PROPOSED MINING ON PORTION 0 (REMAINING EXTENT) OF LOT 23 UMFOLOZI NO 13734, MBONAMBI, KWAZULU-NATAL PROVINCE

DRAFT BASIC ASSESSMENT REPORT

SEPTEMBER 2015

REFERENCE NUMBER: KZN 30/5/1/3/2/10429 MP

PREPARED FOR:

Aeterno Investments 215 (Pty) Ltd
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Centurion
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PREPARED BY:

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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: Aeterno Investments 215 (Pty) Ltd

TEL NO: 035 751 1119
FAX NO: 035 751 1344
POSTAL ADDRESS: P.O. Box 10635, Centurion, 0046
PHYSICAL ADDRESS: 44 Rustiger Avenue, Eldoragne Ext 3, Centurion, 0157
FILE REFERENCE NUMBER SAMRAD: KZN 30/5/1/3/2/10429MP

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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 0 (Remaining Extent) of Lot 23 Umfolozi No 13734
Application area (Ha)	2.89 ha
Magisterial district:	Mbonambi
Distance and direction from the nearest town	Mtubatuba – 7.5 km North
21 digit Surveyor General Code for each farm portion	N0GV00000001373400000

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 area previously used for crop farming. The applicant intends to extract the mineral through mechanical excavation by means of an excavator that will load the gravel onto trucks upon which it will be transported to clients. No blasting, crushing or screening will be needed. All activities will be contained within the boundaries of the mining site. The existing farm and provincial roads currently used to gain access to the property will be used to transport the gravel from the mining site to the clients. 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	2.89 ha	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	2.89 ha	X	GNR 983 Listing Notice 1 Activity 22: The decommissioning of any activity requiring a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No 28 of 2002).
Open cast mining	2.89 ha	X	GNR 983 Listing Notice 1 Activity 27: The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.
Open cast mining	2.89 ha	X	GNR 983 Listing Notice 1 Activity 28: Commercial developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.
Open cast mining	2.89 ha	X	GNR 985 Listing Notice 3 Activity 12: The clearance of an area of 300 square metres or more of indigenous vegetation in KwaZulu-Natal viii) a protected area identified in terms of NEMPAA.

(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 project will entail the mining of gravel by Aeterno Investments 215 (Pty) Ltd from a 2.89 ha footprint area on Portion 0 (Remaining Extent) of Lot 23 Umfolozi No 13734. The area earmarked for the proposed mining was previously used for crop production. Due to the low yield produced by the fields, mining of the area was identified as a more viable use.

The GPS coordinates for the proposed site are as listed below:

DEGREES, MINUTES, SECONDS (DD˚MM'SS")			DECIMAL DEGREES (DD)	
	LATITUDE	**LONGITUDE**	**LATITUDE**	**LONGITUDE**
A	28°27'28,026"S;	32°9'15.419"E	-28.457785˚S	32.154283˚E
B	28°27'19.84"S;	32°9'26.341"E	-28.455511˚S	32.157317˚E
C	28°27'20.552"S;	32°9'26.968"E	-28.455709˚S	32.157491˚E
D	28°27'30.132"S;	32°9'19.591"E	-28.45837˚S	32.155442˚E

The proposed mining activity triggers GNR 983 Listing Notice 1 Activities 21, 22, 27, 28 and GNR 985 Listing Notice 3 Activity 12 as:

- LN 1 Activity 21: the project requires a mining permit in terms of the MPRDA,
- LN 1 Activity 22: upon closure of the site a closure permit in terms of the MPRDA will be required,
- LN 1 Activity 27: the proposed site has some indigenous vegetation that established through succession, that will have to be removed in order to establish the mining area,
- LN 1 Activity 28: upon approval the site, that was previously used for agricultural purposes, will be used as a commercial mine source.
- LN 3 Activity 12: the property earmarked for the mining activities lies within 10 km from the iSimangaliso Wetland Park and therefore falls within the iSimangaliso's Zone of Influence.

Aeterno Investments (Pty) Ltd intends to extract the mineral through mechanical excavation by means of an excavator that will load the gravel onto trucks upon which it will be transported to clients.

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 footprint.

Upon stripping, the topsoil and overburden will be stockpiled along the boundaries of the mining area to be used during the rehabilitation phase. Topsoil stripping will be restricted to the areas to be 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 mining area

where it will not be driven over, contaminated, flooded or moved during the operational phase. The topsoil berm will measure a maximum of 1.5 m high and should be planted with indigenous grass species if vegetation does not naturally establish within 6 months of stockpiling to prevent soil erosion and to discourage growth of weeds. The roots of the grass will also improve the viability of the soil for rehabilitation purposes. The stripped overburden will be stockpiled on a designated area after the topsoil was 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:

- Excavation Equipment – for the removal of the gravel from the mining area,
- ADT Trucks – for the transport of the gravel from the site,
- Chemical Toilet – to be used by employees

Operational phase:

The mining process includes mechanical excavation, loading and transportation of the sought mineral. As mentioned previously the gravel will be extracted with an excavator that will load it onto trucks upon which it will be transported to the client. No blasting, crushing or screening will be needed. The mining activities will consist of the following:

- Excavation
- Transportation

No maintenance and servicing of machinery will be done at the mining area. Should an excavator need maintenance it will be moved off-site to the applicants existing 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. A chemical toilet will be established on site to be used by the employees.

The existing farm and provincial roads currently used to gain access to the property will be used to transport the gravel from the mining site to the clients. Haul trucks will travel along the existing farm road up to the provincial/public road passing across the bridge of the N2. Turning left they will travel along the existing road up to the formal interception of the provincial road with the N2 as illustrated below.

