PROPOSED MINING OF THE EXISTING QUARRY PIT ON PORTION 1 OF LOT 29 UMFOLOZI NO 15607, KWAMBONAMBI, KWAZULU-NATAL PROVINCE

DRAFT BASIC ASSESSMENT REPORT

APRIL 2015

REFERENCE NUMBER: KZN 30/5/1/3/2/10415 MP

PREPARED FOR:

Van Eeden Projects Trust
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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: Van Eeden Projects Trust

TEL NO: 035 947 7714
FAX NO: 086 543 2684
POSTAL ADDRESS: P.O. Box 166, Kwambonambi, 3915
PHYSICAL ADDRESS: Sub 6, McIlrath Farm, Teza, Kwambonambi
FILE REFERENCE NUMBER SAMRAD: KZN 30/5/1/3/2/10415MP

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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
	Christine Fouche
Tel No.:	021 850 8875
Fax No.:	086 546 0579
E-mail address:	christine.f@greenmined.co.za

ii) Expertise of the EAP.

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

(with evidence).

BSc Botany & Zoology. See CV with evidence attached as Appendix I

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

(In carrying out the Environmental Impact Assessment Procedure)

See CV and project list attached as Appendix I

b) Location of the overall Activity.

Farm Name:	Portion 1 of Lot 29 Umfolozi No 15607
Application area (Ha)	4.9 ha
Magisterial district:	Kwambonambi
Distance and direction from the nearest town	Kwambonambi – 10 km South Mtubatuba – 13 km North
21 digit Surveyor General Code for each farm portion	N0GV00000001560700001

c) Locality map

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

The requested map is attached as Appendix A.

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 mining method proposed involves opencast extraction of gravel from an old quarry pit that has been worked previously and not been rehabilitated. The existing quarry pit at the site will be worked by cutting a bench which will be progressed further uphill in a north north-westerly direction. The mining methods will make use of blasting by means of explosives in order to loosen the hard rock when necessary; the material will then be loaded with excavators and hauled to the mobile crushing and screening plants that will be established within the boundaries of the already disturbed area previously used for mining purposes. The aggregate will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the mining site. The existing farm road to the quarry will be used to gain access to the site. See the requested map attached as Appendix B.

(i) Listed and specified activities

NAME OF ACTIVITY **(E.g. For prospecting –** drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc **E.g. for mining –** excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accomdation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity** **Ha or m^2**	**LISTED ACTIVITY** **Mark with an X where applicable or affected**	**APPLICABLE LISTING NOTICE** **(GNR 544, GNR 545 OR GNR 546)**
Open cast mining and crushing to produce gravel aggregate	4.9ha	X	GNR 983 Listing Notice 1 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)
Open cast mining and crushing to produce aggregate.	4.9ha	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 and crushing to produce aggregate.	4.9ha	X	GNR 983 Listing Notice 1 Activity 35: 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 proposed mining site will entail the winning of aggregate by Van Eeden Projects Trust as a 4.9 ha extension of the existing quarry on Portion 1 of Lot 29 Umfolozi No 15607 in a north north-western direction from the face of the existing pit. The quarry pit on the property of Mr Van Eeden was previously mined for gravel by Kirco CC and, should this application be approved, the applicant will incorporate the rehabilitation of the existing quarry into the rehabilitation of the proposed mining area registered under this application.

The GPS coordinates for the proposed site is:

- A 28°30'3,24"S; 32°7'8,98"E
- B 28°29'59,89"S; 32°7'3,67"E
- C 28°29'52,37"S; 32°7'9,97"E
- D 28°29'55,55"S; 32°7'14,9"E

The proposed extension of the quarry triggers GNR 983 Listing Notice 1 Activities 21, 22 and 35 as:

- Activity 21: the project requires a mining permit in terms of the MPRDA,
- Activity 22: upon closure of the site a closure permit in terms of the MPRDA will be required,
- Activity 35: upon approval the site, that was previously used for mining purposes, will be used as a commercial mine source.

Van Eeden Projects Trust intents to loosen the hard rock by blasting, upon which it will be mechanically recovered with drilling-, excavating- and earth-moving equipment. A mobile crushing and screening plant will be present at the mining area. The rock that is recovered from the quarry, after the blast, will be loaded on a tipper truck and transported to the crusher plant where it will be crushed and screened to various sized aggregate. Transportation of the final product will be from the stockpile area to the client by means of trucks.

Site Establishment / Construction phase:

During the site establishment phase the applicant have to demarcate the boundaries of the site and clear the topsoil and overburden from the extension area to open it for drilling and blasting.

Upon stripping, the topsoil and overburden will be stockpiled along the boundaries of the quarry pit to be used during the rehabilitation phase. Topsoil stripping will be restricted to the areas to be mined. 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 quarry 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 stripped overburden will be stockpiled on a designated area after the topsoil has been removed.

The applicant will introduce the mining equipment to the area during the site establishment phase. The equipment to be used on site will entail the following:

- Weigh bridge
- Mobile Crusher Plant

- Chemical Toilet
- Drilling equipment
- Excavating equipment
- Earth moving equipment

Operational phase:

The quarrying process includes drilling to set charges; detonation; loading and short haul; and stockpiling. The mining will be conducted by blasting benches from the rock face of the existing quarry. Blasting is anticipated to occur twice a year. The noise caused by blasting will be instantaneous and of short duration. The applicant should ensure that all surrounding residents are informed of each blasting event. After a blast the larger rocks will be broken into smaller pieces by hydraulic hammer. The manageable pieces will then be transported by tipper trucks to the crusher plant. The rocks are run through the crushers to produce the end product, in various grades of stone dependent on the market.

The mining activities will consist of the following:

- Blasting
- Excavating
- Crushing
- Stockpiling and transporting

The machinery used in the operation will be serviced at the applicants existing off-site workshop. Only emergency repairs will be conducted on site with regular maintenance of the equipment done at the above mentioned workshop. The mining site will not require the storage of large quantities of diesel as this is already available at the applicant's workshop area. Fuelling of tracked vehicles has to be done in the quarry due to logistical reasons.

A chemical toilet will be established on site to be used by the employees. The existing farm road will be used to access the mining area.

Decommissioning phase:

The closure objectives are for the quarry pit (existing quarry and new pit) to be made safe and the remainder of the site to be returned to agricultural use.
The current quarry pit will be incorporated into the closure objectives of the proposed extension area and will entail the benching of the site. Benches will be built with overburden, 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:

- Sloping and landscaping during rehabilitation
- Replacing of topsoil
- Implementation of an alien invader plant management plan

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002)	Application for a mining permit Ref Nr: KZN30/5/1/3/2/10415MP	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: KZN30/5/1/3/2/10415MP	GNR 983 Listing Notice 1 Activity 21, 22 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 mine will trigger the MHSA
National Heritage Resources Act No 25 of 1999 and the KwaZulu-Natal Heritage Act No. 4 of 2008.	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

KwaZulu Nature Conservation Act, 1992 (Act 29 of 1992)	Biophysical Environment	No aspects on site could be identified that needs protection in terms of the KZN-NCA.

f) Need and desirability of the proposed activities.

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

The increase in building, construction and road maintenance projects in the vicinity of the quarry triggered the need of the land owner to extent the existing quarry on his property in order to trade with the available aggregate. Mining of the quarry pit will also contribute to the diversification of activities on the property, extending it from agriculture to include small scale mining.

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

The proposed site earmarked for the winning of the aggregate will entail the extension of an existing quarry pit. The proposed site was identified as the preferred alternative due to the following reasons:

- The site offers the mineral sought after,
- The mining impact can be contained to one area on the property that has previously been used for mining purposes,
- Very little natural vegetation needs to be disturbed in order to establish the mining area as most of the area has been used for sugar cane farming.
- The current quarry pit was left un-rehabilitated. The extension of the mining area will entail the mining of the existing quarry face, lowering and properly sloping it in the process. The rehabilitation of the existing quarry pit will therefore be incorporated into the rehabilitation objectives of the proposed mining area.
- The mining area can be reached by an existing access road from the provincial road bordering the property. No new road infrastructure need to be constructed.
- The open cast mining of the quarry has been identified as the most effective method to produce the desired aggregate. Due to the remote location of the quarry the potential impacts on the surrounding environment, associated with open cast 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. The general waste 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 oil or diesel spillages. 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.

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

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

i) Details of the development footprint alternatives considered.

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

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

Van Eeden Projects Trust 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 area as preferred and only viable site alternative. The establishment of a quarry pit in a greenfield area while the existing quarry pit has not yet been mined out or rehabilitated were not found to be the best option with regard to sustainable development. In the light of the above the impacts associated with establishing another quarry pit in a greenfield site on the property is believed to have a higher significance without the need or motivation to justify it.

Various project alternatives were considered during the planning phase of the project. These included the following:

1. Open Cast mining (Preferred Alternative) **vs** Underground Mining:
    - The open cast mining method is used when deposits of commercially useful minerals or rock are found near the surface where the overburden is relatively thin or where the material is structurally unsuitable for tunnelling.
    - Underground Mining is used where the mineral occur deep below the surface and where the overburden is thick.

- Open cast mining of the quarry has been identified as the most cost effective method to produce the desired aggregate as the desired rock is found near the surface with a narrow layer of overburden that needs to be removed. The geology of the specific area is also structurally unsuitable for tunnelling.
- The open cast mining method will not produce any residual waste that has to be disposed of. Due to the remote location of the quarry the potential impacts on the surrounding environment, associated with open cast mining, is deemed to be of low significance. It is proposed that all mining related infrastructure will be contained within the boundary of the mining area.

2. Temporary Infrastructure (Preferred Alternative) **vs** Permanent Infrastructure:
    - The use of temporary infrastructure will entail the use of infrastructure and machinery that is either track-based or can be removed without difficulty. Temporary infrastructure to be used in the mining method will entail a mobile crusher plant, temporary weigh bridge and chemical toilet, with servicing of vehicles and equipment being done off-site at the existing workshop of the applicant. The off-site office will also be used for all administration purposes relating to the project.
        - **Positive Aspects:** The positive aspects associated with the use of temporary infrastructure firstly enable the applicant to move the infrastructure within the boundaries of the mining area as mining of the mineral progresses, lessening the distance material has to be transported from the crusher plant to the stockpile area. Secondly the crusher plant and other equipment can move out of the mining area, staying on the existing road, during a blast to prevent potential flyrock damage. Thirdly the decommissioning phase is facilitated as the removal of infrastructure from the mining area during the rehabilitation of the site is easy and highly effective.
    - The use of permanent infrastructure will entail the construction of an office building with ablution facilities, installation of a septic tank to be connected to the ablution facilities, installation of a permanent weigh bridge and permanent crusher plant.
        - The use of permanent infrastructure will increase the impact of the proposed project on the environment as it will entail the establishment of more structures, necessitate the use of concrete products on site in order to establish these infrastructure, lengthen the period required for

rehabilitation as well as increase the rehabilitation amount as the permanent infrastructure will either have to be decommissioned or be maintained after the closure of the site.

