
DRILLING AND BLASTING	Loss of and disturbance to surface archaeological sites	Artefacts or graves	Operational phase	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999
DRILLING AND BLASTING	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998
EXCAVATION	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.
EXCAVATION	Dust nuisance due to excavation activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Dust Suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
EXCAVATION	Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
EXCAVATION	Noise nuisance generated by excavation equipment	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Control: Noise Control Measures	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
EXCAVATION	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
EXCAVATION	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.
EXCAVATION	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:
EXCAVATION	Unsafe working conditions for employees	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational phase	Control: Implementation of safety control measures	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993
EXCAVATION	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.
EXCAVATION	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Operational phase	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004
EXCAVATION	Alteration of topography	Topography	Operational phase	Control: Surface water Monitoring	

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
EXCAVATION	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
EXCAVATION	Loss of and disturbance to surface archaeological sites	Artefacts or graves	Operational phase	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999
EXCAVATION	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Operational phase	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.
EXCAVATION	Disturbance of geological strata	Geology	Operational phase	N/A	
CRUSHING AND SCREENING OF GRANITE	Dust nuisance due to loading and transportation of the material	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
CRUSHING AND SCREENING OF GRANITE	Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
CRUSHING AND SCREENING OF GRANITE	Noise nuisance caused by crushing plant.	The noise impact must be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Control: Noise Control Measures	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
CRUSHING AND SCREENING OF GRANITE	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behaviour of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.
CRUSHING AND SCREENING OF GRANITE	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
CRUSHING AND SCREENING OF GRANITE	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.
CRUSHING AND SCREENING OF GRANITE	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998
CRUSHING AND SCREENING OF GRANITE	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Dust nuisance due to loading and transportation of the material	Should dust levels become excessive it may have an impact on surrounding landowners.	Operational phase	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1). All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Emissions caused by vehicles and equipment	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Road degradation. Increased potential for road incidences Potential distraction to road users	All road users will be affected	Operational phase	Control & Remedy: Road management	Degradation of the gravel access road: • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Noise nuisance caused by vehicles	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Operational phase	Control: Noise control measures	Noise Handling: NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Operational phase	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Operational phase	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Deterioration in visual aesthetics of the area	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Operational phase	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Potential compaction of soils in neighbouring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Decommissioning phase	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Soils replaced and ameliorated	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Decommissioning phase	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Dust nuisance caused during reshaping activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Decommissioning phase	Control: Dust Suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Emissions caused by vehicles and equipment	Emissions will be contained within the property boundaries and will therefore affect only the landowner.	Decommissioning phase	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Noise nuisance caused by machinery	The noise impact should be contained within the boundaries of the property, and will represent the current noise levels of the farm.	Decommissioning phase	Control: Noise Management	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Groundwater pollution	Decommissioning phase	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Contamination of area with hydrocarbons or hazardous waste materials	Contamination may cause surface or ground water pollution if not addressed	Decommissioning phase	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Loss of biodiversity. Potential damage to vegetation in neighbouring areas. Alien invasive encroachment	Flora	Decommissioning phase	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Improve response to issues relating to deterioration of groundwater quality or quantity	Groundwater improvement	Decommissioning phase	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Surface water Bodies	Decommissioning phase	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Containment of dirty water. Improve response to issues relating to deterioration of surface water quality or quantity. free drainage resorted to area. Revegetation of disturbed areas reduces risk of silt loading on downstream water bodies. Large area of surface water runoff return to catchment	Surface water Bodies	Decommissioning phase	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	The impact on health and safety due to un-sloped areas will be contained within the site boundary.	Decommissioning phase	Control: Sloping of areas upon decommission	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Reintroduction of fauna attracted to flora to the area	Fauna returning to area	Decommissioning phase	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Alteration of topography	Topography	Decommissioning phase	Control: Surface water Monitoring	

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Eradication of trenches and berms. Re-contouring of area for free surface water drainage. Eradication of stockpiles	Topography	Decommissioning phase	Control: Surface water Monitoring	
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Improved aesthetics through rehabilitation	The visual impact may affect the aesthetics of the landscape.	Decommissioning phase	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighbouring farmers). Degrading of grazing potential for livestock farming	Land use	Decommissioning phase	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.

f) Impact Management Actions

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

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
whether listed or not listed	**(Including the potential impacts for cumulative impacts)**	**(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)**		
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc. Etc.)	**(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**E.g. Modify through alternative method. Control through noise control. Control through management and monitoring. Remedy through rehabilitation.**		
DEMARCATION OF SITE WITH VISIBLE BEACONS.	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	N/A	Processing of the waste rock/stone is only allowed within the boundaries of the approved processing area. • MHSA, 1996 • OHSA, 1993	Beacons need to be in place throughout the life of the activity.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	If the infrastructure is established within the boundaries of the approved mining area, no impact could be identified.	N/A	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Portable Toilets Potential harm through sewage leaks	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Deterioration in visual aesthetics of the area	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Dust nuisance caused by the disturbance of soil.	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Emissions caused by vehicles and equipment	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	**Control:** Noise control measures	**Noise Handling:** NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Loss of biodiversity. Potential damage to vegetation in neighboring areas. Alien invasive encroachment	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Potential compaction of soils in neighboring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Contamination of area with hydrocarbons or hazardous waste materials	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Alteration of topography	Control: Surface water Monitoring		Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Loss of and disturbance to surface archaeological sites	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behavior of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighboring farmers). Degrading of grazing potential for livestock farming	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRACTURE WITHIN BOUNDARIES OF SITE.	Influx of unsuccessful job seekers which may informally settle in area. Potential danger to surrounding communities	Control through proper site management	Not applicable as these are mobile and will be removed during rehabilitation and closure of the site.	Construction / Site Establishment phase
STRIPPING AND STOCKPILING OF TOPSOIL	Deterioration in visual aesthetics of the area	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Emissions caused by vehicles and equipment	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	**Control:** Noise control measures	**Noise Handling:** NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of biodiversity. Potential damage to vegetation in neighboring areas. Alien invasive encroachment	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
STRIPPING AND STOCKPILING OF TOPSOIL	Potential compaction of soils in neighboring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases
STRIPPING AND STOCKPILING OF TOPSOIL	Contamination of area with hydrocarbons or hazardous waste materials	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Alteration of topography	Control: Surface water Monitoring		Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of and disturbance to surface archaeological sites	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behavior of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases
STRIPPING AND STOCKPILING OF TOPSOIL	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighboring farmers). Degrading of grazing potential for livestock farming	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
STRIPPING AND STOCKPILING OF TOPSOIL	Disturbance of geological strata	N/A	-	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Deterioration in visual aesthetics of the area	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Dust nuisance due to excavation activities	Control: Dust Suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Noise nuisance generated by drilling equipment and blasting	Control: Noise Control Measures	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Potential compaction of soils in neighboring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases
DRILLING AND BLASTING	Health and Safety Risk by Blasting Activities. Potential danger to surrounding communities	Control: Implementation of safety control measures	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
DRILLING AND BLASTING	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behavior of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases
DRILLING AND BLASTING	Loss of biodiversity. Potential damage to vegetation in neighboring areas. Alien invasive encroachment	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Alteration of topography	Control: Surface water Monitoring		Throughout operational and decommissioning phases
DRILLING AND BLASTING	Disturbance of geological strata	N/A	-	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighboring farmers). Degrading of grazing potential for livestock farming	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Contamination of area with hydrocarbons or hazardous waste materials	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Loss of and disturbance to surface archaeological sites	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999	Throughout operational and decommissioning phases
DRILLING AND BLASTING	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
EXCAVATION	Deterioration in visual aesthetics of the area	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
EXCAVATION	Dust nuisance due to excavation activities	Control: Dust Suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
EXCAVATION	Emissions caused by vehicles and equipment	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
EXCAVATION	Noise nuisance generated by excavation equipment	Control: Noise Control Measures	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
EXCAVATION	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
EXCAVATION	Potential compaction of soils in neighboring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases
EXCAVATION	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
EXCAVATION	Unsafe working conditions for employees	Control: Implementation of safety control measures	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993	Throughout operational and decommissioning phases
EXCAVATION	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behavior of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
EXCAVATION	Loss of biodiversity. Potential damage to vegetation in neighboring areas. Alien invasive encroachment	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	Throughout operational and decommissioning phases
EXCAVATION	Alteration of topography	Control: Surface water Monitoring		Throughout operational and decommissioning phases
EXCAVATION	Contamination of area with hydrocarbons or hazardous waste materials	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
EXCAVATION	Loss of and disturbance to surface archaeological sites	**Control:** Survey area before site clearance	Loss of Artefacts and Graves: National Heritage Resources Act No. 25 of 1999	Throughout operational and decommissioning phases
EXCAVATION	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighboring farmers). Degrading of grazing potential for livestock farming	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases
EXCAVATION	Disturbance of geological strata	N/A	-	Throughout operational and decommissioning phases
CRUSHING AND SCREENING OF GRANITE	Dust nuisance due to loading and transportation of the material	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
CRUSHING AND SCREENING OF GRANITE	Emissions caused by vehicles and equipment	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
CRUSHING AND SCREENING OF GRANITE	Noise nuisance caused by crushing plant.	Control: Noise Control Measures	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
CRUSHING AND SCREENING OF GRANITE	Alienation of animals from the area. Potential risk to avifauna. Potential harm through littering. Loss of food, nest sites and refugia Hindrance to nocturnal animals and change in behavior of nocturnal prey and predators. New habitat available to fauna in the area and reduced activity should result in influx of animals to the area. Impact to nocturnal insects and their predators and other nocturnal animals.	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases
CRUSHING AND SCREENING OF GRANITE	Deterioration in visual aesthetics of the area	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
CRUSHING AND SCREENING OF GRANITE	Potential compaction of soils in neighboring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases
CRUSHING AND SCREENING OF GRANITE	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
CRUSHING AND SCREENING OF GRANITE	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Dust nuisance due to loading and transportation of the material	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1). All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Emissions caused by vehicles and equipment	Control: Dust suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Road degradation. Increased potential for road incidences Potential distraction to road users	Control & Remedy: Road management	Degradation of the gravel access road: • NRTA, 1996 The gravel access road needs to be monitored for signs of degradation. Should any signs become apparent immediate rectification actions must be implemented.	Throughout operational and decommissioning phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Noise nuisance caused by vehicles	Control: Noise control measures	Noise Handling: _ NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Potential compaction of soils in neighboring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Deterioration in visual aesthetics of the area	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Contamination of area with hydrocarbons or hazardous waste materials	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Potential compaction of soils in neighboring areas. Potential contamination through littering. Potential for loss of soil & damage to soil characteristics. Initial increased potential for loss of soils and soil erosion. Potential hydrocarbon contamination to soils.	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Soils replaced and ameliorated	**Control:** Storm water management Site Management Soil Management	Loss of topsoil due to incorrect storm water management: • NEMA, 1998 • NWA, 1998 • NEMBA, 2004 • GNR 598 and 599 of 2014 • The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes. Loss of soil due to un- vegetated areas: • NEMBA (Act No. 10 of 2004). • NEMA, 1998 Bare areas need to be re-vegetation to prevent soil erosion.	Throughout operational phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Dust nuisance caused during reshaping activities	Control: Dust Suppression	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Emissions caused by vehicles and equipment	Control: Emissions	Dust Handling: • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Noise nuisance caused by machinery	Control: Noise Management	Noise Handling: _NEM: AQA, 2004 Regulation 6(1) All project related vehicles must be in a road worthy condition in terms of the Road Transport Act, 1987	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Potential hydrocarbon contamination leeching into the water table. Reduction of local groundwater. Potential contamination through littering leeching into the groundwater table	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned:	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Contamination of area with hydrocarbons or hazardous waste materials	Control: Waste management	Contamination of surface or groundwater due to hazardous spills not cleaned: • NWA, 1998 • NEM: WA, 2008 • Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases