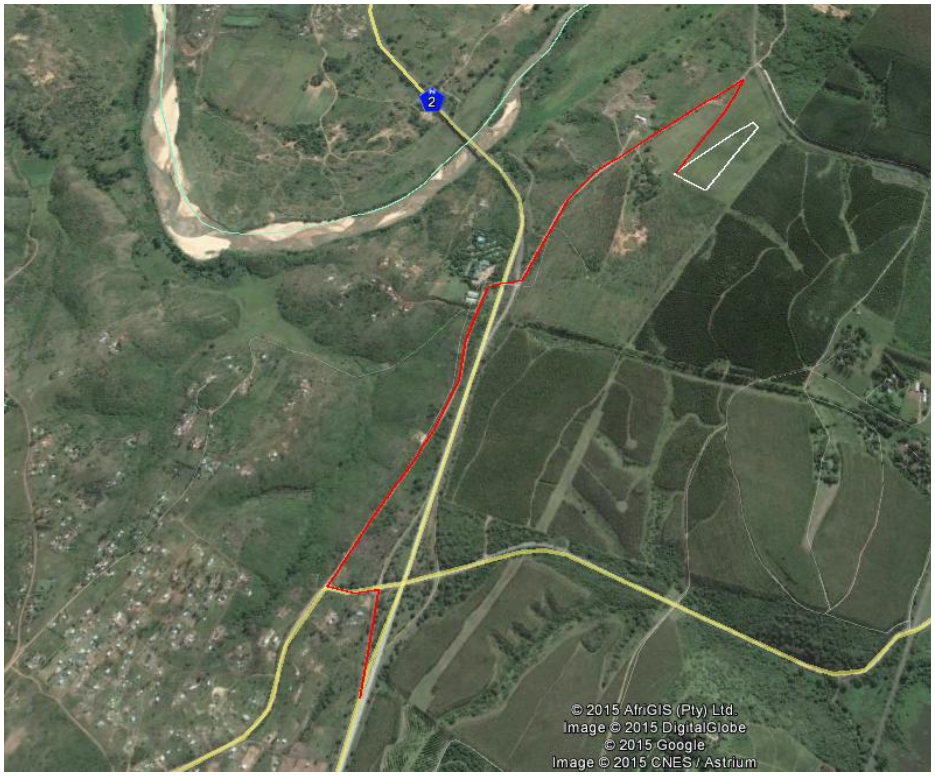

Figure 1: Satellite view indicating the proposed access road to the mining site

Decommissioning phase:

The closure objectives are for the mining area to be made safe and the remainder of the site to be returned to agricultural use. The perimeter walls of the mining area will be sloped (40˚) 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, 27 and 28 GNR 985 Listing Notice 3 Activity 12
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.
Biodiversity Policy and Strategy for South Africa: Strategy on Buffer Zones for National Parks	Biophysical Environment Description of current land uses	The property earmarked for mining falls within the 10 km buffer zone of the iSimangaliso Wetland Park

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 (in particular the widening of the N2) projects in the vicinity of the property triggered the need of the applicant to trade with the available gravel. The proposed mining will also contribute to the diversification of activities on the property, extending it from agriculture to include small scale mining.

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

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

- The site offers the mineral sought after,
- The proposed mining area was defined to be further than 500 m from the floodplain of the Umfolozi River, and more than 100 m from the railway line and the eastern boundary of the property.
- The proposed footprint area was previously used for crop production and therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area.
- The mining area can be reached by an existing access road that formally connects to the N2. No new road infrastructure need to be constructed.
- The open cast mining of the area was identified as the most effective method to obtain the desired gravel. Due to the small size of the activity and the remote location of the mining area the potential impacts on the surrounding environment, associated with 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. Any general waste that may be produced on-site will be contained in sealed refuse bins to be transported to the local municipal landfill site. As maintenance and servicing of the equipment will be done at an off-site workshop the amount of hazardous waste to be produced at the site will be minimal and will mainly be as a result of accidental leakage. Contaminated soil will be removed to the depth of the spillage and contained in sealed bins until removed from site by a hazardous waste handling contractor to be disposed of at a registered hazardous waste handling site.

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

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

i) Details of the development footprint alternatives considered.

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

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

The applicant identified two alternative sites for the proposed mining activity namely:

1. **Site Alternative 1 (S1) (Preferred Alternative):** Site Alternative 1 entails the mining of the proposed area (2.89 ha) within the boundaries of the following GPS Coordinates:

DEGREES, MINUTES, SECONDS (DD˚MM'SS")			DECIMAL DEGREES (DD)	
	LATITUDE	**LONGITUDE**	**LATITUDE**	**LONGITUDE**
A	28°27'28,026"S	32°9'15.419"E	-28.457785˚S	32.154283˚E
B	28°27'19.84"S	32°9'26.341"E	-28.455511˚S	32.157317˚E
C	28°27'20.552"S	32°9'26.968"E	-28.455709˚S	32.157491˚E
D	28°27'30.132"S	32°9'19.591"E	-28.45837˚S	32.155442˚E

Figure 2: Satellite view showing the position of Site Alternative 1

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

- The site offers the mineral sought after,
- The Umfolozi River borders the proposed mining area to the west, northwest and north. Although all mining activities can be contained within the boundaries of the mine area and the proposed excavation of the gravel does not produce any residual waste, the mining area was defined to be further than 500 m from the floodplain of the bordering river in order to eliminate any potential negative impact the mining activities may have on the river or floodplain.
- In order to adhere to the conditions of the Mine Health and Safety Act, 1996 (Act No 29 of 1996) and the Regulations the proposed mining area was chosen to be further than 100 m from the railway line that passes through the property. The mining area will also be further than 100m from the eastern boundary of the property.
- The proposed footprint area was previously used for crop production and therefore very little indigenous vegetation needs to be disturbed in order to establish the mining area.
- The mining area can be reached by an existing access road that formally connects to the N2. No new road infrastructure need to be constructed.