- Due to the small size of the mining area the infrastructure may also be exposed to flyrock damage during blasting events.
- The construction of permanent infrastructure at the site will also increase the visual impact of the proposed project on the surrounding environment and additional mitigation measures will have to be implemented to address the impact.
- In the light of the above the use of temporary infrastructure is deemed to be the most viable preferred alternative.

3. Access onto Provincial Road (Preferred Alternative) **vs** Access onto National Road:
   - Provincial Road: The existing access road of the farm connects to the provincial road passing the property to the north-west. It is proposed that this road be used by trucks transporting material from the quarry pit to the clients as it will prevent trucks having to turn from a farm entrance onto the N2 thereby lessening the potential impact on traffic.
   - National Road (N2): The turning of trucks transporting material from the mining area to clients onto the N2, from the existing farm entrance, could be highly problematic and needs prior authorisation from SANRAL. In order to minimise the impact the activity may have on traffic it is proposed that this option not be implemented and the alternative provincial road (as mentioned above) be used as access road to and from the quarry pit.

4. 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 mined 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 expand the existing quarry, not being 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 aggregate and loss of income to the Mtubatuba/Kwambonambi business area.

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 aggregate 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,
- The existing quarry pit on the property could not be rehabilitated as it has been mined up to the permitted mining boundary and currently does not allow any space for benching.

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 sent directly to the contact persons. A 30 days commenting period were allowed which extended to the 16th of March 2015. The following stakeholders and I&AP's were contacted to obtain their comments:

- Ezemvelo KZN
- Amafa
- Department of Agriculture, Forestry and Fisheries
- Department of Mineral Resources - KZN
- Mfolozi Local Municipality
- Mfolozi Local Municipality Ward 4 Councillor
- Mfolozi Local Municipality Ward 11 Councillor
- Uthungulu District Municipality
- Department of Labour
- Department of Water Affairs
- Department of Transport

On-site notices were placed at the turn off from the N2 onto the property as well as on the western boundary fence of the property facing the residents of the adjacent

community to advertise the project. The project was also advertised in the Zululand Observer.

During the initial public participation phase the only response received was that of the uThungulu District Municipality registering as I&AP on the project as well as the ward councillor of Ward 4 supporting the project. To date no other comments or objections were received. 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 upon which any comments received will be incorporated into the Final Basic Assessment Report to be submitted to DMR for approval.

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. Van Eeden is a trustee of both Van Eeden Holdings Trust, which is the registered landowner of the proposed property, as well as Van Eeden Projects Trust that is the applicant for the project.	X	N/A	No comments or issues were received from the landowner as he assisted in the compilation of the documentation	N/A	
Lawful occupier/s of the land					
The landowner is the only lawful occupier of the site	N/A	N/A	N/A	N/A	N/A
Landowners or lawful occupiers on adjacent properties	**X**				
The landowner of the property earmarked for the mining activity owns the properties bordering Portion 1 of Lot 29 Umfolozi 15607	N/A	N/A	N/A	N/A	N/A

Municipal councillor	**X**	12 February 2015	Cllr Msane (Ward 4) responded that he does not have any concerns with regard to the project as he feels it will contribute to the local community in the form of employment.	Cllr Msane was registered as I&AP on the project and will be notified of the availability of the Draft Basic Assessment Report for his perusal.	N/A
Municipality	**X**	13 March 2015	The uThungulu District Municipality requested to be registered as I&AP on the project. No comments or response were received from the local municipality.	The uThungulu District Municipality was registered as I&AP and will be provided with a copy of the Draft Basic Assessment Report for their perusal.	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Ezemvelo KZN	X	N/A	No comments or response were received from Ezemvelo on the proposed project.	N/A	N/A
Amafa	X	N/A	A needs and desirability application form was submitted to Amafa informing them of the project. No comments or response was received.	N/A	N/A

Department of Transport	X	N/A	No comments were received from the Department of Transport.	N/A	N/A
Communities					
The ward councillor was contacted as representative of the residents of the Ehlabosini community living to west of the proposed mining area.	X	N/A	No comments were received.	N/A	N/A
Dept. Land Affairs	X	N/A	Land Affairs were contacted as I&AP but did not respond or submit comments.	N/A	N/A
Traditional Leaders	N/A	N/A	No traditional leaders were identified that needed to be informed of the project.	N/A	N/A
Dept. Environmental Affairs	X		The Department of Environmental Affairs were automatically registered as stakeholder on the project and will be supplied with a copy of the Draft Basic Assessment Report for their perusal.		
Other Competent Authorities					

affected					
Department of Water Affairs	X	N/A	No comments were received.	N/A	N/A
Department of Agriculture, Forestry and Fisheries	X	N/A	No comments were received.	N/A	N/A
Department of Labour	X	N/A	No comments were received.	N/A	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:

According to Mucina and Rutherford the area is situated almost entirely on Letaba Formation basalts of the Karoo Supergroup. Soils are mainly black with a high clay content and depth in the range of 200 - 300 mm. Land types are mainly Ea with some Fb and Dc.

The applicant intents to mine the hard rock of the quarry in order to produce aggregate through crushing and screening. This area was chosen as it has previously been disturbed and would entail the mining of an existing quarry, thereby consolidating the mining related impacts on the property to one area.

Natural Vegetation:

The vegetation type of the natural area is classified as the Zululand Coastal Thornveld (Veld type SVi 24, Mucina and Rutherford, 2006) and is characterized by gently rolling landscapes supporting wooded grassland dominated by *Themeda triandra* grass. Bush clumps are a strong feature and more numerous on deeper soils. A few of the important taxa of this vegetation type include:

Small Trees:

Acacia natalitia	*Acacia nilotica*	*Phoenix reclinata*

Succulent Trees and Shrubs:

Euphorbia tirucalli	*Diospyros lycioides*	*Euclea divinorum*

Grasses:

Eragrostis capensis	*Panicum maximum*	*Sporobolus pyramidalis*
Hyperrhenia hirta	*Setaria sphacelata*	*Trachypogon spicatus*

Herbs:

Berkheya setifera *Centella asiatica* *Eriosema cordatum*

The vegetation of the area earmarked for the proposed mining activities has largely been removed to allow for sugar cane farming and the mining of the existing quarry pit. A small section (approximately 800m^2) along the top part of the northern bench of the existing quarry pit still presents some indigenous vegetation infested with pioneer plants and weeds. This vegetation has largely been transformed as a result of the previous mining activities. The development of the proposed mining area will therefore not have a negative impact on the Zululand Coastal Thornveld as it is not represented within the earmarked footprint area.

Although no sensitive, protected or endangered species were identified during the site inspection, it is proposed that the applicant remove as little vegetation as possible. This will lessen the area to be managed for erosion and weed invasion purposes. Topsoil management should be implemented to ensure that topsoil is available upon rehabilitation of the area.

Fauna:

No resident fauna were observed at the time of the site inspection. Should any fauna enter the mining area they will not be impacted on by the proposed mining activity as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure no fauna is harmed.

Surface and Ground Water:

The Msunduzi River passes the proposed mining area approximately 140 m to the south-east, with the section passing through the property only seasonally carrying water. The banks of the river are clearly defined and a sugar cane field is found between the proposed mining area and the river. Storm water will need to be channelled around the mining area to prevent possible contamination of clean water flowing over dirty areas. The proposed activity is not expected to have a negative effect on ground- or surface water.

Air Quality:

The background air quality of the surrounding area is relatively good due to low industrial activity. The semi-rural residential area of Ehlabosini bordering the property to the west has an impact on the natural air quality through emissions released by cooking/heating fires. Other factors contributing to air pollution is the burning of veld, sugar cane and plantation remains 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 the movement of machinery and vehicles, blasting and crushing of hard rock and the stockpiling of aggregates. 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 N2 and other public roads surrounding the property contributes to the ambient noise of the area. The noise to be generated at the proposed quarry operation is expected to temporarily increase the noise levels of the area. Blasting noise will be instantaneous and of short duration occurring only twice a year. Crushing and transportation of the material will generate noise daily. As mentioned above the closest residence is that of the applicant with the houses of the bordering community being more than 500 m away, the significance of noise on the surrounding environment is therefore deemed to be of low significance. Mitigation measures should be implemented to ensure employees conducts them in an acceptable manner while on site in order to lessen the noise impact of the proposed activity on the surrounding environment.

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 mining purposes and sugar cane production and no areas of cultural importance could be identified within the footprint area of the site.

Visual Exposure:

The proposed mining area will entail the extension of the existing quarry on the farm, but will still have a visual impact on the surrounding environment as it is situated against the rise of the hill. Due to the remote location the mining area will not be visible from the N2, but will be noticeable from the surrounding agricultural properties as well as the Ehlabosini community.

The applicant should ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the mine. Upon closure of the quarry 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 1 of Lot 29 Umfolozi No 15607 is situated in an agricultural setting to the west of the N2. The land use of the property comprise of agriculture (sugar cane farming) with the existing quarry pit previously used for mining purposes by Krikco CC. The quarry was not rehabilitated and it is proposed that Van Eeden Projects Trust will take over the rehabilitation responsibilities of the existing quarry should the mining permit application be approved.

The land use of the surrounding properties comprise of agriculture mainly sugar cane production and some grazing, plantations and to the west north-west of the property the semi-rural residential area of the Ehlabosini community.

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

The existing infrastructure in the vicinity of the proposed mining area is that of the sugar cane fields, farm roads, and the farm residence approximately 500 m from the proposed site. As mentioned above the houses of the Ehlabosini community is found to the west north-west of the proposed site also

approximately 500 m from the site. The provincial road running through the community area is more than 700 m from the site with the N2 being approximately 1.7km away.

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 activities will be concentrated within the 4.9 ha footprint area of the mine.

The river to the south of the mining area was identified as the only specific environmental feature that would require protection.

In order to mitigate the potential impact on the watercourse storm water management will have to be implemented on-site. Storm water will need to 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 river.