NAME OF ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	COMPLIANCE WITH STANDARD / STANDARD TO BE ACHIEVED	TIME PERIOD FOR IMPLEMENTATION
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Loss of biodiversity. Potential damage to vegetation in neighboring areas. Alien invasive encroachment	**Control & Remedy:** Implementation of weed control and weed/invader plant management plan Management of buffer areas and demarcation of work areas. Modify: Consider use of a less sensitive area	Management of weed- or invader plants: • NEMBA (Act No. 10 of 2004). • Alien and Invasive Species Regulation GNR 598 and 599 of 2014. Negative impact on biodiversity of the area (Site Alternative 1): • NEM:BA, 2004	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Improve response to issues relating to deterioration of groundwater quality or quantity	Control: Proper site management.	Contamination of surface or groundwater due to hazardous spills not cleaned: NWA, 1998	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Potential silt-loading of drainage lines, downstream and surrounding water bodies. Potential hydrocarbon contamination which may reach downstream surface water bodies. Potential surface water contamination if leaks escape into the environment. Potential impact of mining activities on the runoff and infiltration of storm water.	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.		Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Containment of dirty water. Improve response to issues relating to deterioration of surface water quality or quantity. free drainage resorted to area. Revegetation of disturbed areas reduces risk of silt loading on downstream water bodies. Large area of surface water runoff return to catchment	Control: Surface water Management Implement storm water control measures. Measures will be implemented as subscribed by DWS.	NWA, 1998	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk posed by un-sloped areas	Control: Sloping of areas upon decommission	The Occupational Health and safety act in conjunction with the Mine Health and Safety act as mitigation measure. • MHSA, 1996 • OHSA, 1993	Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Reintroduction of fauna attracted to flora to the area	Control: Implementation of fauna protection measures	Negative impact on fauna that may enter the area: • NEM:BA, 2004 • Site management has to strive to eliminate the impact on fauna in the surrounding environment for the duration of the processing activities.	Throughout operational phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Alteration of topography	Control: Surface water Monitoring		Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Eradication of trenches and berms. Re-contouring of area for free surface water drainage. Eradication of stockpiles	Control: Surface water Monitoring		Throughout operational and decommissioning phases
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Improved aesthetics through rehabilitation	Control: Implementation of proper housekeeping	Land use zoning: • Northern Cape LUPA • Local Municipality: Land Use Planning Bylaws • The property is zoned for agriculture as primary use.	Throughout operational phase
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Veldt fire might seriously impact on surrounding land-use (livestock/irrigation of neighboring farmers). Degrading of grazing potential for livestock farming	Control: Fire	• Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases

i) Financial Provision

(1) **Determination of the amount of Financial Provision.**

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

The primary objective is to obtain a closure certificate at the end of the life of the mining permit at minimum cost and in as short a time period as possible whilst still complying with the requirements of the Minerals and Petroleum Resources Development Act. To realise this, the following objectives must be achieved:

- Remove all temporary infrastructure and waste from the site as per the requirements of this EMPR and of the Provincial Department of Mineral Regulation;
- Demolish / rehabilitate all roads with no post -Mining use potential;
- Clear all granite material from site;
- Clear boulders form site;
- Remove all waste from site;
- Future public health and safety are not compromised;
- Ensure that no threat to surface and underground water quality remains;
- Ensure that all permanent changes in topography are sustainable and do not cause erosion or the damming up of runoff;
- Shape and contour all disturbed areas in compliance with the EMPR;
- The stockpiled topsoil (that is available) will be spread over the disturbed area to a depth of at least 300 mm;
- Make safe any dangerous excavations or subsidence on the surface;
- Rehabilitate all disturbed areas in compliance with the EMPR and of the Provincial Department of Mineral Regulation;
- Ensure that all rehabilitated areas are safe, stable and self-sustaining in terms of vegetation;
- Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding has been done in an area;
- The applicant will comply with the minimum closure objectives as prescribed by DMR;
- Any adverse socio-economic impacts are minimised; and
- All socio-economic benefits are maximised.

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

This report, the Draft Basic Assessment Report, includes all the environmental objectives in relation to closure and will be made available for perusal of I&AP's and stakeholders. Any additional comments received during the commenting period will be added to the Final Basic Assessment Report to be submitted to DMR for approval.

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

The requested rehabilitation plan is attached in Appendix E. Upon closure of the Mining activity all infrastructure will be removed. The compacted areas will be ripped and levelled upon which the topsoil will be replaced. No permanent structures will remain upon closure of the site. The rehabilitation plan shall entail removal of all generated waste, infrastructures and materials, re-vegetation of disturbed and cleared areas, rehabilitation of access roads, ensuring the growth of the existing grasses and plants species and cleaning of spillages etc.