2. **Site Alternative 2 (S2):** Site Alternative 2 entails the mining of a 4.9 ha area within the boundaries of the following GPS Coordinates:

DEGREES, MINUTES, SECONDS (DD˚MM'SS")			DECIMAL DEGREES (DD)	
	LATITUDE	**LONGITUDE**	**LATITUDE**	**LONGITUDE**
A	28°27'19,82"S	32°9'18.98"E	-28.455506˚S	32.155272˚E
B	28°27'14.10"S	32°9'26.21"E	-28.453917˚S	32.157281˚E
C	28°27'21.26"S	32°9'29.09"E	-28.455906˚S	32.158081˚E
D	28°27'25.58"S	32°9'25.60"E	-28.457106˚S	32.157111˚E

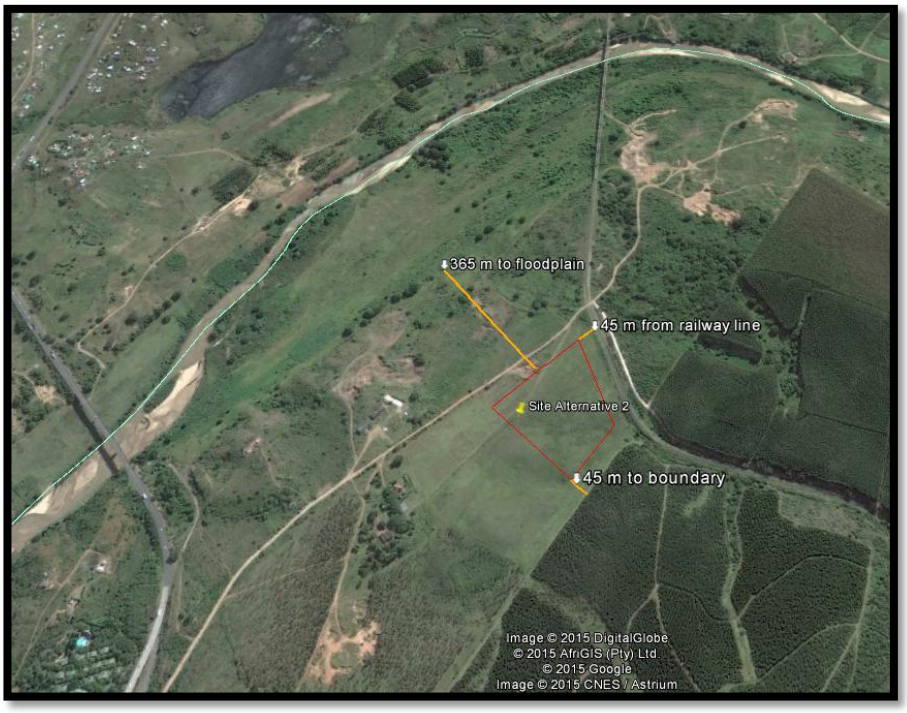

Figure 3: Satellite view showing the position of Site Alternative 2

The applicant investigated the possibility of establishing the proposed mining area at the lower corner of the previously used field as indicated above. This alternative was however found **not** to be the **preferred** alternative due to the following reasons:

- Although the site offers the mineral sought after the mining area will be within 500 m from the floodplain of the Umfolozi River. This will necessitate a water use

licence application to be approved by DWS prior to commencement of the mining activities.

- The proposed mining site will also be within 100 m of the bordering railway line and the boundary of the eastern boundary of the property.
- The footprint area that will be disturbed will also be 2 ha larger than that proposed for Site Alternative 1, directly increasing the impact of the activity on the on the natural environment.

3. No-go Alternative:

The no-go alternative entails no change to the status quo and is therefore a real alternative that needs to be considered. The gravel 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 utilize the mineral present in the area. This could have major impacts on aspects such as transporting of material to construction sites from far off mining areas, cost effectiveness of material, impact on roads and road users due to long distance hauling of gravel and loss of income to the Mtubatuba/Kwambonambi business area due to the multiplier effect.

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

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

ii) Details of the Public Participation Process Followed

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

The stakeholders and I&AP's were informed of the project by means of I&AP comment/notification letters that were either delivered by hand or sent directly to the contact persons. A 30 days commenting period were allowed which extended to the 7th of June 2015. The following I&AP's and stakeholders were contacted to obtain their comments:

INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
• Africa Active • AMS Family Trust • Dhooma Seedat Hardware • Ehlabosini Rural Community care of Councillor Makhanya (Ward 8) • Ingonyama Trust • KwaMsane Reserve • Landowner – Mr Hongwei Qu • Mondi Ltd – Richards Bay • Mr LL Ndwandwe • Mr S Gumede • Mr Z Gumede • Mthetwa Tribal Authority • Protea Hotel – Umfolozi River • Royal Bricks & Blocks • Schoonies Familie Trust • Smart Build Mtuba • Sugarlake Estates • Umfolozi Sugar Mill (Pty) Ltd • Umfolozi Sugar Planters Ltd	• Amafa • Department of Agriculture, Forestry and Fisheries • Department of Economic Development, Tourism and Environmental Affairs • Department of Labour • Department of Land Affairs and Development Planning • Department of Transport • Department of Water and Sanitation • Ezemvelo KZN • iSimangaliso Wetland Park • Mfolozi Local Municipality • Mfolozi Local Municipality Ward 4 Councillor • SANRAL – Eastern Region • Transnet • uThungulu District Municipality

I&AP'S AND STAKEHOLDERS THAT REGISTERED DURING THE COMMENTING PERIOD
• Amafa • iSimangaliso Wetland Park • Mondi Ltd – Richards Bay • SANRAL • Transnet • Umfolozi Sugar Mill (Pty) Ltd • Umfolozi Sugar Planters Ltd

On-site notices were placed at the turn off from the N2 onto the property as well as the entrance gate to the brick making plant on the property (west of the proposed mining area). The project was also advertised in the Zululand Observer.