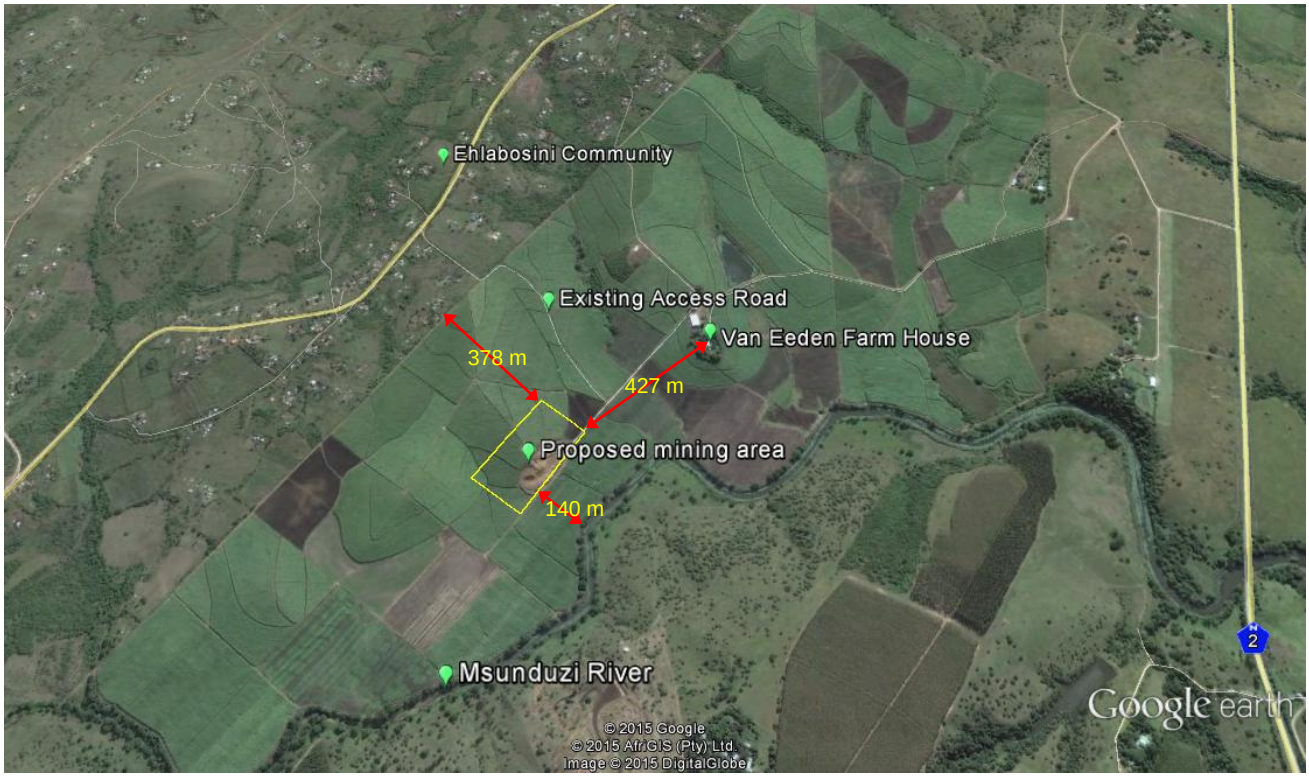

Figure 1 indicates the distance of the surrounding infrastructure in relation to the proposed mining area.

(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: Medium – High **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	5	2	3	5	5	5	**15**

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	5	5	5	**13**

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	2	2.6	5	5	5	**13**

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		
3	4	1	2.6	5	2	3.5	**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	5	4	4.5	**11.7**

Contamination of area with hydrocarbons or hazardous waste materials

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	2	3.3	5	5	5	**16.5**

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	4	1	3	5	2	3.5	**10.5**

Dust nuisance caused by blasting activities

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	2	1.6	5	2	3.5	**5.6**

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	5	2	3.5	**5.6**

EXCAVATION:

Visual intrusion associated with the excavation activities

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	5	2	3	5	5	5	**15**

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	1	2.3	4	5	4.5	**10.4**

Unsafe working conditions for employees

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

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

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: Fully Mitigated**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	2	3.3	4	5	4.5	**14.9**

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**

CRUSHING:

Dust nuisance due to the crushing activities

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

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

Noise nuisance generated by the crushing activities

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	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	2	3.3	4	5	4.5	**14.9**

STOCKPILING AND TRANSPORTING:

Visual intrusion associated with the stockpiled material and vehicles transporting the material

Rating: Medium

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

Loss of material due to ineffective storm water handling

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

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

Weed and invader plant infestation of the area due to the disturbance of the soil

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

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

Dust nuisance from stockpiled material 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	5	4.5	**13.5**

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	2	3.3	4	5	4.5	**14.9**

SLOPING AND LANDSCAPING DURING REHABILITATION:

Soil erosion

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

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

Health and safety risk posed by un-sloped areas

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

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

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	`1	2	1.6	3	5	4	**6.4**

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	1	2	**6**

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	2	2.5	**5.8**

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 production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

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

Rating of Duration:

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

Determination of Extent/Spatial Scale

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

Rating of Extent / Spatial Scale:

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

Determination of Overall Consequence

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

Example of calculating Overall Consequence

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

Determination of Likelihood:

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

Determination of Frequency

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

Rating of Frequency:

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

Determination of Probability

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

Rating of Probability:

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

Overall Likelihood

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

Example of calculating Overall Likelihood

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

Determination of Overall Environmental Significance:

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

Determination of Overall Environmental Significance

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

Qualitative description or magnitude of Environmental Significance

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

Description of Environmental Significance and related action required

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

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

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

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

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

Low-Medium — Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved of little would be required, or both. In case of positive impacts

alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.

Low — Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit

Insignificant — There would be a no impact at all – not even a very low impact on the system or any of its parts.

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

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

The proposed quarry will be established in an area that was previously used for mining purposes as well as the sugar cane fields of the applicant. The quarry will therefore not have to compete with other land uses at the site. Upon closure of the mining area, the land will revert back to agriculture.

Due to the remote location of the quarry very little to no 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.

The operation of the mine will however also have a number of positive impacts such as job creation for approximately five permanent workers. The aggregate to be removed from the quarry will be used for the upgrading of the roads in the vicinity of the mine. The proposed quarry will therefore contribute to the upgrading/maintenance of infrastructure in and around Mtubatuba, Eteza and Kwambonambi and indirectly contribute to the economy of the area.

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 activities having a negative impact on the aesthetic quality of the surrounding environment can be reduced to 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 and sloped 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 activities, having a negative impact on the surrounding environment can be reduced to being low-medium through the implementation of the mitigation measures listed below:

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents.
- 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.
- The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts.

Noise Handling:

The risk of noise, generated from the proposed mining activities, 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.
- The type, duration and timing of the blasting procedures must be planned with due cognisance of other land users and structures in the vicinity. Surrounding land owners must be notified in writing prior blasting occasions.

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 material 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, stockpile areas and access roads to prevent erosion and loss of material.
- Runoff water must also be diverted around the stockpile areas with trenches and contour structures to prevent erosion of the work areas.
- Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:

    - Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.

    - Dirty water must be collected and contained in a system separate from the clean water system.

    - Dirty water must be prevented from spilling or seeping into clean water systems.

    - The storm water management plan must apply for the entire life cycle of the mine 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.

Management of Health and Safety Risks:

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

- The type, duration and timing of the blasting procedures must be planned with due cognisance of other land users and structures in the vicinity,
- The surrounding landowners and communities must be informed in writing ahead of any blasting event,
- Measures to limit flyrock must be taken,

- Audible warning of a pending blast must be given at least 3 minutes in advance of the blast,
- All flyrock (of diameter 150mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed,
- 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.

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 processing area or waste pile may be established within 100 m of the edge of any river channel or other water bodies.
- Regular vehicle maintenance may only take place within the service bay area of the off-site workshop. 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 litre closed container/bin to be removed from the emergency service area to the 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 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 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 activities 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 of each removed strip 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 stockpile area and access roads to prevent erosion.

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 activities, 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.

ix) Motivation where no alternative sites were considered.

Van Eeden Projects Trust identified the need for gravel/aggregate in the surrounding business 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 area as preferred and only viable site alternative. The establishment of a quarry pit in a greenfield area while the existing quarry pit has not yet been mined out or rehabilitated were not found to be the best option with regard to sustainable development. In the light of the above the impacts associated with establishing another quarry pit in a greenfield site on the property is believed to have a higher significance without the need or motivation to justify it.

Various project alternatives were considered during the planning phase of the project and the preferred alternatives proofed to be:

- The open cast mining of the quarry has been identified as the most effective method to produce the desired aggregate again as a result of the existing quarry pit previously being mined in this manner.
- The use of temporary infrastructure will highly reduce the impact on the environment and decreasing the closure objectives with regard to decommissioning of infrastructure.
- As mentioned earlier in the report it is recommended the existing farm road connected to the provincial road to the north-west of the property be used as access road instead of trucks turning from the farm entrance onto the N2.

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

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

The open cast mining of the quarry has been identified as the most cost effective method to produce the desired aggregate. The proposed method will not produce any residual waste that has to be disposed of. Due to the remote location of the quarry the potential impacts on the surrounding environment, associated with open cast mining, is deemed to be of low significance. It is proposed that all mining related infrastructure will be contained within the boundary of the mining area. As no permanent infrastructure will be established on site the layout/position of the temporary infrastructure will be determined by the mining progress and available space within the 4.9 ha mining area.

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 mining area

Rating: Medium

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

Dust nuisance caused by the disturbance of the soil

Rating: Low

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

Noise nuisance caused by machinery stripping and stockpiling the topsoil

Rating: Low

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
1	1	2	1.3	3	2	2.5	**3.3**

Infestation of the topsoil heaps by weeds or invader plants

Rating: Low

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

Loss of topsoil due to incorrect storm water management

Rating: Low

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

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

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

BLASTING:

Health and safety risk posed by blasting activities

Rating: Low

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

Dust nuisance caused by blasting activities

Rating: Low – Medium

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
2	1	2	1.6	5	2	3.5	**5.6**

Noise nuisance caused by blasting activities

Rating: Low – Medium

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	**Significance**
2	1	2	1.6	5	2	3.5	**5.6**

EXCAVATION:

Visual intrusion associated with the excavation activities

Rating: Medium

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

Dust nuisance due to excavation activities

Rating: Low

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

Noise nuisance generated by excavation equipment

Rating: Low – Medium

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

Unsafe working conditions for employees

Rating: Low

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

Negative impact on the fauna and flora of the area

Rating: Low

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

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

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

Weed and invader plant infestation of the area

Rating: Low

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

CRUSHING:

Dust nuisance due to the crushing activities

Rating: Low – Medium

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

Noise nuisance generated by the crushing activities

Rating: Low – Medium

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	1	2.3	2	3	2.5	**5.8**

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

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

STOCKPILING AND TRANSPORTING:

Visual intrusion associated with the stockpiled material and vehicles transporting the material

Rating: Low – Medium

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

Loss of material due to ineffective storm water handling

Rating: Low

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

Weed and invader plant infestation of the area due to the disturbance of the soil

