PROPOSED MINING OF DOLERITE ON PORTION 5 OF FARM LATHAM 205, QUEENSTOWN, EASTERN CAPE PROVINCE & PORTION 2 OF FARM CATHCART'S GIFT 311, QUEENSTOWN, EASTERN CAPE

DRAFT BASIC ASSESSMENT REPORT

AUGUST 2016

REFERENCE NUMBER: EC30/5/1/3/2/10342MP

PREPARED FOR:

Mr. David Hayes
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PREPARED BY:

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ABBREVIATIONS

CARA	Conservation of Agricultural Recourses Act, 1983
DARDLA	Department of Agriculture, Rural Development and Land Administration
DBAR	Draft Basic Assessment Report
DEDET	Department of Economic Development, Environment and Tourism
DLCC	Department of Labour
DMR	Department of Mineral and Resources
DPWRT	Department of Public Works, Roads and Transport
DRDLR	Department of Rural Development and Land Reform
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EMPr	Environmental Management Programme
FBAR	Final Basic Assessment Report
GVA	Gross Value Added
HIA	Heritage Impact Assessment
I&AP's	Interested and Affected Parties
IBS	Department of Infrastructure and Basic Services
LED	Local Economic Development
MPRDA	Minerals and Petroleum Resources Development Act, 2002
MR	Mining Right
MSDS	Material Safety Data Sheets
PCBs	Polychlorinated Biphenyls
PPE	Personal Protective equipment
S1	Site Alternative 1
S2	Site Alternative 2
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAPS	South African Police Service
WMA	Water Management Area

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: Mr. David Hayes

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FILE REFERENCE NUMBER SAMRAD: EC30/5/1/3/2/10342MP

1. IMPORTANT NOTICE

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

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

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

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

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

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 the 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
	Niel Odendaal
Tel No.:	011 966 4390
Fax No.:	086 546 0579
E-mail address:	niel.o@greenmined.co.za

ii) Expertise of the EAP.

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

(with evidence).

Mr. Niel Odendaal has a B.sc degree in geology and geography and an Honors B.sc. degree in environmental management and geography Full CV with evidence attached as Appendix I.

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

(In carrying out the Environmental Impact Assessment Procedure)

Mr. Niel Odendaal has 1 year experience in doing Environmental Assessments and 1year experience in pro bono university Environmental Assessments. See a list of past project attached as Appendix I

b) Location of the overall Activity.

Farm Name:	Portion 5 of farm Latham 205, Queenstown, Eastern Cape province & portion 2 of farm Cathcart's gift 311, Queenstown, Eastern Cape
Application area (Ha)	4.89 ha
Magisterial district:	Queenstown
Distance and direction from the nearest town	Komani – 14 km North East
21 digit Surveyor General Code for each farm portion	C06200000000020500005 & C06200000000031100002

c) Locality map

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

The requested map is attached as Appendix A1.

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

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

The Applicant Mr. David Hayes intents to apply for a mining permit to mine two sections, site 1 - 2.800134 ha and site 2 - 2.08 ha that comes to a total of 4.89 ha on a portion of Portion 5 of farm Latham 205, Queenstown, Eastern Cape Province province & portion 2 of farm Cathcart's gift 311, Queenstown, Eastern Cape. It must be noted that the applicant is the land owner.

The applicant intents to mine the proposed area for gravel through mechanical excavation. The mining method will not require any crushing to be done. Blasting will be done if needed (limited to one blast). As the material to be mined is already in aggregate form, only excavation equipment is needed. Blasting will only be done to loosen oversized rocks. Upon stripping and stockpiling of the topsoil the gravel will be loaded by excavator onto trucks that will transport it from the site to the clients. All activities will be contained within the boundaries of the site.

The proposed mining areas combined is approximately 4.89ha and respectively Site 1 - 2.800134ha and Site 2 - 2.08ha in extent and the applicant intents to win gravel from the area for at least two years with a possibility of a three year extension. The gravel to be removed from the mining area will be supplied to the road construction industry in the Whittlesea district. The proposed mining project will contribute to the upgrading/maintenance of road infrastructure in and around the Queenstown and Whittlesea areas.

A generator will be used to power the infrastructure on site until an Eskom connection can be secured. Process water will be obtained from Mr. David Hayes (landowner) reservoir. The water will mainly be used for dust suppression purposes on the roads and mining area.
See the requested map attached as Appendix B.

(i) Listed and specified activities

NAME OF ACTIVITY	Aerial extent of	LISTED	APPLICABLE LISTING

(E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc **E.g. for mining –** excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accomdation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**the activity** **Ha or m^2**	**ACTIVITY** **Mark with an X where applicable or affected**	**NOTICE** **(GNR 544, GNR 545 OR GNR 546)**
Open cast mining	2.81ha + 2.08ha = 4.89	X	NR 983 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 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 associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource, 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).
Open cast mining	2.81ha + 2.08ha = 4.89	X	GNR 983 Listing Notice 1 Activity 22: The decommissioning of any activity requiring a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002)
Open cast mining	2.81ha + 2.08ha = 4.89	X	GNR 983 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 27 (Mining Area): The clearance of an area of 1 hectare or more, but less than

			20 hectares of indigenous vegetation.
Open cast mining and stockpile area	2 ha	X	GNR 983 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28 (Mining and Stockpile area): Residential, mixed, retail, commercial
Open Cast mining and stockpile area	2 ha	X	GNR 983 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 35 (Mining and Stockpile area): The expansion of commercial developments on land previously used for mining or heavy industrial purposes, where the increased development footprint will exceed 1 000 square metres.

(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 two area's earmarked for the proposed development is situated on Portion 5 of farm Latham 205, Queenstown, Eastern Cape Province & Portion 2 of farm Cathcart's Gift 311, Queenstown, Eastern Cape found on the R67 approximately 14 km South West of Komani.

The GPS coordinates for the proposed site(s) (Site alternative 1) are as listed below:

Site 1& 2

DEGREES, MINUTES, SECONDS (DD˚MM'SS")			**DECIMAL DEGREES (DD)**	
	LATITUDE	**LONGITUDE**	**LATITUDE**	**LONGITUDE**
A	31^{o} 59'40.73"S	26^{o} 47'40.99"E	-31.994647°S;	26.794719°E
B	31^{o} 59'44.51"S	26^{o} 47'46.42"E	-31.995697°S;	26.796228°E
C	31^{o} 59'40.43"S	26^{o} 47'49.88" E	-31.994564°S;	26.797189°E
D	31^{o} 59'36.70"S	26^{o} 47'44.50"E	-31.993528°S;	26.795694°E

DEGREES, MINUTES, SECONDS (DD˚MM'SS")			DECIMAL DEGREES (DD)	
	LATITUDE	**LONGITUDE**	**LATITUDE**	**LONGITUDE**
A	32^{o} 0'20.84"S	26^{o} 48'11.01"E	-32.005789°S;	26.803058°E
B	32^{o} 0'16.19"S	26^{o} 48'11.55"E	-32.004497°S;	26.803208°E
C	32^{o} 0'12.19"S	26^{o} 48'8.85"E	-32.003386°S;	26.802458°E
D	32^{o} 0'16.87"S	26^{o} 48'8.86"E	-32.004686°S;	26.802461°E

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) will be submitted to the Department of Mineral Resources.

The proposed project triggers the following listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations as amended 2014 and therefore requires a basic assessment process to obtain environmental authorisation:

- GNR 983 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 21:

  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 associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource, 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).
- GNR 983 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 22:

  The decommissioning of any activity requiring a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002).

- GNR 983 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 983 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28:

  Commercial 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 983 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 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 1000 square meters;

- *Other legislation triggered by the proposed project:*

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 Resources.

Site Establishment / Construction phase:

During the site establishment phase the applicant have to fence the footprint area and clear the topsoil from the applied area.

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 aggregate 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 of the following:

- Stripping and stockpiling of topsoil
- Blasting (Minimal, limited to one blast)
- Excavation of gravel
- Stockpilings
- Loading and transportation of mineral to clients
- Sloping and landscaping upon closure of the site
- Replacing the topsoil and vegetating the disturbed area

The mining site will contain the following:

- Excavation Equipment
- ADT trucks
- Chemical toilet to be used by employees
- Security control room

- Salvage yard demarcated but not fenced
- One above ground diesel tank 23000L
- 1 x 60 ton Weigh Bridge

Operational phase:

The applicant intents to mine the proposed area for gravel through mechanical excavation. The mining method will not require any crushing to be done. Blasting will be done if needed (limited to one Blast). As the material to be mined is already in aggregate form, only excavation equipment is needed. Blasting will only be done to loosen oversized rocks. Upon stripping and stockpiling of the topsoil the gravel will be loaded by excavator onto trucks that will transport it from the site to the clients. All activities will be contained within the boundaries of the site.