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

iii) Summary of issues raised by I&APs

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

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES					
Landowner/s	**X**				
Galaxy Minerals (Pty) Ltd owns the property and provided Aeterno Investments (Pty) Ltd with consent letter to mine on the property.	X	5 February 2015 Landowner Consent	N/A	N/A	N/A
Lawful occupier/s of the land					
• Mr L Ndwandwe • Mr S Gumede • Mr Z Gumede	X	No comments were raised	N/A	N/A	N/A
Landowners or lawful occupiers on adjacent properties	**X**				
Ingonyama Trust	X	No comments received	N/A	N/A	N/A
Mondi Ltd – Richards Bay	X	31 August 2015	Mondi registered as I&AP and requested a copy of the Draft BAR.	Mondi was registered as I&AP and a copy of the Draft BAR will be forwarded to Mondi for their perusal.	N/A
SANRAL – Eastern Region	X	25 May 2015 & 4 June 2015	SANRAL requested information on the proposed access route to the mining site and upon receipt of the information stated the following: • Access to and from the mining area shall only be permitted across the bridge over the N2	A map indicating the proposed access road to the mining area was sent to SANRAL on the 26th of May 2015. The comments received from SANRAL were added to the DBAR.	Part A (d)(ii) Description of the activities to be undertaken.

			and permission obtained from whoever has rights to the bridge crossing in the vicinity of the Protea Hotel or permission must be obtained from Mondi or Sappi to use their internal road leading onto the road which crosses under the N2 at the Umfolozi Interchange. • Vehicles to and from the mining area shall not be permitted to utilise the abnormal road access ramps off and onto the N2.		
Schoonies Familie Trust	X	No comments received	N/A	N/A	N/A
Umfolozi Sugar Mill (Pty) Ltd	X	7 May 2015	Umfolozi Sugar Mill (Pty) Ltd registered as I&AP.	Umfolozi Sugar Mill (Pty) Ltd was registered as I&AP and a copy of the Draft BAR will be made available for their perusal.	N/A

Municipal councillor	**X**	No comments received			N/A
Municipality	**X**	No comments received			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Amafa	X	15 June 2015	Amafa responded with the following comments: • Our database indicates that the general area of proposed development is in an area of low paleontological sensitivity and will therefore not need to be subjected to a paleontological study. • The archaeological database	An archaeologist was appointed to assess the sensitivity of the site. The archaeologist determined the site to be of low significance as the general area has been subjected to commercial agriculture since the beginning of the 20th Century. In light of his findings the specialist requested AMAFA to grant exemption from doing an	Part A (t)(i)(2) Impact on any national estate referred to in section 3(2) of the National Resources Act.

			places the area of proposed development in an archaeologically sensitive zone with a possibility of encountering graves. • Considering the heritage value of the area of proposed development, a Heritage Impact Assessment is required for the above proposed project. This must include the archaeological component (Phase 1) and any other applicable heritage components. • Amafa KZN Heritage therefore requires the appointment of an Amafa accredited Heritage Practitioner to assist in the provision of recommendations and mitigation procedures.	HIA. This request was uploaded on the SAHRIS website and response is still awaited.	
Ezemvelo KZN	X	No comments received	N/A	N/A	N/A
Transnet	X	13 May 2015	Transnet responded that they do not have an objection with the proposed project.	N/A	N/A
Communities					
• Ehlabosini Rural Community care of Councillor Makhanya (Ward 8) • KwaMsane Reserve • Mthetwa Tribal Authority	X	No comments received	N/A	N/A	N/A

Dept. Land Affairs	X	2 June 2015	The Department of Land Affairs responded that no claim for restitution has been lodged in respect of the property.	N/A	N/A
Traditional Leaders	N/A	N/A	N/A	N/A	N/A
Dept. Environmental Affairs	X	No comments received	N/A	N/A	N/A
Other Competent Authorities affected					
Department of Agriculture, Forestry and Fisheries	X	No comments received	N/A	N/A	N/A
Department of Labour	X	No comments received	N/A	N/A	N/A
Department of Transport	X	No comments received	N/A	N/A	N/A
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
OTHER AFFECTED PARTIES					
iSimangaliso Wetland Park	16 May 2015		The iSimangaliso Wetland Park Authority registered as I&AP on the project as it is believed that the proposed mining site falls within 10km of the boundary of the Wetland Park and is within close proximity to the Umfolozi River. Additional information was requested and it was requested that the following be investigated as part of the EIA: • Potential pollution of surface and ground water systems	Greenmined responded on the 21st of May 2015 with the following: • The iSimangaliso Wetland Park was registered as an I&AP • We take note of the fact that the property earmarked for the proposed mining activities falls within 10km of iSimangaliso and therefore within the iSimangaliso's Zone of influence. • The primary issues mentioned in your letter will be answered in the DBAR.	• Part A (iv)(1)(a) Type of environment affected by the proposed activity – Surface and Ground water • Part A (iv)(1)(a) Type of environment affected by the proposed

		that are hydrologically linked to the park, • Potential impacts of water abstraction on the hydrological systems and biodiversity of iSimangaliso, • Potential disruption or cut-off of biological corridors and/or other ecological links and any other relevant interconnectivity issues.		activity – Natural Vegetation
INTERESTED PARTIES				
• Africa Active • AMS Family Trust • Dhooma Seedat Hardware • Protea Hotel – Umfolozi River • Royal Bricks & Blocks • Smart Build Mtuba • Sugarlake Estates	No comments received	N/A	N/A	N/A
Umfolozi Sugar Planters Ltd	11 May 2015	Umfolozi Sugar Planters Ltd registered as I&AP.	Umfolozi Sugar Planters Ltd was registered as I&AP and a copy of the Draft BAR will be made available for their perusal.	N/A

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 geology of the area is defined by Quaternary sediments of marine origin having mainly yellowish and argillaceous redistributed sands. The soil is nutritionally very poor and well leached. The dominant land types include Hb and Ha with some contribution of Db land type.

The applicant intents to mechanically remove the gravel from the mining area in order to sell it as fill material to the construction industry. This area was chosen as the soil proofed to be nutritionally poor and not suitable for crop farming.