Rating: Low

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	1	1.3	4	2	3	**3.9**

Dust nuisance from stockpiled material and vehicles transporting the material

Rating: Low

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

Degradation of access roads

Rating: Low – Medium

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

Noise nuisance caused by vehicles

Rating: Low

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
1	1	2	1.3	2	3	2.5	**3.3**

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

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

SLOPING AND LANDSCAPING DURING REHABILITATION:

Soil erosion

Rating: Low

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

Health and safety risk posed by un-sloped areas

Rating: Low

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

Dust nuisance caused during sloping and landscaping activities

Rating: Low

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

Noise nuisance caused by machinery

Rating: Low

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	1	2	1.6	2	1	1.5	**2.4**

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

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

REPLACING OF TOPSOIL AND REHABILITATION OF DISTURBED AREA:

Loss of reinstated topsoil due to the absence of vegetation

Rating: Low

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

Infestation of the area by weed and invader plants

Rating: Low

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

j) Assessment of each identified potentially significant impact and risk

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

NAME OF ACTIVITY **(E.g. For prospecting –** drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc **E.g. for mining –** excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**POTENTIAL IMPACT** (Including the potential impacts for cumulative impacts) (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)	**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
STRIPPING AND STOCKPILING OF TOPSOIL	Visual intrusion associated with the establishment of the mining area.	The visual impact may affect the residents of the immediate area.	Site establishment / Construction phase	Medium – High	<u>Control:</u> Implementation of proper housekeeping	Medium
	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the landowner.		Medium	<u>Control:</u> Dust suppression	Low

STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	The noise impact should be contained within the boundaries of the property, but might have a periodic impact on the closest residents of the Ehlabosini community.	Site establishment / Construction phase	Medium	<u>Control:</u> Noise control measures	Low
	Infestation of the topsoil heaps by weeds and invader plants.	Biodiversity		Low - Medium	<u>Control & Remedy:</u> Implementation of weed control	Low
	Loss of topsoil due to incorrect storm water management.	Loss of topsoil will affect the rehabilitation of the mining area.		Medium	<u>Control:</u> Storm water management	Low
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed		Medium – High	<u>Control & Remedy:</u> Implementation of waste management	Low
BLASTING	Health and safety risk posed by blasting activities	Impact might affect the employees working on site.	Operational Phase	Medium	<u>Control:</u> Health and safety monitoring and management	Low
	Dust nuisance caused by blasting activities	Dependent on the blast, the impact might affect the surrounding community. Blasting will only occur twice a year.		Low – Medium	<u>Control:</u> Dust suppression	Low – Medium
	Noise nuisance caused by blasting activities	Dependent on the blast, the impact might affect the surrounding community. Blasting will only occur		Low – Medium	<u>Control:</u> Noise control measures	Low

		twice a year.				
EXCAVATION	Visual intrusion associated with the excavation activities	The visual impact may affect the residents of the immediate area.	Operational Phase	Medium – High	Control: Implementation of proper housekeeping	Medium
	Dust nuisance due to excavation activities.	Dust will be contained within the property boundaries and will therefore affect only the landowner.		Medium	Control: Dust suppression	Low
	Noise nuisance generated by excavation equipment.	The noise impact should be contained within the boundaries of the property, but might have a periodic impact on the closest residents of the Ehlabosini community.		Medium – High	Control: Noise control measures	Low
	Unsafe working conditions for employees.	Impact might affect employees.		Low	Control: Health and safety monitoring and management	Low
	Negative impact on the fauna and flora of the area.	Biodiversity		Medium	Control: Protection of fauna and flora through operational phase	Low
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed.		Medium	Control: Implementation of waste management	Low
	Weed and invader plant infestation of the area.	Biodiversity		Low - Medium	Control: Implementation of weed control	Low

CRUSHING	Dust nuisance due to the crushing activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational Phase	Medium	<u>Control:</u> Dust suppression	Low - Medium
	Noise nuisance generated by the crushing activities.	The noise impact should be contained within the boundaries of the property, but might have a periodic impact on the closest residents of the Ehlabosini community.		Medium	<u>Control:</u> Noise control measures	Low - Medium
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed.		Medium	<u>Control:</u> Implementation of waste management	Low
STOCKPILING AND TRANSPORTING	Visual intrusion associated with the stockpiled material and vehicles transporting the material.	The visual impact may affect the residents of the immediate area.	Operational Phase	Medium	<u>Control:</u> Implementation of proper housekeeping	Low – Medium
	Loss of material due to ineffective storm water handling.	Impact will affect income of applicant.		Low – Medium	<u>Control:</u> Storm water control measures	Low
	Weed and invader plant infestation of the area due to the disturbance of the soil	Biodiversity		Low – Medium	<u>Control & Remedy:</u> Implementation of weed control	Low
	Dust nuisance from stockpiled material and vehicles transporting the material.	Dust will be contained within the property boundaries and will therefore affect only the landowner.		Medium	<u>Control:</u> Dust suppression	Low

	Degradation of access roads.	All road users will be affected.		Medium	Control & Remedy: Road management	Low – Medium
	Noise nuisance caused by vehicles.	The noise impact should be contained within the boundaries of the property, but might have a periodic impact on the closest residents of the Ehlabosini community.		Medium	Control: Noise management monitoring and management	Low
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed.		Medium	Control: Implementation of waste management	Low
SLOPING AND LANDSCAPING DURING REHABILITATION	Soil Erosion	Biodiversity	Decommissioning Phase	Low – Medium	Control: Soil management	Low
	Health and safety risk posed by un-sloped areas	Impact will affect the employees and residents of the property.		Medium – High	Control: Health and safety monitoring and management.	Low
	Dust nuisance caused during sloping and landscaping activities.	Dust will be contained within the property boundaries and will therefore affect only the landowner.		Low - Medium	Control: Dust suppression	Low
	Noise nuisance caused by machinery.	The noise impact should be contained within the boundaries of the property, but might have a periodic impact on the closest residents of the Ehlabosini community.		Low - Medium	Control: Noise monitoring	Low
	Contamination of area with hydrocarbons or hazardous	Contamination may cause surface or ground water		Low - Medium	Control: Waste management	Low

	waste materials.	contamination if not addressed.				
REPLACING OF TOPSOIL AND REHABILITATION OF DISTURBED AREA	Loss of reinstated topsoil due to the absence of vegetation	Biodiversity and soil management	Decommissioning Phase	Low – Medium	Control: Soil management	Low
	Infestation of the area by weed and invader plants.	Biodiversity and soil management.		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**

k) Summary of specialist reports.

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

LIST OF STUDIES UNDERTAKEN	**RECOMMENDATIONS OF SPECIALIST REPORTS**	**SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)**	**REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED**
No specialist studies were deemed necessary for this project as the project entails the expansion of an existing quarry pit over an area used for sugar cane farming.			

Attach copies of Specialist Reports as appendices

l) Environmental impact statement

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

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

- The project entails the extension of an existing quarry pit over an area currently utilised for sugar cane production. Therefore very little natural vegetation has to be disturbed as a result of the mining activities.
- The existing roads to the quarry pit 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.
- Due to the remote setting of the quarry pit the majority of potential impacts can be contained within the boundaries of Portion 1 of Lot 29 Umfolozi No 15607 provided that the mitigation measures proposed in this document is implemented on-site.
- The mining operation will have a temporary visual impact on the surrounding environment. The extension of the existing quarry pit will however assist in the rehabilitation of the historic mining area that was left un-rehabilitated. Upon closure of the proposed mining area the visual impact on the environment of both the historic pit as well as the proposed mining area will be mitigated and addressed.
- The proposed project is not expected to have an impact on the river passing the site to the south-east as mining activities will be contained within the boundaries of the permitted site. The river is also removed from the mining area by a sugar can field. 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 five - eight employees indirectly contributing to the socio-economic status of the Mtubatuba area,
- The aggregate to be mined will be used for the upgrading of roads in the vicinity of the mine, thereby indirectly contributing to infrastructure development.
- The proposed quarry will contribute to the upgrading/maintenance of infrastructure in and around Mtubatuba, Eteza and Kwambonambi,
- The project will assist in the rehabilitation of the abandoned quarry pit on the property.

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

- Visual intrusion associated with the establishment of the mining area **Medium**
- Visual intrusion associated with the excavation activities **Medium**
- Visual intrusion associated with the stockpiled material and vehicles transporting the material **Low-Medium**
- Dust nuisance caused by blasting activities **Low-Medium**
- Dust nuisance due to the crushing activities **Low-Medium**
- Noise nuisance generated by excavation equipment **Low-Medium**
- Noise nuisance generated by the crushing activities **Low-Medium**
- Degradation of access roads **Low-Medium**

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

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

Management Objectives	Role	Management Outcomes
Dust Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. 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

Management Objectives	Role	Management Outcomes
		products) if dust is generated above acceptable limits. ▪ Assess effectiveness of dust suppression equipment. ▪ Ensure the crusher plant have operational water sprayer to alleviate dust generation from the conveyor belts.
Noise Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. 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. ▪ Plan the type, duration and timing of the blasting procedures with due cognisance of other land users and structures in the vicinity. ▪ Notify surrounding land owners in writing prior blasting occasions.
Management of weed/invader plants	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer.	▪ Implement a weed and invader plant control management plan. ▪ Control declared invader or exotic species on the rehabilitated areas. ▪ Keep the temporary topsoil stockpiles free of weeds.
Surface and Storm water Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer.	▪ Divert storm water around the topsoil heaps, stockpile areas and access roads to prevent erosion and loss of material. ▪ Divert runoff water around the stockpile areas with trenches and contour structures to prevent erosion of the work areas. ▪ Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose.
Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer. Blasting contractor to comply with national blasting requirements.	▪ Plan the type, duration and timing of the blasting procedures with due cognisance of other land users and structures in the vicinity, ▪ Inform the surrounding landowners and communities of any blasting event, ▪ Use noise mufflers and/or soft explosives during blasting, ▪ Limit flyrock, ▪ Give audible warning of a pending blast at least 3 minutes in advance of the blast, ▪ Remove all flyrock (of diameter 150mm and larger) which falls beyond the working area, together with the rock spill.

Management Objectives	Role	Management Outcomes
		▪ 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 EMP. Compliance to be monitored by the Environmental Control Officer.	▪ Ensure no waste pile is established within 100 m of the edge of any river channel or other water bodies. ▪ Ensure regular 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. ▪ 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. ▪ 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 should take place on a regular basis and disposed of at the recognised landfill site at Empangeni. Prevent refuse from being dumped on or in the vicinity of the mine 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 at the stockpile area. ▪ 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

Management Objectives	Role	Management Outcomes
		vegetation does not re-establish within 6 months of stockpiling. ▪ 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.

n) Aspects for inclusion as conditions of Authorisation.
Any aspects which must be made conditions of the Environmental Authorisation

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

o) Description of any assumptions, uncertainties and gaps in knowledge.
(Which relate to the assessment and mitigation measures proposed)

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

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

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

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

ii) Conditions that must be included in the authorisation

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

q) Period for which the Environmental Authorisation is required.