The proposed mining areas combined is approximately 4.89ha and respectively Site 1 - 2.800134ha and Site 2 - 2.08ha in extent and the applicant intents to win gravel from the area for at least two years with a possibility of a three year extension. The gravel to be removed from the mining area will be supplied to the road construction industry in the Whittlesea district. The proposed mining project will contribute to the upgrading/maintenance of road infrastructure in and around the Queenstown and Whittlesea areas.

The stockpiling process includes mechanical loading and transportation of the sought aggregate. As mentioned previously the aggregate will be loaded with a front end loader onto trucks upon which it will be weighed and transported to the client. No crushing or washing will be needed. The stockpiling activities will consist of the following:

- Loading of aggregate
- Weighing of aggregate
- Transportation of aggregate

No maintenance and servicing of machinery will be done at the mining area. Should a vehicle need maintenance it will be moved off-site to the applicants existing workshop. A chemical toilet 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 aggregate from the mining site to the client. Haul trucks will travel along the existing farm road up to the provincial/public road. Turning right they will travel along the existing R67 road, as illustrated below.

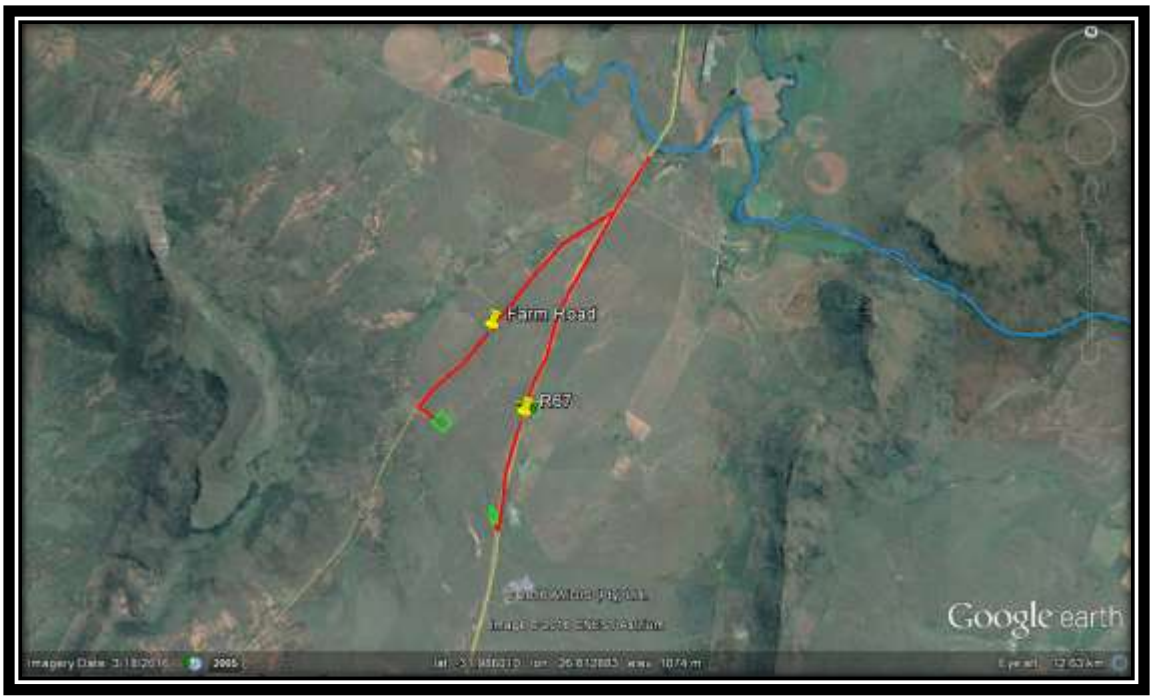

Figure 1: Satellite view indicating the proposed access road to the mining site

Decommissioning phase:

The closure objectives are for the mining area to be made safe and the remainder of the site to be returned to agricultural use. 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 established 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:

- Landscaping during rehabilitation
- Replacing of topsoil
- Implementation of an alien invader plant management plan

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	Application for a mining Permit Ref No: EC30/5/1/3/2/10342MP	Act No. 28 of 2002 Section 27
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014	Application for environmental authorisation Ref Nr: EC30/5/1/3/2/10342MP	GNR 983 Listing Notice 1 Activity 21, 22, 27, 28 and 35
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) and amendments	Biophysical Environment	No aspects of the project could be identified that triggers the NEMA:BA
Mine Health and Safety Act, 1996 (Act No 29 of 1996)	The mitigation measures proposed for the site includes specifications of the MHSA	The operational phase of the Stockpile will trigger the MHSA
National Heritage Resources Act No 25 of 1999	Cultural and Heritage Environment	No aspects of the project could be identified that triggers the NHRA.
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	Biophysical Environment	All alien invader plants on site needs to be controlled in terms of CARA
Eastern Cape Nature Conservation Act, 1998 (Act 10 of 1998)	Biophysical Environment	No aspects on site could be identified that needs protection in terms of the NCA.
Eastern Cape Land Use Planning Act, 2014 (Act No. 3 of 2014)	Part A(iv)(1)(b) Description of the current land uses	The applicant will submit an application for temporary departure from the zoning provisions in terms of the Land Use Planning Act 3/2014 and the lukhanji Local Municipal Land Use Bylaws 264/2015 prior to commencement of the proposed activities.
Lukhanji Local Municipality Local Municipality Municipality: Land Use Planning Bylaws, 2015 (No 264 of 2015) Lukhanji Local Municipality Local Municipality Spatial Development Framework	Part A(iv)(1)(b) Description of the current land uses	

e) 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 aggregate. The proposed mining will also contribute to the diversification of activities on the property, extending it from agriculture to include small scale mining. It must be noted that the applicant is the land owner.

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

The proposed site earmarked for the mining of the loose aggregate will entail an area previously used for agriculture and 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 aggregate form and will not need to be blasted in order to loosen the material.
- The proposed sites was previously used for mining activities, thus minimal environmental damage will occur.
- The proposed mining area was defined to be further than 500m form a valley bottom wetland in the vicinity.
- The mining area can be reached by an existing farm access road that connects to R67. 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.
- 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. As maintenance and servicing of the equipment will be done at an off-site workshop 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.

g) 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.

h) 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 two alternative sites for the proposed mining activity namely:

1. **Site Alternative 1 (S1) (Preferred Alternative):** The Applicant Mr. David Hayes intents to apply for a mining permit to mine two sections, site 1 - 2.800134 ha and site 2 - 2.08 ha (Combined known as Site Alternative 1) that comes to a total of 4.89 ha Site Alternative 1 entails the mining of the proposed area (4.89 ha) within the boundaries of the following GPS Coordinates:

DEGREES, MINUTES, SECONDS (DD˚MM'SS")			**DECIMAL DEGREES (DD)**	
	LATITUDE	**LONGITUDE**	**LATITUDE**	**LONGITUDE**
A	31^{o} 59'40.73"S	26^{o} 47'40.99"E	-31.994647°S;	26.794719°E
B	31^{o} 59'44.51"S	26^{o} 47'46.42"E	-31.995697°S;	26.796228°E
C	31^{o} 59'40.43"S	26^{o} 47'49.88" E	-31.994564°S;	26.797189°E
D	31^{o} 59'36.70"S	26^{o} 47'44.50"E	-31.993528°S;	26.795694°E
DEGREES, MINUTES, SECONDS (DD˚MM'SS")			**DECIMAL DEGREES (DD)**	
	LATITUDE	**LONGITUDE**	**LATITUDE**	**LONGITUDE**
A	32^{o} 0'20.84"S	26^{o} 48'11.01"E	-32.005789°S;	26.803058°E
B	32^{o} 0'16.19"S	26^{o} 48'11.55"E	-32.004497°S;	26.803208°E
C	32^{o} 0'12.19"S	26^{o} 48'8.85"E	-32.003386°S;	26.802458°E

D	32° 0'16.87"S	26° 48'8.86"E	-32.004686°S;	26.802461°E

Figure 2: Satellite view showing the position of Site Alternative 1 (site 1 - 2.800134 ha and site 2 - 2.08 ha (Combined known as Site Alternative 1))

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 site offers the mineral sought after,
- The Site is 500m away from a valley bottom wetland in the vicinity
- The proposed footprint area was previously used for agricultural grazing and mining therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area.
- The mining area can be reached by an existing access road that formally connects to the R67. No new road infrastructure need to be constructed.
- The mining site is more than 14 km away from the Komani residential area and will not affect the community dust and noise wise.
- 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.
- The mineral to be mined is already in aggregate form and will not need to be blasted in order to loosen the material.