Natural Vegetation:

The vegetation type of the natural area is classified as the Maputaland Coastal Belt (Veld type CB 1, Mucina and Rutherford, 2006) and is characterized through flat coastal plains that is composed of pockets of various forest types, thickets, primary and secondary grassland, extensive timber plantations and cane fields. A few of the important taxa of this vegetation type include:

Small Trees & Tall Shrubs:

Acacia natalitia	*Annona senegalensis*	*Bridelia cathartica*
Chrysanthemoides monilifera subs *rotundata*		*Euclea natalensis*
Kraussia floribunda	*Phoenix reclinata*	*Searsia natalensis*
Syzygium cordatum		

Herbs:

Achyranthes aspera	*Centella asiatica*	*Chaemaecrista plumosa*

Grasses:

Aristida stipitata *Cymbopogon pospischilii* *Diheteropogon amplectens*
Elionurus muticus *Eragrostis sclerantha* *Ischaemum fasciculatum*
Themeda triandra *Urelytrum agropyroides*

The area earmarked for the proposed mining activities was previously used for crop production that was ceased due to the low potential of the soil. Various indigenous grass species has since established in the area along with weeds and some crops re-germinating. The area is also intensively grazed by livestock. No sensitive or protected plant species could be identified that would need to be conserved.

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 topsoil heaps are kept weed free and is available upon rehabilitation of the area.

Although the property identified for the proposed mining activity lies within 10 km from the boundaries of the iSimangaliso Wetland Park the potential impact on biological corridors as a result of this project is deemed to be of low significance. The proposed development was identified in an area previously disturbed by agricultural activities and no pristine or natural areas has to be isolated as a result of the establishment of the mining area. The proposed mining area is only 2.89 ha in extent and rehabilitation of the area will be compulsory upon closure.

Fauna:

Apart from the livestock on the property 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 Umfolozi River passes the proposed mining area approximately 730 m to the west and ±1.2 km to the north-west. The banks of the river are clearly defined and property owners use the floodplain area for grazing purposes. The proposed mining area is removed from the river by a gravel access road to the west, with the railway line running between the river and the mining area to the north. Due to the nature of the proposed activity the potential impact on the Umfolozi River is deemed to be insignificant. No other surface water is found within 500 m of the proposed mining area. The proposed activity is not expected to have a negative effect on any surface water. As an added precaution the river will be declared and managed as a no-go area to all mining employees. Storm water will be channelled around the mining area to prevent possible contamination of clean water flowing over dirty areas.

The existing borrow pit on the property is approximately 20 m deep and groundwater has not been encountered. Mining at the proposed mining area is not expected to be deeper than 20 m and therefore not impact on groundwater systems could be identified.

Water to be used for dust suppression purposes will be obtained from the water reservoirs of the landowner.

Air Quality:

The background air quality of the surrounding area is relatively good due to low industrial activity. The semi-rural residential areas of KwaMsane and Ehlabosini in the vicinity of the mining area have 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 during loading of material and the movement of machinery and trucks. 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 mining operation is expected to temporarily increase the noise levels of the area. The activity is proposed to daily contribute the noise of one Excavator while the trucks that will transport the material will come and go. The closest residence is that of the applicant, the Protea Hotel is more than 700 m from the site while the houses of the bordering communities are more than 1 km away. The significance of noise on the surrounding environment is therefore deemed to be of low significance. Mitigation measures should however still 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 crop production and no areas of cultural importance could be identified within the footprint area of the site.

This was confirmed by an archaeologist who visited the proposed mining site. The archaeologist concluded that the general area has been subjected to commercial agriculture since the beginning of the 20th Century and consequently any archaeological material present would have been moved out of primary context. No evidence of Cretaceous fossils or Stone Age and Iron Age archaeological material was observed.

Visual Exposure:

Due to the previous disturbance of the area the site has a low aesthetic value. The proposed mining area will not be visible from any public areas or roads and will therefore only have a visual impact on the immediate surrounding area.

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

(b) Description of the current land uses.

Portion 0 (Remaining Extent) of Lot 23 Umfolozi No 13734 is situated in an agricultural setting to the east of the N2. The land use of the property comprise of the following:

- Agriculture – Mainly grazing
- Mining – Hlanganani Earthmoving CC holds a mining permit for a mining area on the property. This permit expired 13 July 2015 (±270 m away).
- Light Industrial – A brick making plant was established on the property (±227 m away).
- Informal Residents – Some informal residents settled within the floodplain of the Umfolozi River (±420 m away).
- Transport – The N2 (±510 m away) traverse the property as well as a Transnet Railway line (100 m away).

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

- Agriculture – Grazing, Sugar Cane Farming and Plantations
- Mining – Various areas are used for the mining of aggregate
- Light Industrial – Various industries area operated on the surrounding properties
- Residential – The Enhlabosini and KwaMsane communities border the property to the south, west and north-west

- Transport – N2 national Road, various provincial roads and Transnet Railway line
- Conservation – Lake Eteza Nature Reserve ±1.5 km south-east.
  The property falls within the 10 km buffer area of the iSimangaliso Wetland Park (Mining area ±9.8 km from the boundary of the Wetland Park)

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

The existing infrastructure within 500 m of the proposed mining area is the Transnet Railway Line, Gravel Access Road, Farm Residence, Informal Dwellings and the Brick Making Plant. The national road (N2) is approximately 510 m away from the proposed mining area.

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 2.89 ha footprint area of the mine.

The river to the west north-west of the mining area was identified as the only specific environmental feature that would require protection and will therefore be declared and managed as no-go area to ensure protection.

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

Figure 4 indicates the surrounding infrastructure and land uses 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 **Degree of Mitigation: Partial**

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	5	1	2.6	5	5	5	**13**

Dust nuisance caused by the disturbance of the soil

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	2	2	2	5	5	5	**10**

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	2	2	2	5	5	5	**10**

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	3	4	**10.4**

Contamination of area with hydrocarbons or hazardous waste materials

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	2	3.3	4	4	4	**13.2**

EXCAVATION:

Visual intrusion associated with the excavation activities

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	5	1	2.6	5	5	5	**13**

Dust nuisance due to excavation activities

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

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

Noise nuisance generated by excavation equipment

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
2	4	2	2.6	4	5	4.5	**13**

Unsafe working conditions for employees

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
4	4	1	3	3	5	4	**12**

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**

LOADING AND TRANSPORTING:

Dust nuisance due to loading and vehicles transporting the material

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

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

Degradation of access roads

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

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
3	4	1	2.6	4	5	4.5	**11.7**

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 **Degree of Mitigation: Fully Mitigated**

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

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.	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

		Where possible improve	possible.		