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

r) Undertaking

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

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

s) Financial Provision

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

i) Explain how the aforesaid amount was derived

The annual amount required to manage and rehabilitate the environment was estimated to be R145 000. Please see the explanation as to how this amount was derived at attached as Appendix G – Financial and Technical Competence.

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 Van Eeden Projects Trust.

t) Specific Information required by the competent Authority

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

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

The proposed quarry will be established in an area that was previously used for mining purposes as well as sugar cane production by the applicant. The

quarry will therefore not have to compete with other land uses at the site. Upon closure the land will revert back to agriculture.

Due to the remote location of the quarry very little to no 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. However due to the distance of the community from the mining area (±500 m) these impacts are deemed to be of low-medium significance.

The operation of the mine will however also have a number of positive impacts such as job creation for approximately five permanent workers. The aggregate to be removed from the quarry will be used for the upgrading of the roads in the vicinity of the mine. The proposed quarry will therefore contribute to the upgrading/maintenance of infrastructure in and around Mtubatuba, Eteza and Kwambonambi. Should this application be approved it will also enable the applicant to rehabilitation the abandoned quarry pit on his property.

(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).

Due to the disturbed nature of the proposed footprint area, by previous mining activities as well as the establishment of the sugar cane fields, no area of archaeological or cultural importance could be identified. A Needs and Desirability Application Form in terms of the KwaZulu-Natal Heritage Act No 4 of 2008 and the National Heritage Resources Act No 25 of 1999 (Section 38(1)) was submitted to Amafa (Heritage KwaZulu-Natal) for their perusal. To date no response has been received from Amafa.

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

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

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

1. Expansion of the existing quarry pit (Preferred Alternative) vs. Establishment of quarry in a greenfield area,
2. Open Cast mining (Preferred Alternative) vs. Underground Mining,
3. Temporary Infrastructure (Preferred Alternative) vs. Permanent Infrastructure,
4. Access onto Provincial Road (Preferred Alternative) vs. Access onto National Road,
5. 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 Christine Fouche 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)

The decommissioning phase will entail the rehabilitation of the mining site. Upon cessation of the mining activities, the area will be fully rehabilitated. The perimeter walls of the opencast pit will either be sloped at 1:3 to the pit floor to prevent soil erosion or be stepped by creating benches of not more than 3 meter high. The applicant will comply with the minimum closure objectives as prescribed by DMR and detailed below.

<u>Rehabilitation of the excavated area:</u>

- 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 added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored shall be returned to its original depth over the area.
- The area shall be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

<u>Rehabilitation of plant area:</u>

- The compacted areas shall be ripped and the topsoil returned over the area.
- Coarse natural material used for the construction of ramps shall be removed and dumped into the excavations.
- Stockpiles shall 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.
  - The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora if natural vegetation does not re-establish within 6 months of the closure of the site.
- Photographs of the mining area 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 300 mm and graded to an even surface condition and the previously stored topsoil will be returned to its original depth over the area.

- Prior to replacing the topsoil the overburden 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 natural vegetation does not re-establish within 6 months after closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final rehabilitation:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and weed / alien clearing.
- All infrastructure, equipment, plant, temporary housing and other items used during the mining period will be removed from the site (section 44 of the MPRDA).
- 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.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

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. Water sprayers will be fixed to the crusher plant and a water truck will be used to spray access roads and stockpile areas to alleviate dust generation. It is proposed that the mining activities will require approximately 1 000 l of water per day.

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

The landowner has an existing Water Use Certificate (Ref No. 21165908) to abstract 540 000l of water per annum from the Msunduzi River. Water for the

mining activity will be obtained in accordance with this authorisation. An application will be submitted to DWS to change the water use from agriculture to industrial for a portion of the allocated water, in order to allow its use at the mining site.

iv) Impacts to be mitigated in their respective phases

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

ACTIVITIES **(E.g. For prospecting –** drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc **E.g. for mining –** excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**PHASE** (of operation in which activity will take place State: Planning and design, Pre-Construction, Construction Operational, Rehabilitation, Closure, Post Closure)	**SIZE AND SCALE OF DISTURBANCE** (volumes, tonnages and hectares or m²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and mitigation of pollutants)	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations wherein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to rehabilitation specifically this must take place at the earliest opportunity. With regard to rehabilitation, therefore state either... Upon cessation of the individual activity Or, Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Stripping and Stockpiling of topsoil	Site establishment / Construction phase.	4.9 ha	Visual mitigation: • 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 and sloped to insure that the visual impact on the aesthetic value of the area	• Dust and Noise: NEM:AQA, 2004 Regulation 6(1) • Weeds: CARA, 1983 • Storm Water:	Throughout the site establishment phase.

			is kept to a minimum. Dust handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • 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 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.	NWA, 1998 • Waste: NEM:WA, 2008	

			Weed and Invader Plant Management: • 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: • Storm water must be diverted around the topsoil heaps, stockpile areas and access roads to prevent erosion and loss of material. • Runoff water must also be diverted around the stockpile areas with trenches and contour structures to prevent erosion of		

			the work areas. Waste Management: • No processing area or waste pile may be established within 100 m of the edge of any river channel or other water bodies. • Regular vehicle maintenance may only take place within the service bay area of the off-site workshop. 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 litre closed container/bin to be removed from the emergency service area to the 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 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.		
Blasting	Operational Phase	3.9 ha	Management of Health and Safety Risks: • The type, duration and timing of the blasting procedures must be planned with due cognisance of other land users and structures in the vicinity, • The surrounding landowners and communities must be informed in writing ahead of any blasting event, • Measures to limit flyrock must be taken, • Audible warning of a pending blast must be given at least 3 minutes in advance of the blast, • All flyrock (of diameter 150mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed, • Workers must have access to the correct personal protection equipment (PPE) as required by law.	• Health and Safety: MHSA, 1996 OHSA, 1993 OHSAS 18001 • Dust and Noise: NEM:AQA, 2004 Regulation 6(1)	Applicable with each blasting event.

			• All operations must comply with the Occupational Health and Safety Act. Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust. Noise Handling: • 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. • The type, duration and timing of the blasting procedures must be planned with due cognisance of other land users and structures in the vicinity. Surrounding land owners must be notified in writing prior blasting occasions.		

Excavation	Operational Phase	3.9 ha	Visual Mitigation: • 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 and sloped to insure that the visual impact on the aesthetic value of the area is kept to a minimum. Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • 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 applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.	• Dust and Noise: NEM:AQA, 2004 Regulation 6(1) • Health and Safety: MHSA, 1996 OHSA, 1993 OHSAS 18001 • Fauna and Flora NEM:BA, 2004 • Waste: NEM:WA, 2008 • Weeds: CARA, 1983	Throughout the operational phase.

			• 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 Health and Safety Risks: • 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 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. Waste Management: • No processing area or waste pile may be established within 100 m of the edge of any river channel or other water bodies. • Regular vehicle maintenance may only take place within the service bay area of the off-site workshop. 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 litre closed container/bin to be removed from the emergency service area to the 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 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 weed or invader plants: • 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.		
Crushing	Operational Phase	0.3 ha	Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • The site manager must ensure	• Dust and Noise: NEM:AQA, 2004 • Waste: NEM:WA, 2008	Throughout the operational phase.

			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. • The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts. Noise Handling: • 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. Waste Management: • No processing area or waste pile may be established within 100 m of the edge of any river channel or other water bodies. • Regular vehicle maintenance may only take place within the service bay area of the off-site workshop. 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 litre closed container/bin to be removed from the emergency service area to the 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 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.		

Stockpiling and transporting	Operational Phase	0.7 ha	Visual Mitigation: • 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 and sloped to insure that the visual impact on the aesthetic value of the area is kept to a minimum. Storm water Handling: • Storm water must be diverted around the stockpile areas and access roads to prevent erosion and loss of material. • Runoff water must also be diverted around the stockpile areas with trenches and contour structures to prevent erosion of the work areas. • Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.	• Storm Water: NWA, 1998 • Weeds: CARA, 1983 • Dust and Noise: NEM:AQA, 2004 Regulation 6(1) • Waste: NEM:WA, 2008	Throughout the operational phase.

			▪ 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 mine 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. Management of weed or invader plants: • 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 stockpile area needs to be kept free of weeds. Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • 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. Management of Access Roads: • Storm water should be diverted around the access roads to prevent erosion. • 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 activities should be repaired by the applicant. Noise Handling: • 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. Waste Management: • No processing area or waste pile may be established within 100 m of the edge of any river channel or other water bodies. • Regular vehicle maintenance may only take place within the service bay area of the off-site workshop. 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 litre closed container/bin to be removed from the emergency service area to the 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 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.		
Sloping and Landscaping during rehabilitation	Decommissioning Phase	4.9 ha	Storm water Handling: • Storm water must be diverted around the rehabilitated area to prevent erosion and loss of re-instated material. Management of Health and Safety Risks:	• Storm Water: NWA, 1998 • Health and Safety: MHSA, 1996 OHSA, 1993 OHSAS 18001	Upon cessation of mining.