2. **Site Alternative 2 (S2):** Site Alternative 2 entails the mining of a 4.84 ha area within the boundaries of the following GPS Coordinates:

DEGREES, MINUTES, SECONDS (DD°MM'SS")			DECIMAL DEGREES (DD)	
	LATITUDE	**LONGITUDE**	**LATITUDE**	**LONGITUDE**
A	31°59'37.40"S	26°47'33.48"E	-31.993722°S	26.792633°E
B	31°59'31.27"S	26°47'37.86"E	-31.992020°S	26.793850°E
C	31°59'35.30"S	26°47'44.99"E	-31.993139°S	26.795831°E
D	31°59'40.65"S	26°47'40.57"E	-31.994626°S	26.794602°E

Figure 3: Satellite view showing the position of Site Alternative 2

The applicant investigated the possibility of establishing the proposed Mining area closer to the haul road to cut transporting costs. This alternative was however found **not** to be the **preferred** alternative due to the following reasons:

- The site alternative will entail the building of a new road to gain access to the site.

- The site alternative will counteract the visual aesthetic value of the area by being closer to the road.
- The site alternative 2 –will also have difficulties with storm water drainage as the site is placed in a trench. The area will thus not have adequate drainage and storm water will contaminate surrounding areas. This is a major issue due to a valley bottom wetland within 500m of the site
- The footprint area of the site is within 500 meters of a valley bottom wetland. Thus an EIA will be needed as it will trigger NEMA's listed activity.
- The footprint area of the site is within 500 meters of a valley bottom wetland. Thus a water use licence will need to be applied for with the DWA

3. 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 aggregate 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 Queenstown - Whittlesea 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 aggregates 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.

The stakeholders and I&AP's were 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 7th of July 2016 to 7th August 2016. The following I&AP's and stakeholders were contacted to obtain their comments:

INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
• Mr. David hayes • Mr. Angus mcclain • Mr. David ozborne • Mr. John Maghlana • Mr. Ozzy Schlenkrich	• Mr. Moppo Mene (Chris Hani District Municipality) • Mr. Cira Ngetu (Department of Economic Development, Environmental Affairs and Tourism) • Mrs. Nolwandle Gqiba (Lukhanji Local Municipality) • Mr. Sibusiso Mvana (Lukhanji Local Municipality Ward 14) • Department of Labour • Mr. Lumkile Ngada (Department Of Rural Development and Agrarian Reform) • Mr. Kholekile Golela (Department Of Rural Development and Land Reform) • Mr. Mcedisi Gazi (Department Of Social Development) • Ms. Irene Mpolweni (Department Of Transport) • Ms. P. Makhanya (Department Of Water and Sanitation) • South African Heritage Resource Agency
I&AP'S AND STAKEHOLDERS THAT REGISTERED DURING THE COMMENTING PERIOD	

On-site notices were placed at the turn off from the R67 onto the farm Road Queenstown municipality clipboard. The project was also advertised in the representative on the 1st of July 2016.

The stakeholders and I&AP's will be notified of the availability of the Draft Basic Assessment Report for their perusal. A 30 days commenting period will be 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 E proof that the stakeholders and I&AP's were contacted.

iii) Summary of issues raised by I&APs

(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	**X**				
• Mr. David Hayes (Applicant & Landowner)	X	No comments received	N/A	N/A	N/A
Lawful occupier/s of the land					
• Mr. David Hayes	X	No comments received	N/A	N/A	N/A
Landowners or lawful occupiers on adjacent properties	**X**				
• Mr. Angus McClain	X	No comments received	N/A	N/A	N/A
• Mr. David Ozborne	X	4 July 2016	Mr. David Ozborne submitted the following comments: • Please provide us with a map of exactly where the proposed mine is of David Hayes Latham 205	The following response is offered to address Mr. David Ozborne concerns: • A preliminary Regulation 2.2 map was sent via E-mail	Appendix A - Whittlesea Regulation 2.2 Map
• Mr. John Maghlana	X	No comments received	N/A	N/A	N/A

• Mr. Ozzy Schlenkrich	X	No comments received	N/A	N/A	N/A

Municipal councillor					
Chris Hani District Municipality	X	No comments received	N/A	N/A	N/A
Municipality					
Lukhanji Local Municipality	X	No comments received	N/A	N/A	N/A
Lukhanji Local Municipality Ward 14	X	No comments received	N/A	N/A	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					

	X				
	X				
	X				
Communities					
	X	No comments received	N/A	N/A	N/A
Dept. Land Affairs	X	No comments received	N/A	N/A	N/A
Department Of Rural Development and Agrarian Reform	X	No comments received	N/A	N/A	N/A
Department Of Rural Development and Land Reform	X	8 August 2016	Department Of Rural Development and Land Reform responded to A land claim request sent on 8 August 2016 : • Enquiry has been received and forwarded to the Amathole district team for confirmation.	Greenmined environmental response is reserved: • Still awaiting the outcome.	N/A
Traditional Leaders	N/A	N/A	N/A	N/A	N/A
Dept. Environmental Affairs	X	No comments received	N/A	N/A	N/A
Department of Economic Development, Environmental Affairs and Tourism	X	No comments received	N/A	N/A	N/A
Other Competent Authorities					

affected					
Department of Labour	X	8 July 2016	The Department of Labour responded: • the notification has been sent to Eastern Cape Provincial Manager for further assistance	N/A	N/A
Department of Transport	X	No comments received	N/A	N/A	N/A
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
Department Of Social Development	X	No comments received	N/A	N/A	N/A
South African Heritage Resource Agency	X	8 July 2016	South African Heritage Resource Agency requested: • Upload of application on to SAHRIS	The following response is offered to South African Heritage Resource Agency: • Uploaded onto SAHRIS: 8 July 2016	N/A
OTHER AFFECTED PARTIES					
INTERESTED PARTIES					

iv) The Environmental attributes associated with the alternatives.

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

(1) Baseline Environment

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

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

Geology:

The Queenstown area is in the Burgersdorp formation of the Tarkastad sub group, in the upper Beaufort Group Triassic in age in the karoo super group. The lithology is red mudstone 1 to 10 m rich layers and sub-ordinate 1 to 2 m rich sandstone layers deposited by meandering rivers in the flood plain in an oxidising environment gradually filling the Karoo basin. The formation reaches thickness of 600 m in the Queenstown and Lady Frere area (S.gcobo). Numerous dolerite dykes and ring structures intruded the area creating good localities for ground water exploration.

Shallow soils typical of lb, Fb and Fv land types on mudstones and sandstones of the Beaufort Group (Karoo Supergroup). Jurassic dolerite intrusions form ridges in the area. An outcrop of “Sebunga” rock. That is known as weathered Dolerite is the mineral to be mined.

Natural Vegetation:

The site earmarked for the proposed mining activity has previously been used for aggregate mining purposes. Although some indigenous vegetation did re-establish through succession the vegetation of the area can be described as disturbed with a high invasion of alien invader plants.

No red data or protected plants could be identified in the proposed footprint area of the mining area.

Fauna:

The resident fauna found during the site inspection mainly comprised of birds such as doves, starlings, sparrows and crows as well as commonly found insects, reptiles and a few small mammals. No protected or red data specie could be identified to be resident within the footprint area of the proposed mining area.

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

commencement of the proposed mining activities, the mining area must be fenced to prevent livestock, such as cattle and sheep, grazing on the area falling into the quarry.

Surface and Ground Water:

The site is located in Water Management Area 12 known as the Mzimvubu to Keiskamma Water Management Area and falls into the quaternary drainage area S31G.