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

High	Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.
Medium-High	Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
Medium	Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.
Low-Medium	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved of little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
Low	Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit
Insignificant	There would be a no impact at all – not even a very low impact on the system or any of its parts.

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

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

SITE ALTERNATIVE 1

Positive Impacts:

- The site offers the mineral sought after,
- The mining area will be further than 500 m from the floodplain of the Umfolozi River and the applicant will not have to apply for a Water Use Licence from DWS.
- The mining area will be further than 100 m from the Transnet railway line as well as the eastern boundary of the property and therefore complies with the conditions of the Mine Health and Safety Act, 1996 (Act No 29 of 1996) and the relevant Regulations.
- No natural or pristine vegetation area has to be disturbed as the footprint of the proposed area falls over fields previously disturbed for crop production. The footprint of the mining area is only 2.89 ha.
- The mining area can be reached by an existing access road that formally connects to the N2. No new road infrastructure need to be constructed.
- The proposed mining area will not have to compete with other land uses as all the activities can be contained within the boundaries of the site. Upon closure of the mining area, the land will revert back to agriculture.
- The operation of the mine will create employment for approximately five permanent workers.
- The gravel to be removed from the mine area will be used for the upgrading of the roads in the vicinity of the mine. The proposed mine area 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.

Negative Impacts:

- Due to the remote location of the mining area very little negative impacts on the community could be identified that were deemed to be of significant importance. The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the

surrounding community if the mitigation measures proposed in this document is not implemented and managed on-site.

- Negative impacts with regard to the environment include potential contamination of the area due to spillage of hydrocarbon products.

SITE ALTERNATIVE 2

Positive Impacts:

- The site offers the mineral sought after,
- No natural or pristine vegetation area has to be disturbed as the footprint of the proposed area falls over fields previously disturbed for crop production.
- The mining area can be reached by an existing access road that formally connects to the N2. No new road infrastructure need to be constructed.
- The proposed mining area will not have to compete with other land uses as all the activities can be contained within the boundaries of the site. Upon closure of the mining area, the land will revert back to agriculture.
- The operation of the mine will create employment for approximately five permanent workers.
- The gravel to be removed from the mine area will be used for the upgrading of the roads in the vicinity of the mine. The proposed mine 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.

Negative Impacts:

- The footprint area to be disturbed will be 2 ha larger than the area proposed for site alternative 1, directly increasing the impact on the environment as well the area to be rehabilitated upon closure of the mine.
- The mining area will be within 500 m from the floodplain of the Umfolozi River and the applicant will have to apply for a Water Use Licence from DWS.
- The mining area will be closer than 100 m from the Transnet railway line as well as the eastern boundary of the property.
- The dust and noise impacts that may emanate from the mining area during the operational phase could have a negative impact on the surrounding community if the mitigation measures proposed in this document is not implemented and managed on-site.
- Negative impacts with regard to the environment include potential contamination of the area due to spillage of hydrocarbon products.

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

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

Visual Mitigation:

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

- The site needs to have a neat appearance and be kept in good condition at all times.
- Upon closure the site needs to be rehabilitated 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 through the implementation of the mitigation measures listed below:

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents.
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust.
- Roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.

Noise Handling:

The risk of noise, generated from the proposed mining 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.

Management of weed or invader plants:

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

- A weed and invader plant control management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of Conservation of Agricultural Act (Act No 43 1983).
- Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:
  - "The plants can be uprooted, felled or cut off and can be destroyed completely."
  - "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide."
- The temporary topsoil stockpiles needs to be kept free of weeds.

Storm water Handling:

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

- Storm water must be diverted around the topsoil heaps, and access roads to prevent erosion and loss of material.
- Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:
  - Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system.

You must prevent clean water from running or spilling into dirty water systems.

- Dirty water must be collected and contained in a system separate from the clean water system.
- Dirty water must be prevented from spilling or seeping into clean water systems.
- The storm water management plan must apply for the entire life cycle of the 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.

Waste Management:

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

- No waste stockpile area may be established outside the boundaries of the mining area.
- Vehicle maintenance may only take place within the service bay area of the off-site workshop.
- The diesel bowser needs to be equipped with a drip tray at all times. Drip trays have to be used during each and every refuelling event.
- The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.
- Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing it at a recognised facility. Proof should be filed.
- Suitable covered receptacles should be available at all times and conveniently placed for the disposal of waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc, should be stored in a container with a closable lid at a collecting point

and collected on a regular basis and disposed of at a recognised landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area.

- Biodegradable refuse generated should be handled as indicated above.

Management of Health and Safety Risks:

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

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

Protection of fauna and flora:

The risk on the fauna and flora of the footprint area as well as the surrounding environment, as a result of the proposed mining 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.
- Clearing of vegetation has to be restricted to the smallest possible area.

Management of Access Roads:

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

- Storm water should be diverted around the access roads to prevent erosion.
- Erosion of access road: Vehicular movement must be restricted to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Rutting and erosion of the access road caused as a result of the mining 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 should be kept free of weeds.
- Topsoil stockpiles should be placed on a levelled area and measures should be implemented to safeguard the piles from being washed away in the event of heavy rains/storm water.
- Topsoil heaps should not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- Should natural vegetation not establish on the heaps within 6 months of stockpiling it should be planted with an indigenous grass species.
- Storm- and runoff water should be diverted around the topsoil stockpiles and access roads to prevent erosion.

ix) Motivation where no alternative sites were considered.

Not applicable.