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

The rehabilitation of the Mining area as indicated on the rehabilitation plan attached as Appendix E will comply with the minimum closure objectives as prescribed by DMR and detailed below, and therefore is deemed to be compatible:

Rehabilitation of the excavated area:

- Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature.
- This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form slopes on the benches below, thereby reducing the overall face angle. Oversized rocks and overburden will be used to make the quarry safe.
- Fill and topsoil could be placed over the benches to provide a suitable medium for the establishment of vegetation, especially trees which will break up the line of the faces and enhance their appearance. The floor of the quarry should be capped with suitable soil material and re-vegetated.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste will be permitted to be deposited in the excavations.
- The area shall be fertilized to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

Rehabilitation of plant, office and service areas:

- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- Stockpiles will be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.

- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act [MPRDA], 2002 (Act No. 28 of 2002):
    - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
    - Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface.
    - The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs of the workshop and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.
- On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified and graded to an even surface condition. Where applicable / possible topsoil needs to be returned to its original depth over the area.
- Prior to replacing the topsoil, the material that was removed from these areas will be replaced in the same order as it originally occurred.
- The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- 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 seed mix to his or her specification.

Final rehabilitation:

- Rehabilitation of the surface area shall entail reshaping, levelling, top dressing, land preparation, seeding and maintenance, and weed / alien clearing.
- All Infrastructures, equipment, plant, and other items used during the mining permit period will be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining permit area and disposed of at a recognized landfill facility, proof of this removal will be kept on file at the applicant's office. It will not be permitted to be buried or burned on the site.
- Weed / Alien clearing will be done in a sporadic manner during the life of the Mining activities. Species regarded as the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure. Final rehabilitation shall be completed within a period specified by the Regional Manager.

- Final rehabilitation shall be completed within a period specified by the Regional Manager.
- Seeding of the area:

    - Once the pit slopes (40º) have been shaped and the soil replaced, the initial goal is to establish a good cover of a robust grass that will stabilise the soil and start the accumulation of soil organic carbon. This will be done using a combination of hydro seeding and physical planting of runners to apply a mix of commercial and indigenous species that includes both tufted and creeping species. The plants that were collected during the establishment and operational phases and kept in the designated area will be replanted.

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

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

Mine type and saleable mineral by-product

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

Mine type	Granite
Saleable mineral by-product	None

Risk ranking

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

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

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Extensive

Identify closure components

According to Table B.5 and site-specific conditions

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

Unit rates for closure components

According to Table B.6 master rates and multiplication factors for applicable closure components. The master rate from DMR Master Rates table for financial provision of 2018 has been used.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of **processing plant and related structures** (including overland conveyors and power lines)		
2(A)	Demolition of **steel buildings and structures**		
2(B)	Demolition of **reinforced concrete buildings and structures**		
3	Rehabilitation of **access roads**		
4(A)	Demolition and rehabilitation of **electrified railway lines**		
4(B)	Demolition and rehabilitation of **non-electrified railway lines**		
5	Demolition of **housing and facilities**		
6	**Opencast rehabilitation** including final voids and ramps	225 186	0.04
7	Sealing of **shafts, adits and inclines**		
8(A)	Rehabilitation of **overburden and spoils**	150 124	1.00
8(B)	Rehabilitation of **processing waste deposits and evaporation ponds (basic, salt-producing)**		
8(C)	Rehabilitation of **processing waste deposits and evaporation ponds (acidic, metal-rich)**		
9	Rehabilitation of **subsided areas**		
10	**General surface rehabilitation**, including grassing of all denuded areas	118 924	1.00
11	**River diversions**		
12	**Fencing**	136	1.00
13	**Water management** (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)		
14	2 to 3 years of **maintenance and aftercare**		

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.00 (Flat)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05 (Peri-Urban)

Calculation of closure costs

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of **R 278 724.17**

Table B.10 Template for Level 2: "Rules-based" assessment of the quantum for financial provision							
CALCULATION OF THE QUANTUM							
Mine:	**Lime Sales Limited Aroams Quarry**			**Location:**	**Aggeneys**		
Evaluators:	**Yolandie Coetzee**			**Date:**	**28-Sep-18**		
No	**Description**	**Unit**	**A Quantity**	**B Master rate**	**C Multiplication factor**	**D Weighting factor 1**	**E=A *B*C*D Amount (rands)**
			Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**	
	Description		**A Quantity**	**B Master rate**	**C Multiplication factor**	**D Weighting factor 1**	**E=A *B*C*D Amount (rands)**
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m^3	0	15	1	1	R 0,00
2a	Demolition of steel buildings and structures	m^2	0	215	1	1	R 0,00
2b	Demolition of reinforced concrete buildings and structures	m^2	0	317	1	1	R 0,00
3	Rehabilitation of access roads	m^2	0	38	1	1	R 0,00
4a	Demolition and rehabilitation of electrified railway lines	m	0	373	1	1	R 0,00
4b	Demolition and rehabilitations of non-electrified railway lines	m	0	203	1	1	R 0,00
5	Demolition of housing and/or administration facilities	m^2	0	430	1	1	R 0,00
6	Opencast rehabilitation including final voids and ramps	ha	5	225.186	0,04	1	R 45.037,20
7	Sealing of shaft, audits and inclines	m^3	0	115	1	1	R 0,00
8a	Rehabilitation of overburden and spoils	ha	0	150.124	1	1	R 0,00
8b	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	186.977	1	1	R 0,00
8c	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	543.069	0,51	1	R 0,00
9	Rehabilitation of subsided areas	ha	0	125.706	1	1	R 0,00
10	General surface rehabilitation	ha	0	118.924	1	1	R 0,00
11	River diversions	ha		118.924	1	1	R 0,00
12	Fencing	m	1132	136	1	1	R 153.952,00
13	Water Management	ha		45.218	0,17	1	R 0,00
14	2 to 3 years of maintenance and aftercare	ha	0	15.826	1	1	R 0,00
15a	Specialists study	Sum				1	R 0,00
15b	Specialists study	Sum					R 0,00

							R 198.989,20
	Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)			1,05		**Sub Total 1**	R 208.938,66
	General and prelim		6% of subtotal 1				R 12.536,32
	Contingency			10.0% of Subtotal 1			R 20.893,87
	(Subtotal 1 plus management and contingency)					**Sub Total 2**	R 242.368,85
	Vat (15%)					**Sub Total 3**	R 36.355,33
	(Subtotal 3 plus VAT)					**GRAND TOTAL**	R 278.724,17