A tributary of the Klaas Smits River flows approximately 4km North of the proposed mining area (site alternative 1). As the mining activities will be contained within the boundaries of the area the tributary should not be affected by the project. No river diversions will be needed and no wetland could be identified within 500 m radius of the site. Ground water will not be affected with this activity of mining.

Although the depth of the groundwater is unknown it is presumed to be deeper than 5m as the existing quarry pit has been mined to 5m and groundwater was not intersected. Mining at the proposed site is expected to be up to a maximum depth of 30 m and therefore the impact on the groundwater will need continuous monitoring should ground water be intersected.

Air Quality:

The background air quality of the surrounding area is highly impacted on by vehicles travelling along the R67. Given the surrounding extent of mostly covered vegetated areas, no extreme dust generation under windy conditions is experienced.

Emission into the atmosphere is controlled by the National Management: Air Quality Act, 2004. The proposed activity at the site will however not trigger an application in terms of the Air Quality Act as the emissions to be produced at the mining site will only entail dust generation due to the disturbance of soil. Dust will be generated by the movement of earthmoving equipment, the loading of material and transporting of material from site.

The trucks driving on site has to comply with the speed limit and since the material is coarse and heavy, minimal dust is generated during the transportation of material from the quarry. Loads will be flattened to ensure that minimal spillage of the material takes place during transportation. Topsoil stockpiles will be planted with indigenous grass species to ensure that exposed surface areas are minimised,

reducing windblown dust from the site. The vegetation will also assist in capturing wind born dust and minimising the spread of dust from the site.

Dust generation on the access and haul roads as well as mechanical excavation can be managed through the implementation of dust suppression measures via water carts and a sprinkler system. The applicant has to conduct formal dust monitoring on site to provide management with an effective management tool for mitigating the impact of the mining activity on the surrounding environment with regard to dust pollution.

Ambient Noise:

The background noise level of the surrounding area is highly impacted on by traffic travelling along the R67 road passing the property.

Due to the nature of the proposed activity, noise will be generated as a result of mechanical excavation including activities such as drilling.

The site will be limited to one blast as the mineral is already in aggregate form. 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.

It is anticipated that blasting will occur once if needed. 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).

Archaeological and Cultural Interest:

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

Visual Exposure:

Due to the current mining disturbance nearby the area the site has a low aesthetic value. The proposed mining area will visible from R67 passing the property 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 stockpile 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.

(b) Description of the current land uses.

Portion 5 of farm Latham 205, Queenstown, Eastern Cape province & portion 2 of farm Cathcart's gift 311, Queenstown, eastern cape is situated in an agricultural and mining setting to the west of the R67. The land use of the property comprise of the following:

- Agriculture – Mainly grazing
- Mining – Signs of previous mining activities for aggregate is evident on the farm portions.

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

- Industrial – NONE
  .
- Residents – Residents are situated more than 500 m to the North West of the mining site.
- Transport – Farm road is located 150 m from Site alternative 1 that's connected to the R67 (±1.5 km away)
- Agriculture – Grazing and grain farming
- Agriculture – Chicken coup farming on the other side of the R 67
- Residential – NONE

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

The proposed mining areas combined is approximately 4.89ha and respectively Site 1 - 2.800134ha and Site 2 - 2.08ha in extent and the applicant intents to win gravel from the area for at least two years with a possibility of a three year extension. The gravel to be removed from the mining area will be supplied to the road construction industry in the Whittlesea district.

The existing infrastructure within 500 m of the proposed mining area is the Gravel Access Road, R67 and two old quarries. The provincial road (R67) is approximately next the proposed mining area. There is powerline infrastructure to the south of the proposed mining sit, but will not be affected as it is more than 100m away and blasting will be limited to one blast.

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 4.89 ha footprint area of the mine.

In order to mitigate the potential impact on the wetland. 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 water of the nearby wetland.

(d) Environmental and current land use map.

(Show all environmental and current land use features)

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

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

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

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

STRIPPING AND STOCKPILING OF TOPSOIL:

Visual intrusion associated with the establishment of the mining area

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.6	5	1	3	**7.8**

Dust nuisance caused by the disturbance of the soil

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.6	4	4	4	**10.4**

Noise nuisance caused by machinery stripping and stockpiling the topsoil

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	1	2.3	5	5	5	**11.7**

Infestation of the topsoil heaps by weeds or invader plants

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

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

Loss of topsoil due to incorrect storm water management

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

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

Contamination of area with hydrocarbons or hazardous waste materials

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

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

BLASTING:

Health and safety risk posed by blasting activities

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

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

Dust nuisance caused by blasting activities

Rating: Low – Medium **Degree of Mitigation: Not Mitigated**

			Consequence			Likelihood	**Significance**

Severity	Duration	Extent		Probability	Frequency		
2	1	1	1.3	1	1	1	**1.3**

Noise nuisance caused by blasting activities

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

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

EXCAVATION:

Visual intrusion associated with the excavation activities

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

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

Dust nuisance due to excavation activities

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.6	5	5	5	**13**

Noise nuisance generated by excavation equipment

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

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

Contamination of surface or groundwater due to effluent runoff from excavation area

Rating: Medium

			Consequence			Likelihood	**Significance**
Severity	Duration	Extend		Probability	Frequency		
3	4	2	3	4	3	3.5	**10.5**

Unsafe working conditions for employees

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	1	2.3	4	5	4.5	**10.35**

Negative impact on the fauna and flora of the area

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	2	1.6	5	1	3	**4.8**

Contamination of area with hydrocarbons or hazardous waste materials

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

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

Weed and invader plant infestation of the area

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.6	5	2	2	**5.2**

LOADING AND TRANSPORTING:

Dust nuisance due to loading and vehicles transporting the material

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

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

Degradation of access roads

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	2	3	4	4	4	**12**

Noise nuisance caused by vehicles

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

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

Contamination of area with hydrocarbons or hazardous waste materials

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

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

SLOPING AND LANDSCAPING DURING REHABILITATION:

Soil erosion

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	1	3	3	4	3.5	**10.5**

Health and safety risk posed by un-sloped areas

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

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

Dust nuisance caused during sloping and landscaping activities

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

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

Noise nuisance caused by machinery

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

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

Contamination of area with hydrocarbons or hazardous waste materials

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

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

REPLACING OF TOPSOIL AND REHABILITATION OF DISTURBED AREA:

Loss of reinstated topsoil due to the absence of vegetation

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

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

Infestation of the area by weed and invader plants

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.6	4	2	3	**7.8**

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

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

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

DEFINITIONS AND CONCEPTS:

Environmental significance:

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

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

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

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

Impact

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

Consequence

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

Likelihood

A qualitative term covering both probability and frequency.

Frequency

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

Probability

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

Environment

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

Methodology that will be used

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

Environmental Significance = Overall Consequence x Overall Likelihood

Determination of Overall Consequence

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

Determination of Severity / Intensity

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

Table 1 will be used to obtain an overall rating for severity, taking into consideration the various criteria.

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	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

production, fauna and flora)					

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.

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

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

SITE ALTERNATIVE 1

Positive Impacts:

- The mining site offers the mineral sought after
- The mineral to be mined is already in aggregate form and will not need to be blasted in order to loosen the material.
- The proposed sites was previously used for mining activities, thus minimal environmental damage will occur.
- The proposed mining area was defined to be further than 500m form a valley bottom wetland in the vicinity.
- The mining area can be reached by an existing farm access road that connects to R67. 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.
- 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. As maintenance and servicing of the equipment will be done at an off-site workshop 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.
- Negative impacts with regard to the environment include potential contamination of the area due to spillage of hydrocarbon products.

SITE ALTERNATIVE 2

Positive Impacts:

- The site is near the mineral sought after,
- No natural or pristine vegetation area has to be disturbed as the footprint of the proposed area falls over a portion previously used for mining and bares minimal vegetation.
- The alternative area will not have to compete with other land uses as all the activities can be contained within the boundaries of the site. Upon closure of the mining area, the land will revert back to agriculture.
- The aggregate to be mined will be used for the upgrading of the roads in the vicinity of the activity. The alternative mining area will therefore contribute to the upgrading/maintenance of infrastructure in and around Whittlesea - Queenstown area and indirectly contribute to the economy of the area.