			• Excavations have to be rehabilitated as stipulated in the closure plan to ensure the site is safe upon closure. • 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. Dust Handling: • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. • 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 applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site, both	• Dust and Noise: NEM:AQA, 2004 Regulation 6(1) • Waste: NEM:WA, 2008	

			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. Waste Management: • 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 • 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.		
Replacing of topsoil and rehabilitation of disturbed area	Decommissioning Phase	4.9 ha	Rehabilitation of the excavated area: • 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 added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored shall be returned to its original depth over the area. • The area shall be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months	• Rehabilitation: MPRDA, 2008 • Health and Safety: MHSA, 1996 OHSA, 1993 OHSAS 18001 • Dust and Noise: NEM:AQA, 2004 Regulation 6(1) • Weeds: CARA, 1983 • Waste: NEM:WA, 2008	Upon cessation of mining.

			from closure of the site. • If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification. Rehabilitation of plant area: • The compacted areas shall be ripped and the topsoil returned over the area. • Coarse natural material used for the construction of ramps shall be removed and dumped into the excavations. • Stockpiles shall 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. ▪ The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora if natural vegetation does not re-establish within 6 months of the closure of the site. • Photographs of the mining area 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 300 mm and graded to an even surface condition and the previously stored topsoil will be returned to its original depth over the area. • Prior to replacing the topsoil the overburden 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 natural vegetation does not re-establish within 6 months after closure of the site. • If a reasonable assessment		

			indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed 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, leveling, top dressing, land preparation, seeding (if required) and maintenance, and weed / alien clearing. • All infrastructure, equipment, plant, temporary housing and other items used during the mining period will be removed from the site (section 44 of the MPRDA). • 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. • Final rehabilitation shall be completed within a period specified by the Regional Manager.		

e) Impact Management Outcomes

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

ACTIVITY (whether listed or not listed) **(E.g. excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc...)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..)**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives etc.)**
STRIPPING AND STOCKPILING OF TOPSOIL	Visual intrusion associated with the establishment of the mining area.	The visual impact may affect the residents of the immediate area.	Site establishment / Construction phase	<u>Control:</u> Implementation of proper housekeeping	• Impact on the surrounding environment mitigated until rehabilitation standards can be implemented.
	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the landowner.		<u>Control:</u> Dust suppression	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard

					published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM:AQA, 2004 Regulation 6(1)
STRIPPING AND STOCKPILING OF TOPSOIL	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	The noise impact should be contained within the boundaries of the property, but might have a periodic impact on the closest residents of the Ehlabosini community.	Site establishment / Construction phase	<u>Control:</u> Noise control measures	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Infestation of the topsoil heaps by weeds and invader plants	Biodiversity		<u>Control & Remedy:</u> Implementation of weed control	• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.
	Loss of topsoil due to incorrect storm water management.	Loss of topsoil will affect the rehabilitation of the mining area.		<u>Control:</u> Storm water management	• The impact should be avoided through the implementation of storm water management.
	Contamination of area	Contamination may		<u>Control & Remedy:</u>	• The impact should be

	with hydrocarbons or hazardous waste materials.	cause surface or ground water contamination if not addressed		Implementation of waste management	avoided through the implementation of the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.
BLASTING	Health and safety risk posed by blasting activities	Impact might affect the employees working on site.	Operational Phase	<u>Control:</u> Health and safety monitoring and management	• The impact should be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001
	Dust nuisance caused by blasting activities	Dependent on the blast, the impact might affect the surrounding community. Blasting will only occur twice a year.		<u>Control:</u> Dust suppression	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM:AQA, 2004 Regulation 6(1)
	Noise nuisance caused by blasting	Dependent on the blast, the impact		<u>Control:</u> Noise control measures	• Noise levels on the site has to be managed and need to

	activities	might affect the surrounding community. Blasting will only occur twice a year.			comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
EXCAVATION	Visual intrusion associated with the excavation activities	The visual impact may affect the residents of the immediate area.	Operational Phase	<u>Control:</u> Implementation of proper housekeeping	• Impact on the surrounding environment mitigated until rehabilitation standards can be implemented.
	Dust nuisance due to excavation activities.	Dust will be contained within the property boundaries and will therefore affect only the landowner.		<u>Control:</u> Dust suppression	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM:AQA, 2004 Regulation 6(1).
	Noise nuisance generated by excavation equipment.	The noise impact should be contained within the		<u>Control:</u> Noise control measures	• Noise levels on the site has to be managed and need to comply with the standards

		boundaries of the property, but might have a periodic impact on the closest residents of the Ehlabosini community.			stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Unsafe working conditions for employees.	Impact might affect employees.		<u>Control:</u> Health and safety monitoring and management	• The impact should be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001
EXCAVATION	Negative impact on the fauna and flora of the area.	Biodiversity	Operational Phase	<u>Control:</u> Protection of fauna and flora through operational phase	• The impact should be avoided through the implementation of the mitigation measures stipulated in this document. • NEM:BA, 2004.
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed.		<u>Control:</u> Implementation of waste management	• The impact should be avoided through the implementation the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.

	Weed and invader plant infestation of the area.	Biodiversity		<u>Control:</u> Implementation of weed control	• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.
CRUSHING	Dust nuisance due to the crushing activities	Dust will be contained within the property boundaries and will therefore affect only the landowner.	Operational Phase	<u>Control:</u> Dust suppression	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM:AQA, 2004 Regulation 6(1).
	Noise nuisance generated by the crushing activities.	The noise impact should be contained within the boundaries of the property, but might have a periodic impact on the closest residents of the Ehlabosini community.		<u>Control:</u> Noise control measures	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more

					than 82dBA need to be issue with hearing protection.
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed.		<u>Control:</u> Implementation of waste management	• The impact should be avoided through the implementation the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.
STOCKPILING AND TRANSPORTING	Visual intrusion associated with the stockpiled material and vehicles transporting the material.	The visual impact may affect the residents of the immediate area.	Operational Phase	<u>Control:</u> Implementation of proper housekeeping	• Impact on the surrounding environment mitigated until rehabilitation standards can be implemented.
	Loss of material due to ineffective storm water handling.	Impact will affect income of applicant.		<u>Control:</u> Storm water control measures	• The impact should be avoided through the implementation of storm water management.
	Weed and invader plant infestation of the area due to the disturbance of the soil	Biodiversity		<u>Control & Remedy:</u> Implementation of weed control	• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.
	Dust nuisance from	Dust will be		<u>Control:</u> Dust suppression	• Fallout dust levels has to

	stockpiled material and vehicles transporting the material.	contained within the property boundaries and will therefore affect only the landowner.			comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM:AQA, 2004 Regulation 6(1).
STOCKPILING AND TRANSPORTING	Degradation of access roads.	All road users will be affected.	Operational Phase	<u>Control & Remedy:</u> Road management	• The impact should be avoided through the implementation of the mitigation measures proposed in this document.
	Noise nuisance caused by vehicles.	The noise impact should be contained within the boundaries of the property, but might have a periodic impact on the closest residents of the Ehlabosini community.		<u>Control:</u> Noise management monitoring and management	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Contamination of area	Contamination may		<u>Control:</u> Implementation of waste management	• The impact should be

	with hydrocarbons or hazardous waste materials.	cause surface or ground water contamination if not addressed.			avoided through the implementation the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.
SLOPING AND LANDSCAPING DURING REHABILITATION	Soil Erosion	Biodiversity	Decommissioning Phase	Control: Soil management	• The impact should be avoided through the implementation the mitigation measures stipulated in this document. • CARA, 1993
	Health and safety risk posed by un-sloped areas	Impact will affect the employees and residents of the property.		Control: Health and safety monitoring and management.	• The impact should be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001
	Dust nuisance caused during sloping and landscaping activities.	Dust will be contained within the property boundaries and will therefore affect only the landowner.		Control: Dust suppression	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates

SLOPING AND LANDSCAPING DURING REHABILITATION			Decommissioning Phase		>1/10th of the occupational exposure limit. • NEM:AQA, 2004 Regulation 6(1).
	Noise nuisance caused by machinery.	The noise impact should be contained within the boundaries of the property, but might have a periodic impact on the closest residents of the Ehlabosini community.		<u>Control:</u> Noise monitoring	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed.		<u>Control:</u> Waste management	• The impact should be avoided through the implementation the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.

REPLACING OF TOPSOIL AND REHABILITATION OF DISTURBED AREA	Loss of reinstated topsoil due to the absence of vegetation	Biodiversity and soil management	Decommissioning Phase	<u>Control:</u> Soil management	• The impact should be avoided through the implementation the mitigation measures stipulated in this document. • CARA, 1993
	Infestation of the area by weed and invader plants.	Biodiversity and soil management.		<u>Control & Remedy:</u> Implementation of weed control	• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.

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 WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
STRIPPING AND STOCKPILING OF TOPSOIL	Visual intrusion associated with the establishment of the mining area.	<u>Control:</u> Implementation of proper housekeeping	To be implemented daily throughout the site establishment / construction phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Impact on the surrounding environment must be mitigated until rehabilitation standards can be implemented in terms of the MRDA.
	Dust nuisance caused by the disturbance of soil.	<u>Control:</u> Dust suppression	To be implemented daily throughout the site establishment / construction phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to

STRIPPING AND STOCKPILING OF TOPSOIL				comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM:AQA, 2004 Regulation 6(1)
	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	<u>Control:</u> Noise control measures	To be implemented daily throughout the site establishment / construction phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Infestation of the topsoil heaps by weeds and invader plants	<u>Control & Remedy:</u> Implementation of weed control	To be implemented when necessary throughout the site establishment / construction phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.
	Loss of topsoil due to incorrect storm water management.	<u>Control:</u> Storm water management	To be implemented daily throughout the site establishment / construction phase: • Daily compliance monitoring by site management. • Quarterly compliance	• The impact should be avoided through the implementation of storm water management.

			monitoring of site by an Environmental Control Officer.	
	Contamination of area with hydrocarbons or hazardous waste materials.	Control & Remedy: Implementation of waste management	To be implemented daily throughout the site establishment / construction phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the implementation of the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.
BLASTING	Health and safety risk posed by blasting activities	Control: Health and safety monitoring and management	To be implemented when necessary throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001
	Dust nuisance caused by blasting activities	Control: Dust suppression	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit.

				• NEM:AQA, 2004 Regulation 6(1)
	Noise nuisance caused by blasting activities	<u>Control:</u> Noise control measures	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
EXCAVATION	Visual intrusion associated with the excavation activities	<u>Control:</u> Implementation of proper housekeeping	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Impact on the surrounding environment mitigated until rehabilitation standards can be implemented.
	Dust nuisance due to excavation activities.	<u>Control:</u> Dust suppression	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit.

EXCAVATION				• NEM:AQA, 2004 Regulation 6(1).
	Noise nuisance generated by excavation equipment.	<u>Control:</u> Noise control measures	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Unsafe working conditions for employees.	<u>Control:</u> Health and safety monitoring and management	To be daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001
	Negative impact on the fauna and flora of the area.	<u>Control:</u> Protection of fauna and flora through operational phase	To be daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the implementation of the mitigation measures stipulated in this document. • NEM:BA, 2004.
	Contamination of area with hydrocarbons or hazardous waste	<u>Control:</u> Implementation of waste management	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management.	• The impact should be avoided through the implementation the mitigation measures stipulated in this

	materials.		• Quarterly compliance monitoring of site by an Environmental Control Officer.	document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.
	Weed and invader plant infestation of the area.	<u>Control:</u> Implementation of weed control	To be implemented when necessary throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.
CRUSHING	Dust nuisance due to the crushing activities	<u>Control:</u> Dust suppression	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM:AQA, 2004 Regulation 6(1).