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

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

(g) Monitoring of Impact Management Actions

(h) Monitoring and reporting frequency

(i) Responsible persons

(j) Time period for implementing impact management actions

(k) Mechanisms for monitoring compliance

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
whether listed or not listed			**(FOR THE EXECUTION OF THE MONITORING PROGRAMMES)**	
(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc... etc. Etc.)				
DEMARCATION OF SITE WITH VISIBLE BEACONS.	Maintenance of beacons	• Visible beacons need to be established at the corners of the processing area. • A 20m buffer area (if applicable) from any natural areas need to be demarcated. • A 30m buffer area from a watercourse needs to be demarcated if applicable.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure beacons are in place throughout the life of the activity.	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	N/A	N/A	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure beacons are in place throughout the life of the activity.	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Groundwater	Monitor portable toilets for any leaks	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure beacons are in place throughout the life of the activity.	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Surface Water	Monitor portable toilets for any leaks	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure beacons are in place throughout the life of the activity.	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Soils	Monitor portable toilets for any leaks	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure beacons are in place throughout the life of the activity.	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Social	Monitor portable toilets for any leaks	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure beacons are in place throughout the life of the activity.	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Monitoring of visual impacts. Inspect area for illegal littering and dumping	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the visual impact on the surrounding environment. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Minimize the visual impact of the activity on the surrounding environment	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available. Dust Monitoring will also be conducted on site on a monthly basis.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Emission Monitoring: • The emissions generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Emission Handling and Monitoring: • Emissions will be monitored	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • All vehicles in good working order to reduce risk of emissions	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	**<u>Noise Monitoring</u>** • The noise impact should be contained within the boundaries of the property, as it will represent the current activities.	**<u>Noise Handling and Monitoring:</u>** • Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the processing area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Management of weed or invader plants • The presence of weed and/or invader plants must be continuously monitored, and any unwanted plants must be removed. Loss of natural vegetation.	Inspect progress of construction & ensure activity is in designated areas. Inspect area for damage to flora species. Establish alien invasive monitoring programme Management of weed or invader plants: • Removal of weeds must be manually or by the use of an approved herbicide. Management of buffer areas: • Site management has to ensure the use of visible beacons to demarcate the	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Implement a weed and invader plant management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		boundaries of the approved area. Protection of fauna: • Site management has to protect fauna that enters the processing area.		
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Soil Management Topsoil Management **Soil erosion:** • Loss of reinstated topsoil after rehabilitation.	**Soil Handling:** • Excavating equipment to remove the first 500 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. • Ensure that topsoil is being kept separate form overburden. **Erosion monitoring:** • Grader to restore areas prone to soil erosion. • Planting of a cover crop to stabilize re-instated soil • Erosion prevention equipment.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Waste Management: • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must check compliance daily.	Waste Management: • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • A hydrocarbon spill kit to enable sufficient clean-up of contaminated areas. • Drip trays must be available to place underneath equipment parked for the night. • Should a vehicle have a break down, it must be decommissioned immediately and removed from site to be serviced. • Waste disposal register and file for the keeping of safe disposal records. • Ensure that hazardous substances if any are stored within a securely fenced area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	N/A	Inspect area for erosion and pooling.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Protection of Cultural and Heritage Artefacts	Should any artefacts be discovered the area needs to be demarcated and work needs to be stopped.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Groundwater	**<u>Groundwater Monitoring:</u>** Equipment's needs to be monitored to prevent any hydrocarbon spills.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Surface water Bodies	**<u>Surface water Monitoring:</u>** Ensure no litter or contaminants lie on the ground.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Protection of fauna	Monitor any ecologically sensitive species should they be observed on site.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Contain all activities within the boundaries of the approved processing area. • Demarcate, signpost and manage the 20 m buffer area as no-go area around areas with natural vegetation.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.	site by an Independent Environmental Control
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Fire Management	Fire Management	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
ESTABLISHMENT OF TEMPORARY BUILDINGS AND INFRASTRUCTURE WITHIN BOUNDARIES OF SITE.	Social	Ensure employment is in line with SLP initiatives. Inspect all complaints received and compare against photographic evidence. Inspect areas and ensue fences haven't been tampered with and no illegal connections have been added to lines	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure beacons are in place throughout the life of the activity.	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	Monitoring of visual impacts. Inspect area for illegal littering and dumping	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the visual impact on the surrounding environment. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Minimize the visual impact of the activity on the surrounding environment	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available. Dust Monitoring will also be conducted on site on a monthly basis.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
STRIPPING AND STOCKPILING OF TOPSOIL	Emission Monitoring: • The emissions generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Emission Handling and Monitoring: • Emissions will be monitored	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • All vehicles in good working order to reduce risk of emissions	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
				site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
STRIPPING AND STOCKPILING OF TOPSOIL	**Noise Monitoring** • The noise impact should be contained within the boundaries of the property, as it will represent the current activities.	**Noise Handling and Monitoring:** • Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the processing area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	Management of weed or invader plants • The presence of weed and/or invader plants must be continuously monitored, and any unwanted plants must be removed. Loss of natural vegetation.	Inspect progress of construction & ensure activity is in designated areas. Inspect area for damage to flora species. Establish alien invasive monitoring programme Management of weed or invader plants: • Removal of weeds must be manually or by the use of an approved herbicide. Management of buffer areas: • Site management has to ensure the use of visible beacons to demarcate the boundaries of the approved area. Protection of fauna: • Site management has to protect fauna that enters the processing area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Implement a weed and invader plant management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer
STRIPPING AND STOCKPILING OF TOPSOIL	Soil Management Topsoil Management **Soil erosion:** • Loss of reinstated topsoil after rehabilitation.	**Soil Handling:** • Excavating equipment to remove the first 500 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. • Ensure that topsoil is being kept separate form overburden. **Erosion monitoring:** • Grader to restore areas prone to soil erosion. • Planting of a cover crop to stabilize re-instated soil • Erosion prevention equipment.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer

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STRIPPING AND STOCKPILING OF TOPSOIL	Waste Management: • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must check compliance daily.	Waste Management: • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • A hydrocarbon spill kit to enable sufficient clean-up of contaminated areas. • Drip trays must be available to place underneath equipment parked for the night. • Should a vehicle have a break down, it must be decommissioned immediately and removed from site to be serviced. • Waste disposal register and file for the keeping of safe disposal records. • Ensure that hazardous substances if any are stored within a securely fenced area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	N/A	Inspect area for erosion and pooling.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	Protection of Cultural and Heritage Artefacts	Should any artefacts be discovered the area needs to be demarcated and work needs to be stopped.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	Groundwater	**Groundwater Monitoring:** Equipment's needs to be monitored to prevent any hydrocarbon spills.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	Surface water Bodies	**Surface water Monitoring:** Ensure no litter or contaminants lie on the ground.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL	Protection of fauna	Monitor any ecologically sensitive species should they be observed on site.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Contain all activities within the boundaries of the approved processing area. • Demarcate, signpost and manage the 20 m buffer area as no-go area around areas with natural vegetation. • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control
STRIPPING AND STOCKPILING OF TOPSOIL	Fire Management	Fire Management	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
STRIPPING AND STOCKPILING OF TOPSOIL	N/A	N/A	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
DRILLING AND BLASTING	Monitoring of visual impacts. Inspect area for illegal littering and dumping	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the visual impact on the surrounding environment. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
DRILLING AND BLASTING	Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
DRILLING AND BLASTING	Noise Monitoring • The noise impact should be contained within the boundaries of the property, as it will represent the current activities.	Noise Handling and Monitoring: • Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
DRILLING AND BLASTING	Surface water Bodies	**Surface water Monitoring:** Ensure no litter or contaminants lie on the ground.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
DRILLING AND BLASTING	Groundwater	**Groundwater Monitoring:** Equipment's needs to be monitored to prevent any hydrocarbon spills.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
DRILLING AND BLASTING	Soil Management Topsoil Management **Soil erosion:** • Loss of reinstated topsoil after rehabilitation.	**Soil Handling:** • Excavating equipment to remove the first 500 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. • Ensure that topsoil is being kept separate form overburden. **Erosion monitoring:** • Grader to restore areas prone to soil erosion. • Planting of a cover crop to stabilize re-instated soil • Erosion prevention equipment.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer
DRILLING AND BLASTING	Social Health and Safety Risk	Health and Safety Management	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure workers have access to the correct personal protection equipment (PPE) as required by law. • Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control
DRILLING AND BLASTING	Protection of fauna	Monitor any ecologically sensitive species should they be observed on site.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Contain all activities within the boundaries of the approved processing area. • Demarcate, signpost and manage the 20 m buffer area as no-go area around areas with natural vegetation. • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
DRILLING AND BLASTING	Management of weed or invader plants • The presence of weed and/or invader plants must be continuously monitored, and any unwanted plants must be removed. Loss of natural vegetation.	Inspect progress of construction & ensure activity is in designated areas. Inspect area for damage to flora species. Establish alien invasive monitoring programme Management of weed or invader plants: • Removal of weeds must be manually or by the use of an approved herbicide. Management of buffer areas: • Site management has to ensure the use of visible beacons to demarcate the boundaries of the approved area. Protection of fauna: • Site management has to protect fauna that enters the processing area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Implement a weed and invader plant management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer
DRILLING AND BLASTING	N/A	Inspect area for erosion and pooling.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
DRILLING AND BLASTING	N/A	N/A	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

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DRILLING AND BLASTING	Fire Management	Fire Management	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
DRILLING AND BLASTING	Waste Management: • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must check compliance daily.	Waste Management: • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • A hydrocarbon spill kit to enable sufficient clean-up of contaminated areas. • Drip trays must be available to place underneath equipment parked for the night. • Should a vehicle have a break down, it must be decommissioned immediately and removed from site to be serviced. • Waste disposal register and file for the keeping of safe disposal records. • Ensure that hazardous substances if any are stored within a securely fenced area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
DRILLING AND BLASTING	Protection of Cultural and Heritage Artefacts	Should any artefacts be discovered the area needs to be demarcated and work needs to be stopped.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
DRILLING AND BLASTING	Surface water Bodies	**<u>Surface water Monitoring:</u>** Ensure no litter or contaminants lie on the ground.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