Negative Impacts:

- The alternative site will need a short new road that connects to the farm road.
- The mining area will be within 500 m from the valley bottom wetland and the applicant will have to apply for full EIA in terms of DEA.
- The mining area will be within 500 m from the valley bottom wetland and the applicant will have to apply for a water use licence in terms of DWA
- 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.
- Negative impacts with regard to the environment include potential contamination of the area due to spillage of hydrocarbon products.

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

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

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 must be limited to 40km/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 Conservation of Agricultural Act (Act No 43 1983).
- 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 needs 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:
    - 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.

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 off-site 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.

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.

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.

ix) Motivation where no alternative sites were considered.

Not applicable.

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

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

Mr David Hayes identified the need for gravel/aggregate 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 establishment of a quarry (site alternative 2) pit will be within 500 m from a valley bottom wetland. This will necessitate a full EIA application to be approved by DEA prior to commencement of the mining activities. 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. It must be noted that the applicant is the land owner.

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.

STRIPPING AND STOCKPILING OF TOPSOIL:

Visual intrusion associated with the establishment of the processing area

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	3	2	2.3	3	2	2.5	**5.75**

Dust nuisance caused by the disturbance of the soil

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

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

Noise nuisance caused by machinery stripping and stockpiling the topsoil

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	2	1.6	3	2	2.5	**4**

Infestation of the topsoil heaps by weeds or invader plants

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

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

Loss of topsoil due to incorrect storm water management

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	3	2	2.6	2	3	2.5	**6.5**

Contamination of area with hydrocarbons or hazardous waste materials

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	3	1	2.6	3	2	2.5	**6.5**

BLASTING:

Health and safety risk posed by blasting activities

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	1	1.3	2	1	1.5	**1.95**

Dust nuisance caused by blasting activities

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

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

Noise nuisance caused by blasting activities

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

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

EXCAVATION:

Visual intrusion associated with the excavation activities

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	1	2.3	4	4	4	**9.2**

Dust nuisance due to excavation activities

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

			Consequence			Likelihood	**Significance**

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

Noise nuisance generated by excavation equipment

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
1	2	2	1.6	4	4	4	**6.4**

Contamination of surface or groundwater due to effluent runoff from excavation area

Rating: Low

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

Unsafe working conditions for employees

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	1	2.3	2	3	2.5	**5.75**

Negative impact on the fauna and flora of the area

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	1	1.3	5	1	3	**3.9**

Contamination of area with hydrocarbons or hazardous waste materials

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.6	3	3	3	**7.8**

Weed and invader plant infestation of the area

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

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

LOADING AND TRANSPORTING

Dust nuisance due to loading and vehicles transporting the material

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.6	3	3	3	**7.8**

Impact on the access roads

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	2	3	3	1	2	**6**

Noise nuisance caused by vehicles

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
1	4	2	2.3	3	4	3.5	**8.05**

Contamination of area with hydrocarbons or hazardous waste materials

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

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

SLOPING AND LANDSCAPING UPON CLOSURE OF THE SITE

Soil erosion

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

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

Health and safety risk posed by un-sloped areas

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

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

Dust nuisance caused during landscaping activities

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

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

Noise nuisance caused by machinery

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

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

Contamination of area with hydrocarbons or hazardous waste materials

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

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

REPLACING OF TOPSOIL AND REHABILITATION OF DISTURBED AREA

Loss of reinstated topsoil due to the absence of vegetation

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	3	1	2.3	2	1	1.5	**3.5**

Infestation of the area by weeds and invader plants

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.6	2	1	1.5	**3.9**

i) 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).

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**POTENTIAL IMPACT** (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc...etc...etc.)	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	**SIGNIFICANCE** If not mitigated.	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	**SIGNIFICANCE** If not mitigated.
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	N/A	N/A
STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil.	The visual impact may affect the aesthetics of the landscape.	Operational phase	Low – Medium	<u>Control:</u> Implementation of proper housekeeping	Low – Medium

	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 – Medium
	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
	Infestation of the topsoil heaps by weeds and invader plants.	Biodiversity	Operational phase	Low – Medium	Control & Remedy: Implementation of weed control	Low
	Loss of topsoil due to incorrect storm water management	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Operational phase	Medium	Control: Storm water management	Low – Medium
	Contamination of area with hazardous waste materials	Contamination may cause	Operational phase	Medium	Control: Waste management	Low – Medium

		surface or ground water pollution if not addressed				
BLASTING	Health and safety risk posed by blasting activities	The impact on health and safety posed by blasting will be contained within the site	Operational phase	low	Control: Implementation of safety control measures	Low
	Dust nuisance caused by blasting activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Low	Control: Dust suppression	Low
	Noise nuisance caused by blasting activities	The noise impact caused by blasting is instantaneous and has a short duration	Operational phase	Low	Control: Noise control measures	Low
EXCAVATION	Visual intrusion associated with the excavation activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	Medium	Control: Implementation of proper housekeeping	Low – Medium
	Dust nuisance due to excavation activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational phase	Medium	Control: Dust suppression	Low – Medium
	Noise nuisance generated by	The noise impact	Operational phase	Medium	Control: Noise control	Low – Medium

	excavation equipment	should be contained within the boundaries of the property, and will represent the current noise levels of the farm.			measures	
	Contamination of surface or groundwater due to effluent runoff from excavation area	the impact of surface and groundwater contamination due to the excavated area will be mitigated through berms and topsoil stockpiling	Operational phase	Medium	Control: Measures will be implemented as subscribed by ~~the~~ DWSA~~~~	Low
	Unsafe working conditions for employees	The Unsafe working conditions should only impact the applicant. Safety measures will be implemented	Operational phase	Medium	Control: Implementation of safety control measures	Low – Medium
	Negative impact on the fauna and flora of the area	The impact of the fauna of the area will not be significant as vibration and noise will drive the fauna away	Operational phase	Low	Control: Implementation of fauna protection measures	Low
	Contamination of area with hydrocarbons or hazardous	Contamination may cause	Operational phase	Medium	Control: Waste management	Low - medium

	waste materials	surface or ground water pollution if not addressed				
	Weed and invader plant infestation of the area	Biodiversity	Operational phase	Low - Medium	Control & Remedy: Implementation of weed control	Low - medium
LOADING AND TRANSPORTING	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	Medium	Control: Dust suppression	Low – Medium
	Impact on the access roads	All road users will be affected	Operational phase	Medium	Control & Remedy: Road management	Low – Medium
	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	Medium	Control: Noise control measures	Low - Medium
	Contamination of area with hazardous waste materials	Contamination may cause	Operational phase	Medium	Control: Waste management	Low

		surface or ground water pollution if not addressed				

SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA (FINAL REHABILITATION)	Erosion of returned topsoil after rehabilitation	Soil erosion, may affect the agricultural potential of the site after closure of the mine.	Decommissioning phase	Medium	<u>Control:</u> Soil management and seeding of mined areas	Low
	Dust nuisance caused during landscaping activities	Should dust levels become excessive it may have an impact on surrounding landowners.	Decommissioning phase	Low – Medium	<u>Control:</u> Dust suppression	Low
	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	<u>Control:</u> Sloping of area upon decommisioning	Low - Medium
	Noise nuisance caused by machinery	Should noise levels become excessive it may have an impact on surrounding landowners.	Decommissioning phase	Low – Medium	<u>Control:</u> Noise management	Low
	Contamination of area with hazardous waste materials	Contamination may cause surface or ground water	Decommissioning phase	Low – Medium	<u>Control:</u> Waste management	Low

		pollution if not addressed				
	Loss of reinstated topsoil due to the absence of vegetation	Loss of topsoil will affect the rehabilitation of the processing area and the future agricultural potential of the site.	Decommissioning phase	Low – Medium	Control: Storm water management	Low
	Weeds and invader plant infestation of the area	Biodiversity	Decommissioning phase	Low – Medium	Control & Remedy: Implementation of weed control	Low

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

j) 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
No 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.			

k) 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 aggregates in an area previously used for agricultural grazing and mining. Due to the small area used for grazing and mining, mining of aggregates 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 aggregates 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 aggregate from the stockpiling site. Minimal blasting (limited to one blast), no crushing will be necessary.
- The existing roads to the mine area can be used to gain access to the site. No new roads are needed.
- The off-site workshop of the applicant will be used for servicing of vehicles thereby reducing the risk of hazardous spills and contamination at the mining site.
- The proposed mining area will be visible from the R67 passing the property and will therefore have a visual impact on the immediate surrounding area.
- The proposed mining area was defined to be outside 500 m from the valley bottom wetland and the project is not expected to have an impact the valley bottom wetland. 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 B.