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

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

The open cast mining of the proposed site has been identified as the most cost effective method to produce the desired gravel. The proposed method will not produce any residual waste that has to be disposed of. Due to the small nature of the proposed mining activity as well as the remote location the potential impact on the surrounding environment 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 the layout/position of the temporary infrastructure will be determined by the mining progress and available space within the 2.89 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: Low – Medium

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

Dust nuisance caused by the disturbance of the soil

Rating: Low

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

Noise nuisance caused by machinery stripping and stockpiling the topsoil

Rating: Low

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

Infestation of the topsoil heaps by weeds or invader plants

Rating: Low

			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	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	3	2	1	1.5	**4.5**

EXCAVATION:

Visual intrusion associated with the excavation activities

Rating: Low – Medium

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

Dust nuisance due to excavation activities

Rating: Low

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

Noise nuisance generated by excavation equipment

Rating: Low – Medium

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

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**

LOADING AND TRANSPORTING:

Dust nuisance due to loading and vehicles transporting the material

Rating: Low

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

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		
2	1	2	1.6	2	3	2.5	**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	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		
2	1	1	1.3	2	1	1.5	**2**

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 will have an impact on the immediate surrounding environment.	Site establishment / Construction phase	Medium	<u>Control:</u> Implementation of proper housekeeping	Low – Medium
	Dust nuisance caused by the disturbance of soil.	Dust will be contained within the property boundaries and will therefore affect only the		Medium	<u>Control:</u> Dust suppression	Low

		land occupiers.				
	Noise nuisance caused by machinery stripping and stockpiling the topsoil.	Due to the small size of the proposed operation the noise impact should be contained within the boundaries of the property.		Medium	Control: Noise control measures	Low
STRIPPING AND STOCKPILING OF TOPSOIL	Infestation of the topsoil heaps by weeds and invader plants.	Biodiversity	Site establishment / Construction phase	Low - Medium	Control & Remedy: Implementation of weed control	Low
	Loss of topsoil due to incorrect storm water management.	Loss of topsoil will affect the rehabilitation of the mining area.		Medium	Control: Storm water management	Low
	Contamination of area with hydrocarbons or hazardous waste materials.	Spillage may cause surface or ground water contamination if not addressed.		Medium	Control & Remedy: Implementation of waste management	Low
	Visual intrusion associated with the excavation activities	The visual impact will be contained to the boundaries of the site and will therefore only affect the landowner.		Medium	Control: Implementation of proper housekeeping	Low – Medium
EXCAVATION	Dust nuisance due to excavation activities.	Dust will be contained within the property boundaries and will therefore affect only the land occupiers.	Operational Phase	Medium	Control: Dust suppression	Low
	Noise nuisance generated by excavation equipment.	Due to the small size of the proposed operation the		Medium	Control: Noise control measures	Low – Medium

		noise impact should be contained within the boundaries of the property.				
	Unsafe working conditions for employees.	Impact may affect employees.		Medium	Control: Health and safety monitoring and management	Low
	Negative impact on the fauna and flora of the area.	Biodiversity		Low	Control: Protection of fauna and flora through operational phase	Low
	Contamination of area with hydrocarbons or hazardous waste materials.	Spillage 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
LOADING AND TRANSPORTING	Dust nuisance from loading and vehicles transporting the material.	Dust will be contained within the property boundaries and will therefore affect only the land occupiers.	Operational Phase	Medium	Control: 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 additional trucks travelling on the access road could have an impact on the surrounding environment.		Medium	Control: Noise management monitoring and management	Low
	Contamination of area with hydrocarbons or hazardous	Contamination may cause surface or ground water		Medium	Control: Implementation of waste management	Low

	waste materials.	contamination if not addressed.				
SLOPING AND LANDSCAPING DURING REHABILITATION	Soil Erosion	Biodiversity	Decommissioning Phase	Low – Medium	<u>Control:</u> Soil management	Low
	Health and safety risk posed by un-sloped areas	Impact will affect the employees and residents of the property.		Medium	<u>Control:</u> 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 land occupiers.		Low - Medium	<u>Control:</u> Dust suppression	Low
	Noise nuisance caused by machinery.	Due to the small size of the proposed operation the noise impact should be contained within the boundaries of the property.		Low - Medium	<u>Control:</u> Noise monitoring	Low
	Contamination of area with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed.		Low - Medium	<u>Control:</u> Waste management	Low
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	<u>Control:</u> Soil management	Low
	Infestation of the area by weed and invader plants.	Biodiversity and soil management.		Low – Medium	<u>Control & Remedy:</u> 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 establishment of the mining area over an area previously used for crop production.			

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 opencast extraction of gravel from an area previously used for crop farming. Due to the low yield produced by the fields, mining of the area was identified as a more viable use. As a result of the agricultural activities no natural areas needs to be disturbed.
- The mine procedure will only entail the mechanical excavation of the gravel by means of an excavator upon which it will be loaded onto trucks and transported from site. No blasting, crushing or screening will be necessary.
- The existing roads to the mine area can be used to gain access to the site. No new roads are needed.
- The off-site workshop of the applicant will be used for servicing of vehicles thereby reducing the risk of hazardous spills and contamination at the mining site.
- The proposed mining area will not be visible from any public areas or roads and will therefore only have a visual impact on the immediate surrounding area.
- The proposed mining area was defined to be further than 500 m from the floodplain of the Umfolozi River and the project is not expected to have an impact on the river passing the site to the north-west as mining activities will be contained within the boundaries of the permitted site. The river is also removed from the mining area by a railway line to the north and a brick plant to the west. Proper storm water and waste management however needs to be implemented on the site in order to minimise the potential of pollution. The river needs to be declared and managed as no-go area to all mining employees.
- Although the property identified for the proposed mining activity lies within 10 km from the boundaries of the iSimangaliso Wetland Park the potential impact on biological corridors as a result of this project is deemed to be of low significance.

(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 four employees indirectly contributing to the socio-economic status of the Mtubatuba area,
- The gravel to be mined will be used for the upgrading of roads in the vicinity of the mine (in particularly the widening of the N2), thereby indirectly contributing to infrastructure development,
- The proposed mine will contribute to the upgrading/maintenance of infrastructure in and around Mtubatuba, Eteza and Kwambonambi,
- The project will assist the landowner and lawful users in diversification of the land use of the property.

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

- Visual intrusion associated with the establishment of the mining area **Low - Medium**
- Visual intrusion associated with the excavation activities **Low - Medium**
- Noise nuisance generated by excavation equipment **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 EMPr. Compliance to be monitored by the Environmental Control Officer.	▪ Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. ▪ Limit speed on the access roads to 40km/h to prevent the generation of excess dust. ▪ Spray roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. ▪ Assess effectiveness of dust suppression equipment.
Noise Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.	▪ Ensure that employees and staff conduct themselves in an acceptable manner while on site.