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EXCAVATION	Monitoring of visual impacts. Inspect area for illegal littering and dumping	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the visual impact on the surrounding environment. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Minimize the visual impact of the activity on the surrounding environment	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
EXCAVATION	Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
EXCAVATION	Emission Monitoring: • The emissions generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Emission Handling and Monitoring: • Emissions will be monitored	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
EXCAVATION	Noise Monitoring • The noise impact should be contained within the boundaries of the property, as it will represent the current activities.	Noise Handling and Monitoring: • Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the processing area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
EXCAVATION	Surface water Bodies	**<u>Surface water Monitoring:</u>** Ensure no litter or contaminants lie on the ground.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

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EXCAVATION	Soil Management Topsoil Management **Soil erosion:** • Loss of reinstated topsoil after rehabilitation.	**Soil Handling:** • Excavating equipment to remove the first 500 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. • Ensure that topsoil is being kept separate form overburden. **Erosion monitoring:** • Grader to restore areas prone to soil erosion. • Planting of a cover crop to stabilize re-instated soil • Erosion prevention equipment.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer
EXCAVATION	Groundwater	**Groundwater Monitoring:** Equipment's needs to be monitored to prevent any hydrocarbon spills.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
EXCAVATION	Social Health and Safety Risk	Health and safety Management	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure workers have access to the correct personal protection equipment (PPE) as required by law. • Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control
EXCAVATION	Protection of fauna	Monitor any ecologically sensitive species should they be observed on site.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Contain all activities within the boundaries of the approved processing area. • Demarcate, signpost and manage the 20 m buffer area as no-go area around areas with natural vegetation. • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control

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EXCAVATION	Management of weed or invader plants • The presence of weed and/or invader plants must be continuously monitored, and any unwanted plants must be removed. Loss of natural vegetation.	Inspect progress of construction & ensure activity is in designated areas. Inspect area for damage to flora species. Establish alien invasive monitoring programme Management of weed or invader plants: • Removal of weeds must be manually or by the use of an approved herbicide. Management of buffer areas: • Site management has to ensure the use of visible beacons to demarcate the boundaries of the approved area. Protection of fauna: • Site management has to protect fauna that enters the processing area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Implement a weed and invader plant management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer
EXCAVATION	N/A	Inspect area for erosion and pooling.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
EXCAVATION	Waste Management: • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must check compliance daily.	Waste Management: • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • A hydrocarbon spill kit to enable sufficient clean-up of contaminated areas. • Drip trays must be available to place underneath equipment parked for the night. • Should a vehicle have a break down, it must be decommissioned immediately and removed from site to be serviced. • Waste disposal register and file for the	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

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		keeping of safe disposal records. • Ensure that hazardous substances if any are stored within a securely fenced area.	them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	
EXCAVATION	Protection of Cultural and Heritage Artefacts	Should any artefacts be discovered the area needs to be demarcated and work needs to be stopped.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
EXCAVATION	Fire Management	Fire Management	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
EXCAVATION	N/A	N/A	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
CRUSHING AND SCREENING OF GRANITE	Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available. Dust Monitoring will also be conducted on site on a monthly basis.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
CRUSHING AND SCREENING OF GRANITE	Emission Monitoring: • The emissions generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Emission Handling and Monitoring: • Emissions will be monitored	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
CRUSHING AND SCREENING OF GRANITE	Noise Monitoring • The noise impact should be contained within the boundaries of the property, as it will represent the current activities.	Noise Handling and Monitoring: • Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the processing area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
CRUSHING AND SCREENING OF GRANITE	Protection of fauna	Monitor any ecologically sensitive species should they be observed on site.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Contain all activities within the boundaries of the approved processing area. • Demarcate, signpost and manage the 20 m buffer area as no-go area around areas with natural vegetation. • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control
CRUSHING AND SCREENING OF GRANITE	Monitoring of visual impacts. Inspect area for illegal littering and dumping	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the visual impact on the surrounding environment. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Minimize the visual impact of the activity on the surrounding environment	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
CRUSHING AND SCREENING OF GRANITE	Soil Management Topsoil Management **Soil erosion:** • Loss of reinstated topsoil after rehabilitation.	**Soil Handling:** • Excavating equipment to remove the first 500 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. • Ensure that topsoil is being kept separate form overburden. **Erosion monitoring:** • Grader to restore areas prone to soil erosion. • Planting of a cover crop to stabilize re-instated soil • Erosion prevention equipment.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer
CRUSHING AND SCREENING OF GRANITE	Surface water Bodies	**Surface water Monitoring:** Ensure no litter or contaminants lie on the ground.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
CRUSHING AND SCREENING OF GRANITE	Groundwater	**Groundwater Monitoring:** Equipment's needs to be monitored to prevent any hydrocarbon spills.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Management of Access Roads • The condition of the access road must be continuously monitored.	Management of Access Roads: • Dust suppression equipment such as a water car and dispenser. • Grader to restore the road surface when needed. Inspect intersections and roads will be clearly signposted. Drivers will be enforced to keep to set speed limits. Trucks will be in worthy condition with reflective strips	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Divert storm water around the access roads to prevent erosion. • Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access roads caused by the processing activities	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Noise Monitoring • The noise impact should be contained within the boundaries of the property, as it will represent the current activities.	Noise Handling and Monitoring: • Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the processing area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Soil Management Topsoil Management **Soil erosion:** • Loss of reinstated topsoil after rehabilitation.	**Soil Handling:** • Excavating equipment to remove the first 500 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. • Ensure that topsoil is being kept separate form overburden. **Erosion monitoring:** • Grader to restore areas prone to soil erosion. • Planting of a cover crop to stabilize re-instated soil • Erosion prevention equipment.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Groundwater	**Groundwater Monitoring:** Equipment's needs to be monitored to prevent any hydrocarbon spills.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

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TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Surface water Bodies	**<u>Surface water Monitoring:</u>** Ensure no litter or contaminants lie on the ground.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Monitoring of visual impacts. Inspect area for illegal littering and dumping	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the visual impact on the surrounding environment. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Minimize the visual impact of the activity on the surrounding environment	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
TRANSPORTATION OF GRANITE FROM STOCKPILE AREA TO CLIENTS	Waste Management: • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must check compliance daily.	Waste Management: • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • A hydrocarbon spill kit to enable sufficient clean-up of contaminated areas. • Drip trays must be available to place underneath equipment parked for the night. • Should a vehicle have a break down, it must be decommissioned immediately and removed from site to be serviced. • Waste disposal register and file for the keeping of safe disposal records. • Ensure that hazardous substances if any are stored within a securely fenced area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

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SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Soil Management Topsoil Management **Soil erosion:** • Loss of reinstated topsoil after rehabilitation.	**Soil Handling:** • Excavating equipment to remove the first 500 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. • Ensure that topsoil is being kept separate form overburden. **Erosion monitoring:** • Grader to restore areas prone to soil erosion. • Planting of a cover crop to stabilize re-instated soil • Erosion prevention equipment.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Soil Management Topsoil Management **Soil erosion:** • Loss of reinstated topsoil after rehabilitation.	**Soil Handling:** • Excavating equipment to remove the first 500 mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Berms to be made to direct storm- and runoff water around the stockpiled topsoil area. • Ensure that topsoil is being kept separate form overburden. **Erosion monitoring:** • Grader to restore areas prone to soil erosion. • Planting of a cover crop to stabilize re-instated soil • Erosion prevention equipment.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Strip and stockpile the upper 500 mm of the soil and protect as topsoil. • Remove topsoil at right angles to the slope to slow down surface runoff and prevent erosion. • Conduct topsoil stripping, stockpiling and re-spreading in a systematic way. Ensure topsoil is stockpiled for the minimum possible time. • Protect topsoil stockpiles against losses by water and wind erosion through the establishment of plants on the stockpiles. • Topsoil heaps may not exceed 1.5 m in order to preserve microorganism within the topsoil. • Conduct the activity in accordance with the Best Practice Guideline for small-scale mining as stipulated by DWS.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Dust Monitoring: • The dust generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Dust Handling and Monitoring: • Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available. Dust Monitoring will also be conducted on site on a monthly basis.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Emission Monitoring: • The emissions generated by the processing activities must be continuously monitored, and addressed by the implementation of dust suppression methods.	Emission Handling and Monitoring: • Emissions will be monitored	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Dampen the stockpiles during periods of high wind spells. • Assess effectiveness of dust suppression equipment. • Limit speed on the access roads to 40km/h to prevent the generation of	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Monthly compliance monitoring of site by fallout dust monitoring consultant. • Quarterly compliance monitoring of site by an Environmental Control Officer.