(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 approximately 10 employees indirectly contributing to the socio-economic status of the Queenstown - Whittlesea area,

- The aggregate 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 **Low – Medium**
- Weeds and invader plant infestation of the area **Low – Medium**
- Contamination of area with hazardous waste materials **Low – Medium**
- Dust nuisance stemming from proposed project **Low – Medium**
- Noise nuisance due to proposed activity **Low – Medium**
- Impact on the access roads **Low – Medium**
- Health and safety risk posed by un-sloped areas **Low – Medium**

l) 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.	▪ 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.
Noise Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	▪ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ▪ No loud music may be permitted at the mining area. ▪ Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.
Management of weed/invader plants	Site Manager to ensure compliance with the guidelines as stipulated in	▪ Implement a weed and invader plant control management plan.

Management Objectives	Role	Management Outcomes
	the EMPr. Compliance to be monitored by the Environmental Control Officer.	▪ 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. ▪ 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.	▪ Ensure that workers have access to the correct PPE as required by law. ▪ Ensure all operations comply with the Occupational Health and Safety Act.
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 is 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. ▪ 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

Management Objectives	Role	Management Outcomes
		the mining area. ▪ Biodegradable refuse to be handled as indicated above.
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.	▪ 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.
Fauna and Flora	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. 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. ▪ Do not remove plants or trees without the approval of the ECO.

m) 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.

n) 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.

o) 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.

p) Period for which the Environmental Authorisation is required.

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

q) 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.

r) 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 R43 000. Please see the explanation as to how this amount was derived at attached as Appendix G – Financial and Technical Competence. It must be noted that

the applicant is the land owner. . Bridging finance, will be supplied where needed by Roadmac Surfacing Cape (PTY) limited.

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

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

The mining operation will be self-funded through income generated by sales of the aggregate mined. Bridging finance, will be supplied where needed by Roadmac Surfacing Cape (PTY) limited.

s) Specific Information required by the competent Authority

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

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

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

Visual 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 (limited to one blast) 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 R67 and other public roads 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 occurring only once. 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 aggregate on the property will also reduce the amount of trucks delivering aggregate, from outside sources. This will have a direct positive impact on the traffic volumes of the surrounding roads and price of the aggregate.

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

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

t) 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 4.89 ha footprint area (Preferred Alternative).
2. Site Alternative 2 – The proposed mining area over a 4.84 ha footprint area.
3. 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 Niel Odendaal 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)

As mentioned under Part A, section (1)(L)(ii) this map has been compiled and is attached as Appendix B 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)

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.

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 overburden, 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 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.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm 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 landscaping, 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 Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) 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 only be used for dust suppression purposes as the mining method does not require any washing or related process water. A water truck will be used to spray access roads to alleviate dust generation. It is proposed that the mining activities will require approximately 10 000 l of water per day.

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

The applicant will obtain water for dust suppression purposes from the reservoir of the landowner. As no water will be abstracted from a natural watercourse no water use authorisation is needed.

iv) Impacts to be mitigated in their respective phases

ACTIVITIES (as listed in 2.11.1)	**PHASE** of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	**SIZE AND SCALE of disturbance** (volumes, tonnages and hectares or m^2)	**MITIGATION MEASURES** (describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Demarcation of site with visible beacons	Construction / Site Establishment phase	4.89 ha	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.	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.
STRIPPING AND STOCKPILING OF TOPSOIL **&** **BLASTING &** **EXCAVATION**	Operational phase	4.89 ha	**<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.	**<u>Land use zoning:</u>** • Eastern Cape LUPA, 2014 • Lukhanji Municipality: Land Use Planning Bylaws, 2015 • The property is zoned for agriculture as primary use.	Throughout operational phase

STRIPPING AND STOCKPILING OF TOPSOIL **&** **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **EXCAVATION**	Operational phase & Decommissioning phase	4.89 ha	**<u>Dust Handling:</u>** • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • 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.	**<u>Dust Handling:</u>** • NEM:AQA, 2004 Regulation 6(1)	Throughout operational and decommissioning phases
STRIPPING AND STOCKPILING OF TOPSOIL **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA**	Operational phase & Decommissioning phase	4.89 ha	**<u>Noise Handling:</u>** • The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the 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.	**<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

& **BLASTING** **&** **EXCAVATION**					

STRIPPING AND STOCKPILING OF TOPSOIL
 	
&
 	
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA
	Operational phase
	
	&
	
	Decommissioning phase
		4.89 ha	**<u>Management of weed- or invader plants:</u>**
			- A weed and invader plant management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of Conservation of Agricultural Act (Act No 43 1983).
			- Management must take responsibility to control declared invader or exotic species on the habilitated 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 needs to be kept free of weeds.
				<u>Management of weed- or invader plants:</u>
				- CARA, 1983
				- All species regarded as Category 1 weeds according to CARA need to be eradicated from site.
					Throughout operational and decommissioning phases

STRIPPING AND STOCKPILING OF TOPSOIL	Operational phase	4.89 ha	**<u>Loss of topsoil due to incorrect storm water management</u>** - 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	**<u>Loss of topsoil due to incorrect storm water management:</u>** - CARA, 1983 - NEMA, 1998 - NWA, 1998 - The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes.	Throughout operational phase

			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:
			  ▪ 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.
			  ▪ Storm water management must apply for the entire life cycle of the site 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.		

STRIPPING AND STOCKPILING OF TOPSOIL **&** **LOADING AND TRANSPORTING** **&** **BLASTING** **&** **EXCAVATION**	Operational phase	4.89 ha	**<u>Negative impact on fauna that may enter the area:</u>** - 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>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 phase
STRIPPING AND STOCKPILING OF TOPSOIL **&** **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **EXCAVATION**	Operational phase & Decommissioning phase	4.89 ha	**<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u>** - Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs is 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 liter 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.	**<u>Contamination of surface or groundwater due to hazardous spills not cleaned:</u>** - NWA, 1998 - NEM:WA, 2008 - Every precaution must be taken to prevent contamination. The precautionary principal must apply.	Throughout operational and decommissioning phases

			▪ 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.		

e) Impact Management Outcomes

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

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms,**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through** **(e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)** **E.g.** • **Modify through alternative method.**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**

roads, pipelines, power lines, conveyors, etc...etc..etc.)				• **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	Control through management and monitoring	Processing of the waste rock/stone is only allowed within the boundaries of the approved processing area. - MHSA, 1996 - OHSA, 1993
STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	**Land use zoning:** - Eastern Cape Planning and Development Act, 201 - 3 lukhanji Municipality: Land Use Planning Bylaws, 2015 - The property is zoned for agriculture as primary use.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation (Site Alternative 1)	The loss of natural vegetation may affect the biodiversity of the surrounding environment.	Operational phase	Control: Management of buffer areas and demarcation of work areas	**Negative impact on biodiversity of the area (Site Alternative 1):** - NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation (Site Alternative 2)	The loss of natural vegetation may affect the biodiversity of the surrounding environment.	Operational phase	Modify: Consider use of a less sensitive area	**Negative impact on biodiversity of the area (Site Alternative 2):** - NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will	Operational phase	Control: Dust suppression	**Dust Handling:** - NEM:AQA, 2004 Regulation 6(1)

		therefore affect only the landowner.			
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 site.	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
STRIPPING AND STOCKPILING OF TOPSOIL	Infestation of the topsoil heaps by weeds and invader plants.	Biodiversity	Operational phase	Control & Remedy: Implementation of weed control and the weed/invader plant management plan	**Management of weed- or invader plants:** - CARA, 1983 - All species regarded as Category 1 weeds according to CARA need to be eradicated from site.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of topsoil due to incorrect storm water management.	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	**Loss of topsoil due to incorrect storm water management:** - CARA, 1983 - NEMA, 1998 - NWA, 1998 - The replacement of the topsoil is of utmost importance to ensure the effective future use of the area for agricultural purposes.
STRIPPING AND STOCKPILING OF TOPSOIL	Contamination of area with 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.
BLASTING	Health and safety risk posed by blasting activities	The impact on health and safety posed by blasting will be contained within the site	Operational phase	Control: Implementation of safety control measures	**Blasting standards implemented** - MHSA, 1996 - OHSA, 1993
BLASTING	Dust nuisance caused by blasting 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)
BLASTING	Noise nuisance caused by blasting activities	The noise impact caused by blasting is instantaneous and has a short duration	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	Visual intrusion associated with the excavation activities	The visual impact may affect the aesthetics of the landscape.	Operational phase	Control: Implementation of proper housekeeping	**Land use zoning:** - Eastern Cape Planning and Development Act, 2013 - lukhanji Municipality: Land Use Planning Bylaws, 2015 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	Operational phase	Control: Dust suppression	**Dust Handling:** NEM:AQA, 2004 Regulation 6(1)