CRUSHING	Noise nuisance generated by the crushing activities.	Control: Noise control measures	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Contamination of area with hydrocarbons or hazardous waste materials.	Control: Implementation of waste management	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the implementation the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.
STOCKPILING AND TRANSPORTING	Visual intrusion associated with the stockpiled material and vehicles transporting the material.	Control: Implementation of proper housekeeping	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Impact on the surrounding environment mitigated until rehabilitation standards can be implemented.
	Loss of material due to ineffective storm water handling.	Control: Storm water control measures	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management.	• The impact should be avoided through the implementation of storm

			• Quarterly compliance monitoring of site by an Environmental Control Officer.	water management.
	Weed and invader plant infestation of the area due to the disturbance of the soil	Control & Remedy: Implementation of weed control	To be implemented when necessary throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.
STOCKPILING AND TRANSPORTING	Dust nuisance from stockpiled material and vehicles transporting the material.	Control: Dust suppression	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM:AQA, 2004 Regulation 6(1).
	Degradation of access roads.	Control & Remedy: Road management	To be implemented when necessary throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an	• The impact should be avoided through the implementation of the mitigation measures proposed in this document.

			Environmental Control Officer.	
STOCKPILING AND TRANSPORTING	Noise nuisance caused by vehicles.	<u>Control:</u> Noise management monitoring and management	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.
	Contamination of area with hydrocarbons or hazardous waste materials.	<u>Control:</u> Implementation of waste management	To be implemented daily throughout the operational phase: • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the implementation the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.
SLOPING AND LANDSCAPING DURING REHABILITATION	Soil Erosion	<u>Control:</u> Soil management	To be implemented throughout the rehabilitation / closure phase: • Daily compliance monitoring by site management. • Compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the implementation the mitigation measures stipulated in this document. • CARA, 1993
	Health and safety risk posed by un-sloped	<u>Control:</u> Health and safety monitoring and management.	To be implemented throughout the rehabilitation / closure phase:	• The impact should be avoided through compliance

SLOPING AND LANDSCAPING DURING REHABILITATION	areas		• Daily compliance monitoring by site management. • Compliance monitoring of site by an Environmental Control Officer.	with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001
	Dust nuisance caused during sloping and landscaping activities.	<u>Control:</u> Dust suppression	To be implemented throughout the rehabilitation / closure phase: • Daily compliance monitoring by site management. • Compliance monitoring of site by an Environmental Control Officer.	• Fallout dust levels has to comply with the acceptable dust fall rate published for non-residential areas in the National Dust Control Regulations 2013 – 600 < Dust Fall < 1 200 mg/m²/day. • Gravimetric dust levels has to comply with the standard published in the NIOSH guidelines – Particulates >1/10th of the occupational exposure limit. • NEM:AQA, 2004 Regulation 6(1).
	Noise nuisance caused by machinery.	<u>Control:</u> Noise monitoring	To be implemented throughout the rehabilitation / closure phase: • Daily compliance monitoring by site management. • Compliance monitoring of site by an Environmental Control Officer.	• Noise levels on the site has to be managed and need to comply with the standards stipulated in NEM:AQA, 2004 Regulation 6(1) as well as the n*oise standards of SANS 10103:2008.* • Employees working in areas with noise levels of more than 82dBA need to be issue with hearing protection.

	Contamination of area with hydrocarbons or hazardous waste materials.	Control: Waste management	To be implemented throughout the rehabilitation / closure phase: • Daily compliance monitoring by site management. • Compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the implementation the mitigation measures stipulated in this document. • Should spillage however occur the area needs to be cleaned in accordance with the standards of the NEM:WA, 2008.
REPLACING OF TOPSOIL AND REHABILITATION OF DISTURBED AREA	Loss of reinstated topsoil due to the absence of vegetation	Control: Soil management	To be implemented throughout the rehabilitation / closure phase: • Daily compliance monitoring by site management. • Compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the implementation the mitigation measures stipulated in this document. • CARA, 1993
	Infestation of the area by weed and invader plants.	Control & Remedy: Implementation of weed control	To be implemented throughout the rehabilitation / closure phase: • Daily compliance monitoring by site management. • Compliance monitoring of site by an Environmental Control Officer.	• The impact should be avoided through the eradication of Category 1 weeds/invader plants in terms of CARA, 1993 as well as the implementation of the mitigation measures in this document.

i) Financial Provision

(1) Determination of the amount of Financial Provision.

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

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

Compacted soil will be ripped and levelled in order to re-establish a growth medium. Stockpiles will be removed during the decommissioning phase, the stockpile area ripped and available topsoil that was removed will be spread over worked areas to enhance the establishment of vegetation. All waste materials will be removed from the site and dumped at recognised landfill sites. 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 mine all infrastructure will be removed. The compacted areas will be ripped and levelled upon which the topsoil will be replaced. The sides of the pit will be sloped to ensure safety and prevent erosion. 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 decommissioning phase will entail the rehabilitation of the mining site. Upon cessation of the mining activities, the area will be fully rehabilitated. The perimeter walls of the opencast pit will be sloped at 1:3 to the pit floor to prevent soil erosion or stepped by creating benches of not more than 3 meter. The rehabilitation of the quarry pit 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:

<u>Rehabilitation of the excavated area:</u>

- 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 added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored shall be returned to its original depth over the area.
- The area shall be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

<u>Rehabilitation of plant area:</u>

- The compacted areas shall be ripped and the topsoil returned over the area.
- Coarse natural material used for the construction of ramps shall be removed and dumped into the excavations.

- Stockpiles shall 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.
    - The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora if natural vegetation does not re-establish within 6 months of the closure of the site.
- Photographs of the mining area 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 300 mm and graded to an even surface condition and the previously stored topsoil will be returned to its original depth over the area.
- Prior to replacing the topsoil the overburden 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 natural vegetation does not re-establish within 6 months after closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final rehabilitation:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and weed / alien clearing.
- All infrastructure, equipment, plant, temporary housing and other items used during the mining period will be removed from the site (section 44 of the MPRDA).
- 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.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

(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	Aggregate
Saleable mineral by-product	None

Risk ranking

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

Primary risk ranking (either Table B.12 or B.13	C (Low risk).

Revised risk ranking (B.14)	N/A

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Limited

Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)		No
2(A)	Demolition of steel buildings and structures		No
2(B)	Demolition of reinforced concrete buildings and structures		No
3	Rehabilitation of access roads		No
4(A)	Demolition and rehabilitation of electrified railway lines		No
4(B)	Demolition and rehabilitation of non-electrified railway lines		No
5	Demolition of housing and facilities		No
6	Opencast rehabilitation including final voids and ramps	Yes	
7	Sealing of shafts, adits and inclines		No
8(A)	Rehabilitation of overburden and spoils	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, managing polluted water and managing the impact on groundwater)		No
14	2 to 3 years of maintenance and aftercare		No

Unit rates for closure components

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

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	189 071	0.04
7	Sealing of **shafts, adits and inclines**		
8(A)	Rehabilitation of **overburden and spoils**	126 047	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	99 851	1
11	**River diversions**		
12	**Fencing**		
13	**Water management** (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)		
14	2 to 3 years of **maintenance and aftercare**		

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.1
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 1 of Lot 29 Umfolozi No 15607**			**Location:**	**Mtubatuba**		
Evaluators:	**C Fouche**			**Date:**	**2015-03-30**		
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	13	1	1.1	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	180	1	1.1	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	266	1	1.1	R 0.00
3	Rehabilitation of access roads	m^2	0	32	1	1.1	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	313	1	1.1	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	171	1	1.1	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	361	1	1.1	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	4.7	189 071	0.04	1.1	R39 099.88
7	Sealing of shaft, audits and inclines	m^3	0	97	1	1.1	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0.3	126 047	1	1.1	R41 595.51
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing	ha	0	156 989	1	1.1	R 0.00

	waste)						
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	455 971	0.51	1.1	R 0.00
9	Rehabilitation of subsided areas	ha	0	105 545	1	1.1	R 0.00
10	General surface rehabilitation	ha	0.2	99 851	1	1.1	R21 967.22
11	River diversions	ha	0	99 851	1	1.1	R 0.00
12	Fencing	m	0	114	1	1.1	R 0.00
13	Water Management	ha	0	37 966	0.17	1.1	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	0	13 288	1	1.1	R 0.00
15(A)	Specialists study	Sum	0			1.1	R 0.00
15(B)	Specialists study	Sum	0				R 0.00
						Sum of items 1 to 15 above	R102 662.61
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R102 662.61		**Sub Total 1**	R107 795.74

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R6 467.74
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R10 779.57
		Sub Total 2 (Subtotal 1 plus management and contingency)	R125 043.05
		Vat (14%)	R17 506.03
		GRAND TOTAL (Subtotal 3 plus VAT)	**R142 549.08**

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 **R142 549.08**.

(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 REQUIRED MONITORING PROGRAMME	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
• Stripping and Stockpiling of topsoil • Blasting • Excavation • Crushing • Stockpiling and transporting • Sloping and Landscaping during rehabilitation	Dust Monitoring: • The dust generated by the mining activities should 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.	Role: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Responsibility: • 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	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

			PCB's (e.g. DAS products) if dust is generated above acceptable limits. • Assess effectiveness of dust suppression equipment. • Re-vegetate all disturbed or exposed areas as soon as possible to prevent any dust source from being created. • Ensure the crusher is equipped with water sprayers.	
• Stripping and Stockpiling of topsoil • Blasting • Excavation • Crushing • Sloping and Landscaping during rehabilitation	Noise Monitoring • The noise generated by the mining activities should be continuously monitored, and any excessive noise should be addressed.	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.	Role: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Responsibility: • Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. • Plan the type, duration and timing of the blasting procedures with due cognisance of other land users and structures in the vicinity. • Notify surrounding land owners in writing prior blasting occasions.	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

			• Use noise mufflers and/or soft explosives during blasting.	
• Stripping and Stockpiling of topsoil • Excavation • Stockpiling and transporting	Management of weed or invader plants • The presence of weed and/or invader plants should be continuously monitored, and any unwanted plants should be removed.	Management of weed or invader plants: • Removal of weeds should be manually or by the use of an approved herbicide.	Role: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Responsibility: • Implement a weed and invader plant control management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.
• Stockpiling and transporting • Sloping and Landscaping during rehabilitation	Surface and Storm Water Monitoring • The effectiveness of the storm water infrastructure needs to be continuously monitored.	Surface and Storm Water Handling: • Trenches and contours to be made to direct storm- and runoff water around the stockpile areas.	Role: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Responsibility: • Divert storm water around the topsoil heaps, stockpile areas and access roads to prevent erosion and loss of material. • Divert runoff water around the stockpile areas with trenches and contour structures to prevent erosion of the work areas. • Conduct mining in accordance with the Best Practice Guideline for small scale	Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