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			excess dust. • Spray gravel roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.	• Annual compliance monitoring of site by an Independent Environmental
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Noise Monitoring • The noise impact should be contained within the boundaries of the property, as it will represent the current activities.	Noise Handling and Monitoring: • Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition. • Compliance with the appropriate legislation with respect to noise will be mandatory.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the processing area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Groundwater	**Groundwater Monitoring:** Equipment's needs to be monitored to prevent any hydrocarbon spills.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Waste Management: • Management of waste must be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager must check compliance daily.	Waste Management: • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • A hydrocarbon spill kit to enable sufficient clean-up of contaminated areas. • Drip trays must be available to place underneath equipment parked for the night. • Should a vehicle have a break down, it must be decommissioned immediately and removed from site to be serviced. • Waste disposal register and file for the keeping of safe disposal records. • Ensure that hazardous substances if any are stored within a securely fenced area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Management of weed or invader plants • The presence of weed and/or invader plants must be continuously monitored, and any unwanted plants must be removed. Loss of natural vegetation.	Inspect progress of construction & ensure activity is in designated areas. Inspect area for damage to flora species. Establish alien invasive monitoring programme Management of weed or invader plants: • Removal of weeds must be manually or by the use of an approved herbicide. Management of buffer areas: • Site management has to ensure the use of visible beacons to demarcate the boundaries of the approved area. Protection of fauna: • Site management has to protect fauna that enters the processing area.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Implement a weed and invader plant management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Groundwater	**Groundwater Monitoring:** Equipment's needs to be monitored to prevent any hydrocarbon spills.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Surface water Bodies	**Surface water Monitoring:** Ensure no litter or contaminants lie on the ground.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Surface water Bodies	**Surface water Monitoring:** Ensure no litter or contaminants lie on the ground.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Health and safety risk	· Health and safety Management:	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure workers have access to the correct personal protection equipment (PPE) as required by law. • Manage all operations in compliance with the Occupational Health and Safety Act as well as the Mine Health and Safety Act.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
				site by an Independent Environmental Control
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Protection of fauna	Monitor any ecologically sensitive species should they be observed on site.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Contain all activities within the boundaries of the approved processing area. • Demarcate, signpost and manage the 20 m buffer area as no-go area around areas with natural vegetation. • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	N/A	Inspect area for erosion and pooling.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

NAME OF ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Inspect area for erosion and pooling.	Inspect area for erosion and pooling.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Ensure regular vehicle maintenance only take place within the service bay area of the on-site workshop. If emergency repairs are needed on site, ensure drip trays is present. Ensure all waste products are disposed of in a 200 litter closed container/bin inside the emergency service area. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility. File proof. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection must take place on a regular basis and waste must be disposed of at the recognized landfill site at Robertson. Prevent refuse from being dumped on or near the processing area. • Biodegradable refuse to be handled as indicated above. • Ensure that chemical toilet facilities function properly, is not abused and does not pose any harm to the environment. • Ensure that pollution control measures are adequate and well maintained, e.g. bund walls, drop pan and concrete slabs, in order to prevent soil and water pollution.	• Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Monitoring of visual impacts. Inspect area for illegal littering and dumping	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Control the height of the stockpiles to minimize the visual impact on the surrounding environment. • Remove all infrastructure upon rehabilitation of the processing area and return the area to its prior status.	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Minimize the visual impact of the activity on the surrounding environment	• Throughout Operational Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.
SLOPING, RESHAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Fire Management	Fire Management	Responsibility: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the Environmental Control Officer. Role: • Immediately stop work should any evidence of human burials or other heritage artefact be discovered during the execution of the activities. • Notify Heritage Mpumalanga and the ECO immediately. • Work may only commence once the area was cleared by Heritage Mpumalanga.	• Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer. • Annual compliance monitoring of site by an Independent Environmental Control Officer.

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

The Mineral and Petroleum Resources Development Regulations stipulates that performance assessment reporting should be done annually. The applicant commits to submitting the performance assessment reports of the proposed processing activity annually to DMR for perusal.

(m) Environmental Awareness Plan

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

The purpose of this section is to outline the methodology that will be used to educate the mine's employees and contractors of any environmental risks associated with their work and the manner in which these risks must be dealt with so as to avoid pollution and minimize the degradation of the environment.

Once Mining of the proposed area starts, a copy of the Basic Assessment Report and Environmental Management Programme report will be handed to the site manager during the site establishment meeting. Issues such as topsoil handling, site clearance, fire principals and hazardous waste handling will be discussed. An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct with regard to the environment. Please refer to
Appendix L for the Environmental Awareness Plan for the proposed Mining permit area.

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments. An Environmental Control Officer needs to check compliance of the Mining activities to the management programmes described in the EMPR.

Training Needs

A training needs analysis will be performed through all levels of the organization including those within the administration, plant and Mining worker sectors. Each of the categories / levels of the organization have different responsibilities and roles, accordingly different knowledge requirements are applicable. These are summarized in Table 10 below.

After the training needs have been identified, it is the responsibility of the SHE Office to ensure that personnel attend the relevant identified training.

Training will also address the specific measures and actions as listed in the EMPR. This Environmental Awareness Plan (EAP) is intended to supplement the Safety, Health and Environmental (SHE) training and awareness requirements. Issues such as topsoil handling, site clearance, fire principals and waste handling will be discussed with the manager to ensure that he understands the goals as set out in the EMPR. An induction meeting will also be held with all the site workers to inform them of the basic steps towards environmental awareness with regard to the environment.

Table 10: Environmental Awareness Plan

OCCUPATION CATEGORY	ENVIRONMENTAL MANAGEMENT RESPONSIBILITY / ROLE	REQUIRED KNOWLEDGE AND INPUT	TRAINING REQUIRED	INTERVAL
Senior Management including Process Managers and Head of Department	Managing the Social & Environmental Assessment & Management System (SEAMS), and the Safety, Health & Environmental (SHE) Management System	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the significant impacts as described in the EIA/EMP during the various phases		
		Knowledge of the commitments made in the EMP relevant to the various phases		
		Setting and reviewing the mine's Environmental objectives		
		Directing the SEAMS and SHE management system, and monitoring their progress		
		Accessing the legal register and searching for details	Training on the legal register	Once off
		Emergency preparedness and response		
Environmental Management Representative, SHE Officer & Internal Auditor	Managing the SEAMS and the SHE Management System Monitoring and auditing	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the significant impacts as described in the EIA/EMP during the various phases		
		Knowledge of the commitments made in the EMP relevant to the various phases		
		Directing the SEAMS and SHE management system, and monitoring their progress		
		Current knowledge of South African regulatory requirements, best practice guidelines and applicable legislation	Training on the legal register	On going
		Emergency preparedness and response		
		Knowledge in spill management, stockpile management, discard management, water management and waste management	Meetings and Talk Topics	Continuous
		Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting		
		Knowledge of the SABS standards and other relevant legislation regarding the correct storage of chemicals	Training on the SABS standards and other legislation	Annual
		Knowledge of auditing techniques and report writing	Auditor training	Annual
Section Managers & Section Engineers	Implementation and daily management of the SEAMS and the SHE Management System	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the relevant department's significant impacts as described in the EIA/EMP during the construction and operational phases		
		Actively implementing actions to achieve SEAMS Management Plans and Environmental Objectives.	Meetings and talk topics	Continuous
		Knowledge in stockpile management, discard management, water management and waste management		
		Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting		
		Knowledge in the correct storage of chemicals		
Engineering HOD & General Engineering Supervisor	Implementation and daily management of the SEAMS and the SHE Management System	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the relevant department's significant impacts as described in the EIA/EMP during the construction and operational phases		
		Actively implementing actions to achieve SEAMS Management Plans and Environmental Objectives.		
		Knowledge in spill management and waste management	Meetings and talk topics	Continuous
		Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting		