		the landowner.			
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	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	Negative impact on the fauna and flora of the area	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	Protection of Fauna on site: - NEM:BA, 2004
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	Weed and invader plant infestation of the area	iodiversity	Operational phase	Control & Remedy: Implementation of weed control	**Management of weed- or invader plants:** - CARA, 1983 All species regarded as Category 1 weeds according to CARA need to be eradicated from site.
LOADING AND TRANSPORTING	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)
LOADING AND TRANSPORTING	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
LOADING AND TRANSPORTING	Impact on the access roads	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.
LOADING AND TRANSPORTING	Contamination of area with hazardous waste materials	Contamination may cause surface or	Operational phase	Control: Waste management	**Contamination of surface or groundwater due to hazardous spills**

		ground water pollution if not addressed			**not cleaned:** - NWA, 1998 - NEM:WA, 2008 - Every precaution must be taken to prevent contamination. The precautionary principal must apply.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Erosion of returned topsoil after rehabilitation	Soil erosion, may affect the agricultural potential of the site after closure of the mine.	Decommissioning phase	Control: Soil management	**Erosion of returned topsoil after rehabilitation:** - CARA, 1983 - NEM:BA, 2004 - MPRDA, 2008 - The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. - Rehabilitation cannot be considered complete until the first cover crop is well established.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Dust nuisance caused during landscaping activities	Should dust levels become excessive it may have an impact on surrounding landowners.	Decommissioning phase	Control: Dust suppression	**Dust Handling:** - NEM:AQA, 2004 Regulation 6(1)
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Noise nuisance caused by machinery	Should noise levels become excessive it may have an impact on surrounding landowners.	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, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Contamination of area with 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, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Loss of reinstated topsoil due to the absence of vegetation	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	**Erosion of returned topsoil after rehabilitation:** - CARA, 1983 - NEM:BA, 2004 - MPRDA, 2008 - The replacement of the topsoil and sloping of the area is of utmost importance to ensure the effective future use of the area for agricultural purposes. - Rehabilitation cannot be considered complete until the first cover crop is well established.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Weeds and invader plant infestation of the area	Biodiversity	Decommissioning phase	Control & Remedy: Implementation of weed control	**Management of weed- or invader plants:** - CARA, 1983 - All species regarded as Category 1 weeds according to CARA need to be eradicated from site.

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)

ACTIVITY whether listed or not listed **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through** **(e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation.**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or . Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WI STANDARDS** (A description of how each of recommendations in 2.11.6 read w 2.12 and 2.15.2 herein will com with any prescribed environmer management standards or practi that have been identified Competent Authorities)
DEMARCATION OF SITE WITH VISIBLE BEACONS	No impact could be identified other than the beacons being outside the boundaries of the approved processing area.	Control through management and monitoring	Beacons need to be in place throughout the life of the mine.	Processing of the waste rock/stone is o allowed within the boundaries of approved processing area. MHSA, 1996 OHSA, 1993

STRIPPING AND STOCKPILING OF TOPSOIL	Visual impact due to removal of topsoil.	Control: Implementation of proper housekeeping	Throughout operational phase	**Land use zoning:** • Eastern Cape Planning Development Act, 2013 • Iukhanji Municipality: Land Planning Bylaws, 2015 • The property is zoned for agricult as primary use.
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation (Site Alternative 1)	Control: Management of buffer areas and demarcation of work areas	Throughout operational phase	**Negative impact on biodiversity of area (Site Alternative 1):** • NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation (Site Alternative 2)	Modify: Consider use of a less sensitive area	Throughout operational phase	**Negative impact on biodiversity of area (Site Alternative 2):** • NEM:BA, 2004
STRIPPING AND STOCKPILING OF TOPSOIL	Dust nuisance caused by the disturbance of soil.	Control: Dust suppression	Throughout operational phase	**Dust Handling:** • NEM:AQA, 2004 Regulation 6(1)
STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping and stockpiling the topsoil	Control: Noise control measures	Throughout operational phase	**Noise Handling:** • NEM:AQA, 2004 Regulation 6(1) • All project related vehicles must in a road worthy condition in te of the Road Transport Act, 1987
STRIPPING AND STOCKPILING OF TOPSOIL	Infestation of the topsoil heaps by weeds and invader plants.	Control & Remedy: Implementation of weed control and weed/invader plant management plan	Throughout operational phase	**Management of weed- or invader pla** • CARA, 1983 • All species regarded as Categor weeds according to CARA need to eradicated from site.

STRIPPING AND STOCKPILING OF TOPSOIL	Loss of topsoil due to incorrect storm water management	Control: Storm water management	Throughout operational phase	**Loss of topsoil due to incorrect st water management:** - CARA, 1983 - NEMA, 1998 - NWA, 1998 - The replacement of the topsoil i utmost importance to ensure effective future use of the area agricultural purposes
STRIPPING AND STOCKPILING OF TOPSOIL	Contamination of area with hazardous waste materials	Control: Waste management	Throughout operational phase	**Contamination of surface groundwater due to hazardous spills cleaned:** - NWA, 1998 - NEM:WA, 2008 - Every precaution must be taker prevent contamination. precautionary principal must app
BLASTING	Health and safety risk posed by blasting activities	Control: Implementation of safety control measures	Throughout Operational phase	**Blasting standards implemented** - MHSA, 1996 - OHSA, 1993
BLASTING	Dust nuisance caused by blasting activities	Control: Dust suppression	Throughout Operational phase	**Dust Handling:** NEM:AQA, 2004 Regulation 6(1)
BLASTING	Noise nuisance caused by blasting activities	Control: Noise control measures	Throughout Operational phase	**Noise Handling:** - NEM:AQA, 2004 Regulation 6(1) All project related vehicles must be i road worthy condition in terms of Road Transport Act, 1987

EXCAVATION	Visual intrusion associated with the excavation activities	Control: Implementation of proper housekeeping	Throughout Operational phase	**Land use zoning:** Eastern Cape Planning a Development Act, 2013 Iukhanji Municipality: Land U Planning Bylaws, 2015 The property is zoned for agriculture primary use.
EXCAVATION	Dust nuisance due to excavation activities	Control: Dust suppression	Throughout Operational phase	**Dust Handling:** NEM:AQA, 2004 Regulation 6(1)
EXCAVATION	Noise nuisance generated by excavation equipment	Control: Noise control measures Operational phase	Throughout Operational phase	**Noise Handling:** NEM:AQA, 2004 Regulation 6(1) All project related vehicles must be i road worthy condition in terms of t Road Transport Act, 1987
EXCAVATION	Unsafe working conditions for employees	Control: Implementation of safety control measures	Throughout Operational phase	The Occupational Health and safety in conjunction with the Mine Health a Safety act as mitigation measure. MHSA, 1996 OHSA, 1993
EXCAVATION	Negative impact on the fauna and flora of the area	Control: Implementation of fauna protection measures	Throughout Operational phase	Protection of Fauna on site: NEM:BA, 2004
EXCAVATION	Contamination of area with hydrocarbons or hazardous waste materials	Control: Waste management	Throughout Operational phase	**Contamination of surface groundwater due to hazardous spills cleaned:** NWA, 1998

				↓ NEM:WA, 2008 Every precaution must be taken prevent contamination. T precautionary principal must apply.
EXCAVATION	Weed and invader plant infestation of the area	Control & Remedy: Implementation of weed control	Throughout Operational phase	**Management of weed- or invad plants:** ↓ CARA, 1983 All species regarded as Category 1 wee according to CARA need to be eradicat from site.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Dust nuisance caused during landscaping activities	Control: Dust suppression	Throughout decommissioning phase	**Dust Handling:** ↓ NEM:AQA, 2004 Regulation 6(1)
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Noise nuisance caused by machinery	Control: Noise management	Throughout decommissioning phase	**Noise Handling:** ↓ NEM:AQA, 2004 Regulation 6(1) ↓ All project related vehicles must in a road worthy condition in te of the Road Transport Act, 1987
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Contamination of area with hazardous waste materials	Control: Waste management	Throughout decommissioning phase	**Contamination of surface groundwater due to hazardous spills cleaned:** ↓ NWA, 1998 ↓ NEM:WA, 2008 ↓ Every precaution must be taken prevent contamination. precautionary principal must app

SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Loss of reinstated topsoil due to the absence of vegetation	Control: Storm water management	Throughout decommissioning phase	**Erosion of returned topsoil a rehabilitation:** • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008 • The replacement of the topsoil sloping of the area is of utm importance to ensure the effec future use of the area agricultural purposes. • Rehabilitation cannot be conside complete until the first cover cro well established.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Weeds and invader plant infestation of the area	Control & Remedy: Implementation of weed control	Throughout decommissioning phase	**Management of weed- or invader pla** • CARA, 1983 • All species regarded as Categor weeds according to CARA need to eradicated from site.