			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.	
• Blasting • Excavation • Sloping and Landscaping during rehabilitation	Management of Health and Safety Risks • All health and safety aspects need to be monitored on a daily basis.	Management of Health and Safety Risks: • Site manager to ensure that workers are equipped with required PPE while operating on site. • The necessary warning signs should be present at the site to inform the public and workers of the mining activities.	Role: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Responsibility: • Submit an application for approval of access onto the R392 to the Department of Roads and Public Works prior to the commencement of any work, • Inform the Traffic Department of each blast. If deemed necessary arrange for the temporary closure of the road during a blast, • Plan the type, duration and timing of the blasting procedures with due cognisance of other land users and structures in the vicinity, • Inform the surrounding landowners and communities of any blasting event, • Use noise mufflers and/or soft explosives will be used during blasting,	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

			• Limit flyrock, • Give audible warning of a pending blast at least 3 minutes in advance of the blast, • Remove all flyrock (of diameter 150mm and larger) which falls beyond the working area, together with the rock spill. • Ensure that workers have access to the correct PPE as required by law.	
• Excavation • Crushing • Stockpiling and transporting • Sloping and Landscaping during rehabilitation	Waste Management • Management of waste should be a daily monitoring activity. • Hydrocarbon spills need to be cleaned immediately and the site manager should check compliance daily.	Waste Management: • Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site. • Hydrocarbon spill kits to enable sufficient clean-up of contaminated areas. • Drip trays should be available to place underneath haul vehicles while the vehicles are parked at night. • Should a vehicle have a break down, it should be serviced immediately.	Role: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Responsibility: • Ensure that vehicle repairs only take place within the service bay area and all waste products are disposed of in a 200 litre 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 recognised facility. • Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

			of them at a recognised facility. • Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. • Place all used oils, grease or hydraulic fluids therein and remove these receptacles from the site on a regular basis for disposal at a registered or licensed hazardous disposal facility. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, 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 at Empangeni. Prevent refuse from being dumped on or in the vicinity of the mine area. • Biodegradable refuse to be handled as indicated above.	
• Stockpiling and transporting	Management of Access Roads • The condition of the access road should be continuously monitored. • Vehicles carrying materials has to be equipped with adequate tarpaulin type covers to ensure that material	Management of Access Roads: • Dust suppression equipment such as a water car and dispenser. • Trenches and contours to be made to direct storm- and runoff water around the access roads.	Role: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Responsibility: • Maintain newly constructed access roads (if applicable) so as to minimise dust, erosion or undue surface damage. • Divert storm water around the	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

	being transported will not leave the vehicle during transportation.		access roads to prevent erosion. • Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas. • Cover vehicles carrying materials with adequate tarpaulin type covers to ensure that material being transported does leave the vehicle during transportation. • Ensure vehicles entering and using the public road system from the site does not exceed the permissible legal limits on gross vehicle mass and individual axle loads as prescribed in terms of the National Road Traffic Act (Act No 93 of 1996).	
• Stripping and Stockpiling of topsoil	Topsoil Handling • When topsoil has been removed from any area the topsoil heaps need to be continuously protected against loss of soil due to wind and water erosion.	Topsoil Handling: • Excavating equipment to remove the first 300mm of topsoil from the proposed work areas. The applicant already has this equipment available. • Trenches and contours to be made to direct storm- and runoff water around the stockpiled topsoil area.	Role: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Responsibility: • Remove the first 300mm of topsoil in strips and store at the stockpile area. • Keep the temporary topsoil stockpiles free of weeds. • Place topsoil stockpiles on a levelled area and implement measures to safeguard the	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

			piles from being washed away in the event of heavy rains/storm water. • Topsoil heaps should not exceed 2 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • Divert storm- and runoff water around the stockpile area and access roads to prevent erosion.	

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

The committed time frames for monitoring and reporting are as stipulated in the table below:

Monitoring Aspect	Time Frames	Reporting
Dust Handling	Throughout Construction, Operational and Decommissioning Phase	▪ Daily compliance monitoring by site management. ▪ Quarterly compliance monitoring of site by an Environmental Control Officer.
Noise Handling	Throughout Construction, Operational and Decommissioning Phase	▪ Daily compliance monitoring by site management. ▪ Quarterly compliance monitoring of site by an Environmental Control Officer.
Management of weed/invader plants	Throughout Operational and Decommissioning Phase	▪ Daily compliance monitoring by site management. ▪ Quarterly compliance monitoring of site by an Environmental Control Officer.
Surface and Storm water Handling	Throughout Operational and Decommissioning Phase	▪ Daily compliance monitoring by site management. ▪ Quarterly compliance monitoring of site by an Environmental Control Officer.
Management of health and safety risks	Throughout Construction, Operational and Decommissioning Phase	▪ Daily compliance monitoring by site management. ▪ Quarterly compliance monitoring of site by an Environmental Control Officer.
Waste management	Throughout Construction, Operational and Decommissioning Phase	▪ Daily compliance monitoring by site management. ▪ Quarterly compliance monitoring of site by an Environmental Control Officer.
Management of access roads	Throughout Construction, Operational and Decommissioning Phase	▪ Daily compliance monitoring by site management. ▪ Quarterly compliance monitoring of site by an Environmental Control Officer.
Topsoil handling	Throughout Construction, Operational and Decommissioning Phase	▪ Daily compliance monitoring by site management. ▪ Quarterly compliance monitoring of site by an Environmental Control Officer.

In the light of the above mentioned it is proposed that the performance assessment/environmental audit report be quarterly submitted to DMR.

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 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 activities to the management programmes described in the EMPr.

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

- **Site Management:**
  - Stay within boundaries of site – do not enter adjacent properties
  - Keep tools and material properly stored
  - Smoke only in designated areas
  - Use toilets provided – report full or leaking toilets
- **Water Management and Erosion:**
  - Check that rainwater flows around work areas and are not contaminated
  - Report any erosion
  - Check that dirty water is kept from clean water
  - Do not swim in or drink from 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

- **<u>Fire Management:</u>**

  - 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**

Christine Fouche

Signature of the environmental assessment practitioner:

Greenmined Environmental

Name of Company:

08 April 2015

Date:

-END-

APPENDIX A

REGULATION 2.2 MAP

APPENDIX B

MINE ACTIVITIES MAP

APPENDIX C

SURROUNDING LAND USE MAP

APPENDIX D

REHABILITATION PLAN

APPENDIX E

COMMENTS AND RESPONSE REPORT

APPENDIX F

SUPPORTING IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT STATEMENT

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

TYPE OF IMPACT	DURATION	LIKELIHOOD	SIGNIFICANCE
Site Establishment / Construction Phase:	**Planning Phase**		
Stripping and Stockpiling of Topsoil:			
▪ Visual intrusion associated with the establishment of the mining area.		**Possible**	**Medium Concern**
▪ Dust nuisance caused by the disturbance of soil.		**Low Possibility**	**Low Concern**
▪ Noise nuisance caused by machinery stripping and stockpiling the topsoil.		**Low Possibility**	**Low Concern**
▪ Infestation of the topsoil heaps by weeds and invader plants.		**Low Possibility**	**Low Concern**
▪ Loss of topsoil due to incorrect storm water management.		**Low Possibility**	**Low Concern**
▪ Contamination of area with hydrocarbons or hazardous waste materials.		**Low Possibility**	**Low Concern**
Operational Phase:	**Duration of operational phase minimum of 3 years**		
Blasting:			
▪ Health and safety risk posed by blasting activities.		**Low Possibility**	**Low Concern**
▪ Dust nuisance caused by blasting activities.		**Definite**	**Low – Medium Concern**
▪ Noise nuisance caused by blasting		**Definite**	**Low – Medium**

activities.			**Concern**
<u>Excavation:</u>			
▪ Visual intrusion associated with the excavation activities.		**Definite**	**Medium Concern**
▪ Dust nuisance due to excavation activities.		**Low Possibility**	**Low Concern**
▪ Noise nuisance generated by excavation equipment.		**Low Possibility**	**Low – Medium Concern**
▪ Unsafe working conditions for employees.		**Low Possibility**	**Low Concern**
▪ Negative impact on the fauna and flora of the area.		**Low Possibility**	**Low Concern**
▪ Contamination of area with hydrocarbons or hazardous waste materials.		**Low Possibility**	**Low Concern**
▪ Weed and invader plant infestation of the area.		**Low Possibility**	**Low Concern**
<u>Crushing:</u>			
▪ Dust nuisance due to the crushing activities.		**Possible**	**Low – Medium Concern**
▪ Noise nuisance generated by the crushing activities.		**Possible**	**Low – Medium Concern**
▪ Contamination of area with hydrocarbons or hazardous waste materials.		**Low Possibility**	**Low Concern**
<u>Stockpiling and transporting:</u>			
▪ Visual intrusion associated with the stockpiled material and vehicles transporting the material.		**Low Possibility**	**Low – Medium Concern**
▪ Loss of material due to ineffective storm water handling.		**Low Possibility**	**Low Concern**
▪ Weed and invader plant infestation of the area due to the disturbance of the soil.		**Low Possibility**	**Low Concern**
▪ Dust nuisance from stockpiled material and vehicles transporting		**Low Possibility**	**Low Concern**

the material. ▪ Degradation of access roads. ▪ Noise nuisance caused by vehicles. ▪ Contamination of area with hydrocarbons or hazardous waste materials. **<u>Decommissioning Phase:</u>** <u>Sloping and landscaping during rehabilitation:</u> ▪ Soil erosion. ▪ Health and safety risk posed by un-sloped areas. ▪ Dust nuisance caused during sloping and landscaping activities. ▪ Noise nuisance caused by machinery. ▪ Contamination of area with hydrocarbons or hazardous waste material. <u>Replacing of topsoil and rehabilitation of disturbed area:</u> ▪ Loss of reinstated topsoil due to the absence of vegetation. ▪ Infestation of the area by weed and invader plants.	**Duration of decommissioning phase**	**Possible** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility**	**Low – Medium Concern** **Low Concern** **Low Concern** **Very Low Concern** **Very Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern**

APPENDIX G

FINANCIAL AND TECHNICAL COMPETENCE

APPENDIX H

PHOTOGRAPHS OF THE SITE

EXISTING QUARRY PIT TO BE MINED SHOULD THIS APPLICATION BE APPROVED

PHOTOGRAPH OF THE SOUTH-WESTERN BOUNDARY OF THE MINING AREA – PIONEER PLANTS VISIBLE

MINING AREA AS SEEN FROM THE MSUNDUZI RIVER

		
PHOTOGRAPH OF THE NORTH-EASTERN BOUNDARY OF THE MINING AREA – SUGAR CANE FIELDS VISIBLE		**EXISTING FARM ROAD TO BE USED TO ACCESS QUARRY PIT**
		
PHOTOGRAPH OF THE SURROUNDING AREA TOWARDS THE EAST	**PHOTOGRAPH OF THE SURROUNDING AREA TOWARDS THE SOUTH-EAST**	**PHOTOGRAPH OF THE SURROUNDING AREA TOWARDS THE SOUTH-WEST**

APPENDIX I

CV AND EXPERIENCE RECORD OF EAP