Table 10: Environmental Awareness Plan

OCCUPATION CATEGORY	ENVIRONMENTAL MANAGEMENT RESPONSIBILITY / ROLE	REQUIRED KNOWLEDGE AND INPUT	TRAINING REQUIRED	INTERVAL
		Knowledge in the correct storage of chemicals		
Mine Captain & General Engineering Supervisors	Implementation and daily management of the SEAMS and the SHE Management System	Understanding the purpose of the SEAMS and SHE Management System Knowledge of the relevant department's significant impacts as described in the EIA/EMP during the construction and operational phases Actively implementing actions to achieve SEAMS Management Plans and Environmental Objectives.	General in-house, management training	Once off
		Knowledge in spill management and waste management Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting Knowledge in the correct storage and handling of chemicals Understanding the requirements for not polluting the environment	Meetings and talk topics	Continuous
Supervisors, Shift Boss & Forman	General Environmental Awareness and job specific impacts	Understanding the purpose of the SEAMS and SHE Management System Knowledge of the relevant department's significant impacts as described in the EIA/EMP during the construction and operational phases Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting Knowledge in spill management and waste management Understanding the requirements for not polluting the environment	General in-house, management training	Once off
Operators, tradespersons & Floor Employees	General Environmental Awareness and job specific impacts	General Awareness of aim and purpose of the SEAMS and SHE Management System Understanding the SEAMS Management Plan relevant to their operations Understanding the requirements for not polluting the environment General understanding of the relevant Operational procedures, Emergency Response Plans and Incident reporting	Environmental Awareness Training	Annual
General Administration Staff	General Environmental Awareness and job specific impacts	General Awareness of aim and purpose of the SEAMS and SHE Management System Understanding the SEAMS Management Plan relevant to their operations Understanding the requirements for not polluting the environment General understanding of the relevant Operational procedures, Emergency Response Plans and Incident reporting	Environmental Awareness Training	Annual
Security	General Environmental Awareness and job specific impacts	General Awareness of aim and purpose of the SEAMS and SHE Management System Understanding the requirements for not polluting the environment General understanding of the relevant Operational procedures, Emergency Response Plans and Incident reporting	Environmental Awareness Training	Annual
Senior Management including Process Managers and Head of Department	Managing the Social & Environmental Assessment & Management System (SEAMS), and the Safety, Health & Environmental (SHE) Management System	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the significant impacts as described in the BAR/EMP during the various phases		
		Knowledge of the commitments made in the EMP relevant to the various phases		
		Setting and reviewing the mine's Environmental objectives		
		Directing the SEAMS and SHE management system, and monitoring their progress		
		Accessing the legal register and searching for details	Training on the legal register	Once off
		Emergency preparedness and response		
Environmental Management Representative	Managing the SEAMS and the SHE Management System Monitoring and auditing	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the significant impacts as described in the EIA/EMP during the various phases		
		Knowledge of the commitments made in the EMP relevant to the various phases		

Table 10: Environmental Awareness Plan

OCCUPATION CATEGORY	ENVIRONMENTAL MANAGEMENT RESPONSIBILITY / ROLE	REQUIRED KNOWLEDGE AND INPUT	TRAINING REQUIRED	INTERVAL
		Directing the SEAMS and SHE management system, and monitoring their progress		
		Current knowledge of South African regulatory requirements, best practice guidelines and applicable legislation	Training on the legal register	On going
		Emergency preparedness and response		
		Knowledge in spill management, stockpile management, discard management, water management and waste management	Meetings and Talk Topics	Continuous
		Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting		
		Knowledge of the SABS standards and other relevant legislation regarding the correct storage of chemicals	Training on the SABS standards and other legislation	Annual
		Knowledge of auditing techniques and report writing	Auditor training	Annual
Section Managers & Section Engineers	Implementation and daily management of the SEAMS and the SHE Management System	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the relevant department's significant impacts as described in the EIA/EMP during the construction and operational phases		
		Actively implementing actions to achieve SEAMS Management Plans and Environmental Objectives.	Meetings and talk topics	Continuous
		Knowledge in stockpile management, discard management, water management and waste management		
		Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting		
		Knowledge in the correct storage of chemicals		
Engineering HOD & General Engineering Supervisor	Implementation and daily management of the SEAMS and the SHE Management System	Understanding the purpose of the SEAMS and SHE Management System	General in-house, management training	Once off
		Knowledge of the relevant department's significant impacts as described in the EIA/EMP during the construction and operational phases		
		Actively implementing actions to achieve SEAMS Management Plans and Environmental Objectives.		
		Knowledge in spill management and waste management	Meetings and talk topics	Continuous
		Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting		
		Knowledge in the correct storage of chemicals		
Mine Captain & General Engineering Supervisors	Implementation and daily management of the SEAMS and the SHE Management System	Understanding the purpose of the SEAMS and SHE Management System. Knowledge of the relevant department's significant impacts as described in the BAR/EMP during the construction and operational phases Actively implementing actions to achieve SEAMS Management Plans and Environmental Objectives. Knowledge in spill management and waste management Knowledge of the relevant Operational procedures, Emergency Response Plans and Incident reporting Knowledge in the correct storage and handling of chemicals Understanding the requirements for not polluting the environment	General in-house, management training	Once off
			Meetings and talk topics	Continuous
Supervisors, Shift Boss & Forman	General Environmental Awareness and job specific impacts		General in-house, management training	Once off

Table 10: Environmental Awareness Plan				
OCCUPATION CATEGORY	**ENVIRONMENTAL MANAGEMENT RESPONSIBILITY / ROLE**	**REQUIRED KNOWLEDGE AND INPUT**	**TRAINING REQUIRED**	**INTERVAL**
Operators, tradespersons & Floor Employees		General Awareness of aim and purpose of the SEAMS and SHE Management System Understanding the SEAMS Management Plan relevant to their operations Understanding the requirements for not polluting the environment	Environmental Awareness Training	Annual
General Administration Staff				
Security				

Specialized Skills

The Training Department in conjunction with the SHE Officer are responsible for ensuring job specific training for personnel performing tasks, which can cause significant environmental and social impacts (e.g. receipt of bulk hazardous chemicals/fuel, hazardous materials handling, responding to emergency situations etc.). The Mining Right Manager with the assistance of the SHE Officer must identify relevant personnel and training courses.

On the job training is an essential tool in environmental awareness. Employees must be given details of the expected environmental issues and concerns specifically related to their occupation. Employees must be trained on how to respond if an environmental problem or source of environmental pollution arises. The training will be on-going, and all new employees will be provided with the same standard of training as existing employees.

Review of Training Material

Effectiveness of the environmental management training will be done by the management through task observations and during internal and external audits.

All training material for presentation to personnel and contractors will be reviewed annually to ensure consistency with organizational requirements and best practice guidelines. In addition to this, annual monitoring reports, audit results and all incident reports will be reviewed, any short comings and non-compliancy will be highlighted and management measures incorporated or improved upon within the training material.

Records

Records from the implementation of this EAP will be kept and controlled in accordance with the SHE Management System Control of Records Procedure, which is required to be implemented so as to provide evidence of conformity and effective operation of the relevant requirements of the SHE management system.

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

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

Please refer to Appendix L for the full Environmental Awareness Plan for Aroams Quarry.

EMERGENCY RESPONSE PLAN AND PROCEDURES

As part of its management tools, a mine must have an Emergency Response Plan. These plans will be disseminated to all employees and contractors in the event of an emergency. In the case of a medical accident or problem, the mine has first aid kits available at various points and an emergency room. A First Aid officer will be on duty at all times. In the event of an emergency the checklist of emergency response units must be consulted and the relevant units notified.

Communication is vital in an emergency and thus communication devices, such as mobile phones, two-way radios, pagers or telephones, must be placed around the mine. Should the emergency have the potential to affect the surrounding communities, they will be alerted via alarm signals or contacted in person.

Emergency services will be sourced from the nearest main town, Aggeneys wherever possible. Contact details for the emergency services and local authorities are listed below; these will be displayed on site and made available to all employees and contractors.

Police Station (Aggeneys):	**054 983 2437**
Department of Water and Sanitation:	**056 811 5834**
Department of Mineral Resources:	**053 807 1700**
Department of Environment and Nature Conservation:	**053 807 7300**
Department of Roads and Public Works:	**053 839 2100**
Department of Economic Development and Tourism:	**053839 4000**
Department of Agriculture, land reform and rural development:	**053 838 9100**

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; and
- 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 drink from streams;
- After a heavy rainstorm or at least every 3 months, all water pollution control structures like storm water berms and trenches will be checked for signs of damage or change in its capacity;
- Any damage to any water pollution structures will be repaired immediately; and
- Any of the above actions will be included in the performance assessment report to the Department of Mineral Resources (DMR).
- Maintenance activities shall not lead to undue damage, blockages or disruption of the drainage lines or stormwater channels on site or concentrate stormwater sheet flow into erosive channels.
- Sediment to be removed on a need basis from all drainage channels, culverts and pipes under roads to prevent blocked pipes and erosion damage to road sides due to disrupted flow.