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

The closure objectives entail the sloping, landscaping and replacement of the topsoil over the processing area in order to rehabilitate the disturbance. The stockpiled topsoil will be spread over the disturbed area to a depth of at least 500 mm.

Final rehabilitation will entail the removal of all infrastructure and equipment from the site. Final sloping, landscaping, levelling and top dressing will be done on all areas. Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding 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 applicant will comply with the minimum closure objectives as prescribed by DMR.

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

This report, the 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 as Appendix D. 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.

(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 D 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.
- 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 overburden, 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 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.
- On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm 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 landscaping, 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 Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) 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.

(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	Gravel
Saleable mineral by-product	None

Risk ranking

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

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

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Limited

Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)		No
2(A)	Demolition of steel buildings and structures		No
2(B)	Demolition of reinforced concrete buildings and structures		No
3	Rehabilitation of access roads		No
4(A)	Demolition and rehabilitation of electrified railway lines		No
4(B)	Demolition and rehabilitation of non-electrified railway lines		No
5	Demolition of housing and facilities		No
6	Opencast rehabilitation including final voids and ramps	Yes	
7	Sealing of shafts, adits and inclines		No
8(A)	Rehabilitation of overburden and spoils	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		No
13	Water management (Separating clean and dirty water,		No

	managing polluted water and managing the impact on groundwater)		
14	2 to 3 years of maintenance and aftercare	Yes	

Unit rates for closure components

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

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of **processing plant and related structures** (including overland conveyors and power lines)		
2(A)	Demolition of **steel buildings and structures**		
2(B)	Demolition of **reinforced concrete buildings and structures**		
3	Rehabilitation of **access roads**		
4(A)	Demolition and rehabilitation of **electrified railway lines**		
4(B)	Demolition and rehabilitation of **non-electrified railway lines**		
5	Demolition of **housing and facilities**		
6	**Opencast rehabilitation** including final voids and ramps	200415	0.04
7	Sealing of **shafts, adits and inclines**		
8(A)	Rehabilitation of **overburden and spoils**	133610	1
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	105842	1
11	**River diversions**		
12	**Fencing**	121	1
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**	14085	1

Determine weighting factors

According to Tables B.7 and B.8

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

Calculation of closure costs

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

CALCULATION OF THE QUANTUM							
Mine:	**Portion 5 of farm Latham 205, Queenstown, Eastern Cape province & portion 2 of farm Cathcart's gift 311, Queenstown, Eastern Cape**			**Location:**	**Whittlesea**		
Evaluators:	**S Smit**			**Date:**	**2016-05-13**		
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**	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m^3	0	14	1	1	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	191	1	1	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	282	1	1	R 0.00
3	Rehabilitation of access roads	m^2	0	34	1	1	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	332	1	1	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	181	1	1	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	383	1	1	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	2.89	200 415	0.04	1	R23 167.98
7	Sealing of shaft, audits and inclines	m^3	0	103	1	1	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	1	133610	1	1	R133 610.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	166 408	1	1	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	483 329	0.51	1	R 0.00
9	Rehabilitation of subsided areas	ha	0	111 878	1	1	R 0.00

10	General surface rehabilitation	ha	4.89	105 842	1	1	R 517 567.38
11	River diversions	ha	0	105 842	1	1	R 0.00
12	Fencing	m	900	121	1	1	R 108 900.00
13	Water Management	ha	0	40 244	0.17	1	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	4.89	14 085	1	1	R 68 875.65
15(A)	Specialists study	Sum	0			1	R 0.00
15(B)	Specialists study	Sum	0				R 0.00
						Sum of items 1 to 15 above	R 852 121.01
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 852 121.01		**Sub Total 1**	R 894 727.10

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 53 683.63
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 89 472.71
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 1 037 883.44
		Vat (14%)	R 145 303.68
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 1 183 187.12**

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 1 183 187.12**

(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

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Demarcation of site with visible beacons	Maintenance of beacons	▪ Visible beacons need to be established at the corners of the processing area. ▪ A 20 m buffer area (if applicable) from any natural areas need to be demarcated. ▪ A 30 m 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.
STRIPPING AND STOCKPILING OF TOPSOIL & BLASTING & EXCAVATION	Monitoring of visual impacts	▪ 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	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.

			on the surrounding environment.	
STRIPPING AND STOCKPILING OF TOPSOIL **&** **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **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. • 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 **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **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: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the	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**			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.	
STRIPPING AND STOCKPILING OF TOPSOIL **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA**	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.	Management of weed or invader plants: - Removal of weeds must be manually or by the use of an approved herbicide.	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. - Annual compliance monitoring of site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA**	Topsoil management	Topsoil 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.	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	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.

			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.	
STRIPPING AND STOCKPILING OF TOPSOIL	Loss of natural vegetation	Management of buffer areas: - Site management has to ensure the use of visible beacons to demarcate the boundaries of the approved 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: - 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 site by an Independent Environmental Control Officer.
STRIPPING AND STOCKPILING OF TOPSOIL & LOADING AND TRANSPORTING & BLASTING & EXCAVATION	Protection of fauna	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: - 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 Officer.

STRIPPING AND STOCKPILING OF TOPSOIL **&** **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **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 cleanup 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.	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 is needed on site ensure drip trays is present. Ensure all waste products are disposed of in a 200 liter 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.	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.

			▪ Biodegradable refuse to be handled as indicated above.	
LOADING AND TRANSPORTING	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.	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 Officer.
SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA	Soil erosion: ▪ Loss of reinstated topsoil after rehabilitation.	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: ▪ 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	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.

			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.	
STRIPPING AND STOCKPILING OF TOPSOIL **&** **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **EXCAVATION**	Health and safety risk	Health and safety Management: - Stocked first aid box. - Level 1 certified first aider - All appointments in terms of the Mine Health and Safety Act.	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 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.	Throughout Construction, Operational and Decommissioning Phase - Daily compliance monitoring by site

& **LOADING AND TRANSPORTING** **&** **SLOPING, LANDSCAPING AND REPLACEMENT OF TOPSOIL OVER DISTURBED AREA** **&** **BLASTING** **&** **EXCAVATION**			▪ 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 Eastern Cape and the ECO immediately. ▪ Work may only commence once the area was cleared by Heritage Eastern Cape.	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.

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.

(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.

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

- **<u>Site Management:</u>**
  - Stay within boundaries of site – do not enter adjacent properties
  - Keep tools and material properly stored
  - Smoke only in designated areas
  - Use toilets provided – report full or leaking toilets
- **<u>Water Management and Erosion:</u>**

- Check that rainwater flows around work areas and are not contaminated
- Report any erosion
- Check that dirty water is kept from clean water
- Do not swim in or drink from streams

- **Waste Management:**

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

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

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

- **Discoveries:**

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

- **Air Quality:**

  - Wear protection when working in very dusty areas
  - Implement dust control measures:
    - ✓ Sweep paved roads

- ✓ Water all roads and work areas
- ✓ Minimize handling of material
- ✓ Obey speed limit and cover trucks

- **Driving and Noise:**

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

- **Vegetation and Animal life:**

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

- **Fire Management:**

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

n) Specific information required by the Competent Authority

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

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

2) UNDERTAKING

The EAP herewith confirms

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

Signature of the environmental assessment practitioner:

Greenmined Environmental

Name of Company:

10 August 2016

Date:

-END-