- Significant erosion in the drainage lines or stormwater channels or swales shall be addressed by implementing water slowing measures e.g. temporary straw bales or sand bags or permanent gabion weirs and stabilised overflows and crossings to prevent recurrence.
- All erosion channels anywhere on site shall be repaired immediately through backfilling with appropriate material and stabilising to prevent recurrence.
- Where vegetation has been washed away or damaged as a result of the erosion this shall be reinstated once the area has been stabilised.
- Stabilisation measures e.g. grass blocks shall be maintained in good repair.
- No materials or wastes shall be dumped into stormwater channels, in the drainage lines or their buffer zones. Any litter or foreign material blown or washed into these areas inadvertently is to be removed regularly (minimum monthly) without undue disturbance to the vegetation and stability of the area.
- Fuel or oil or other chemical spills anywhere on site should be treated immediately with an appropriate mop-up or bio-remedial product as directed by manufacturers to prevent contamination of runoff.

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; and
- Pick-up any litter laying around.

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

Hydrocarbons such as diesel, petrol, and oil which are used as fuel for mine machinery which is kept on site, increases the possibility that spillage may occur. As this is a product mine there is also the possibility of a product spillage occurring. In the event of a spillage, procedures must be put into place to ensure that there are minimal impacts to the surrounding environment.

Diesel, engine oil and hydraulic oil are the most likely hydrocarbons identified during impact assessments that can result in an emergency situation.

The following procedure applies to a hydrocarbon spill:

- If any spills take place the contaminant together with the soil will be removed and placed in acceptable container to be removed with industrial waste to a recognised licence facility or licenced company.
- Bioremediation will be done on site to the satisfaction of DENC
- A spill clean-up kit is available at the storage yard
- All personnel will be trained n spill clean-up methodologies.
- Every precaution will be taken to prevent the spill from entering the surface water environment;

- In the event of a large spillage, adequate emergency equipment for spill containment or collection, such as additional supplies of booms and absorbent materials, will be made available and if required, a specialised clean-up crew will be called in to decontaminate the area. The soil will be removed and treated at a special soil rehabilitation facility;
- If the spill is larger than 100 litres the Department of Environmental and Nature Conservation (Northern Cape) (DENC) will be notified by fax and or phone within 24-hour of the event.
- Reasonable measures must be taken to stop the spread of hydrocarbons and secure the area to limit access;
- Dispatch necessary services;
- The incident must be reported to the Environmental coordinator immediately;
- The Environmental Coordinator will assess the situation from the information provided, and set up an investigation team or relevant personnel. Included in this team could be the Mine Manager, Chief Safety Officer, the employee who reported the incident and any individual responsible for the incident;
- When investigating the incident, priority must be given to safety;
- Once the situation has been assessed, the Environmental Coordinator must report back to the Mine Manager;
- The Mine Manager and the investigation team must make a decision on what measures can be taken to limit the damage caused by the incident, and if possible any remediation measures that can be taken;
- The source / reason of the spill or leak will be addressed immediately;
- Never mix general waste with hazardous waste;
- Use only sealed, non-leaking containers;
- Keep all containers closed and store only in approved areas;
- Always put drip trays under vehicles and machinery;
- Empty drip trays after rain;
- Stop leaks and spills, if safe;
- Keep spilled liquids moving away;
- Immediately report the spill to the site manager/supervision;
- Locate spill kit/supplies and use to clean-up, if safe;
- Place spill clean-up wastes in proper containers; and
- Label containers and move to approved storage area.

Breakdown of vehicles or equipment outside vehicle maintenance yard:

If any equipment of vehicles breaks down inside the pit or outside the storage yard the following emergency procedure will be followed:

- Drip pans will be placed at all point s where diesel, oil or any hydraulic fluid can rip and contaminate the oil;
- All efforts will be made to remove the vehicle or equipment to the storage area;
- If the vehicle or equipment cannot be removed the broken part will be drained of all fluid and the specific part remove to the service area;
- No repairs will be allowed to take place outside the maintenance yard or service area; and

- Any spills will be managed as described in the hydrocarbon section above.

Explosions

Explosions can occur in the plant and workshop areas when working with gas cylinders and chemicals.
These could result in large numbers of employees being injured and requiring medical assistance.
The procedure to be followed is:

- Alternative evacuation routes will be devised, should a rock fall occur as a result of the explosion; and
- All relevant emergency response units must be notified and hospitals informed of incoming patients.

Discoveries:

- Stop work immediately;
- Notify site manager/supervisor; and
- Includes – Archaeological finds, Cultural artefacts, Contaminated water, Pipes, Containers, Tanks and drums, Any buried structures.

Air Quality:

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

Driving and Noise

- Use only approved access roads;
- Respect speed limits;
- Only use turn-around areas – no crisscrossing through undisturbed areas;
- Avoid unnecessary loud noises; and
- Report or repair noisy vehicles.

Flora and Fauna

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

Fire Management

Veld fires and fires resulting from other sources must be handled with extreme caution. Fire extinguishers will be placed around the mine.

The following procedures apply to fires:

- In the event of a fire an alarm will be activated to alert all employees and contractors;
- Identify the type of fire and the appropriate extinguishing material. For example, water for a grass fire, and mono ammonium phosphate based fire extinguisher for chemical and electrical fires;
- In the event of a small fire the fire extinguishers placed around the mine will be used to contain and extinguish the fire;
- In the event of a large fire, the fire department will be notified and must react timeously;
- All staff will receive training in response to a fire emergency on site;
- A Fire Protection Association will be set up with the mine and surrounding land owners to facilitate communication during fire events and assist in fighting fires, where necessary;
- Fire breaks has been established and will be maintained around the Mining area for the duration of the project;
- If possible all surrounding drains, such as storm water drains need to be covered and or protected to prevent any contaminated water from entering the drains
- In case of a chemical or petroleum fire, run-off from the area will be contained as far as possible using the most appropriate measures e.g. spill absorbent cushions, sand or a physical barrier;
- Contaminated run-off must be diverted into an oil sump, or cleaned up;
- All firefighting equipment will be inspected at least monthly to ensure that these are functioning;
- 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; and
- Don’t burn waste or vegetation.

In addition to the induction meeting to be held with the site employees to inform them of the basic steps towards environmental awareness, the operators of earth moving equipment should be informed of the following requirements:

- Mining within demarcated areas;
- No-go areas;
- Establishment of access roads;
- Handling of hazardous waste and their storage facilities;
- Handling of biodegradable and non-degradable waste;
- Vehicle maintenance;
- Mining methods to be followed;

- Handling and storing of topsoil;
- Capping of drill holes;
- Speed control in order to reduce dust;
- Emergency procedure awareness;
- Labourers must be informed of the following during “toolbox talks”:
- Reporting of unusual observations to management (e.g. fossils, graves, etc.);
- Reporting of spills to management;
- Felling or damaging trees for firewood not allowed;
- Making fires not allowed;
- Hunting and killing of animals not allowed;
- Demarcated areas for mining;
- Establishing of access roads and erection of gates in fence lines;
- Toilet facilities and hygiene measures;
- Handling of waste;
- Vehicle maintenance and vehicle maintenance yard;
- Handling of topsoil; and
- Emergency procedures awareness.

Flora and Fauna including alien invasive species

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

Maintenance and Infrastructure Management

- Infrastructure visibly in good repair and operational areas kept tidy.
- The footprint of the operations and vehicular circulation is clearly defined with no "spill over" into other areas of the site.
- Roads are stable and in good repair and
- Fences and gates are in good repair.

(n) Specific information required by the Competent Authority

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

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

Effectiveness of the environmental management training will be done by the management through task observations and during internal and external audits. All training material for presentation to personnel and contractors will be reviewed annually to ensure consistency with organizational requirements and best practice guidelines. In addition to this, annual monitoring reports, audit results and all incident reports will be reviewed, any short comings and non-compliancy will be highlighted and management measures incorporated or improved upon within the training material.

2) UNDERTAKING

The EAP herewith confirms

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

Signature of the environmental assessment practitioner:

Greenmined Environmental

Name of Company:

16 May 2019

Date:

-END-

APPENDIX LIST