Management Objectives	Role	Management Outcomes
	Compliance to be monitored by the Environmental Control Officer.	▪ No loud music may be permitted at the mining area. ▪ Ensure that all mining vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.
Management of weed/invader plants	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	▪ Implement a weed and invader plant control management plan. ▪ Control declared invader or exotic species on the rehabilitated areas. ▪ Keep the temporary topsoil stockpiles free of weeds.
Surface and Storm water Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	▪ Divert storm water around the topsoil heaps and access roads to prevent erosion and loss of material. ▪ Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose.
Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMP. Compliance to be monitored by the Environmental Control Officer.	▪ Ensure that workers have access to the correct PPE as required by law. ▪ Ensure all operations comply with the Occupational Health and Safety Act.
Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. Compliance to be monitored by the Environmental Control Officer.	▪ Ensure no waste storage area is established outside the boundaries of the mining area. ▪ Ensure vehicle maintenance only take place within the service bay area of the off-site workshop. If emergency repairs is needed on site ensure drip trays is present. Ensure all waste products are disposed of in a 200 litre closed container/bin inside the emergency service area. ▪ Ensure diesel bowser is equipped with a drip tray at all times. ▪ Use drip trays during each and every refuelling event. ▪ Ensure the nozzle of the bowser rests in a sleeve to prevent dripping after refuelling. ▪ Keep drip trays clean. No dirty drip trays may be used on site. ▪ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility. ▪ Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. File proof. ▪ Ensure the availability of suitable covered

Management Objectives	Role	Management Outcomes
		receptacles at all times and conveniently placed for the disposal of waste. ▪ Store non-biodegradable refuse such as glass bottles, plastic bags etc., in a container with a closable lid at a collecting point. Collection should take place on a regular basis and disposed of at the recognised landfill site at Mtubatuba. 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 along the boundary of the site. ▪ Keep the temporary topsoil stockpiles free of weeds. ▪ Place topsoil stockpiles on a levelled area and implement measures to safeguard the piles from being washed away in the event of heavy rains/storm water. ▪ Topsoil heaps should not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. ▪ Seed the stockpiled topsoil heaps if vegetation does not re-establish within 6 months of 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 R47 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 gravel mined. Bridging finance, will be supplied where needed by Aeterno Investments 215 (Pty) Ltd.

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 mining area will be established in an area that was previously used for crop production. Due to the low yield produced by the fields, mining of the area was identified as a more viable use. Upon closure the land will revert back to agriculture most likely for grazing purposes.

Due to the remote location of the proposed mining area very little to no negative impacts on the surrounding 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 land occupiers if the mitigation measures proposed in this document is not implemented and managed on-site. However due to the small size of the proposed mining activity these impacts are deemed to be of low significance.

The operation of the mine will however also have a number of positive impacts such as job creation for approximately four permanent workers. The gravel to be removed from the mining area will be used for the upgrading of the roads in the vicinity of the mine (in particular the widening of the N2). The proposed mine will therefore contribute to the upgrading/maintenance of infrastructure in and around Mtubatuba, Eteza and Kwambonambi. Should

this application be approved it will also assist the landowner and lawful users in diversification of the land use of the 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 crop production, 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.

Amafa replied that the development is in an area of low palaeontological sensitivity and will therefore not need to be subjected to a paleontologically sensitive zone with possibility of encountering graves. Amafa therefore required that a Heritage Impact Assessment (HIA) should be done.

An archaeologist was appointed to assess the sensitivity of the site. The archaeologist determined the site to be of low significance as the general area has been subjected to commercial agriculture since the beginning of the 20th Century. In light of his findings the specialist requested AMAFA to grant exemption from doing an HIA. This request was uploaded on the SAHRIS website and response is still awaited.

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

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

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

1. Site Alternative 1 – The mining of the proposed area over a 2.89 ha footprint area (Preferred Alternative).
2. Site Alternative 2 – The mining of the proposed area over a 4.9 ha footprint area.
3. No-go Alternative.

PART B
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme.

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

The details and expertise of 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 be sloped at 40˚ to the pit floor to prevent soil erosion. The applicant will comply with the minimum closure objectives as prescribed by DMR and detailed below.

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 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.

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, temporary equipment 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. A water truck will be used to spray access roads to alleviate dust generation. It is proposed that the mining activities will require approximately 10 000 l of water per day.

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

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

iv) Impacts to be mitigated in their respective phases

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.	2.89 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, and access roads to prevent erosion and loss of material. Waste Management: • No waste stockpile area may be established outside the mining boundaries.		

			• 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.		
Excavation	Operational Phase	2 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:	• 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.

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

			boundaries. • 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. • The diesel bowser needs to be equipped with a drip tray at all times. • Drip trays have to be used during each and every refuelling event. • The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. • Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility. • Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing it at a recognised		

			facility. Proof should be filed. • Suitable covered receptacles should be available at all times and conveniently placed for the disposal of waste. • Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc, should be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognised landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area. • Biodegradable refuse generated should be handled as indicated above. Management of 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.		
Loading and transporting	Operational Phase	2 ha	Storm water Handling: • Storm water must be diverted around the access roads to prevent erosion and loss of material. • Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. ▪ Dirty water must be collected and contained in a system separate from the clean water system. ▪ Dirty water must be	• Storm Water: NWA, 1998 • Dust and Noise: NEM:AQA, 2004 Regulation 6(1) • Waste: NEM:WA, 2008	Throughout the operational phase.

			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. 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 waste stockpile area may be established outside the mining boundaries. • 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	2.89 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: • 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	• Storm Water: NWA, 1998 • Health and Safety: MHSA, 1996 OHSA, 1993 OHSAS 18001 • Dust and Noise: NEM:AQA, 2004 Regulation 6(1) • Waste: NEM:WA, 2008	Upon cessation of mining.

			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. 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	2.89 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.	• 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.

			• 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. 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, temporary equipment 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 will have an impact on the immediate surrounding environment.	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 land occupiers.		<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

STRIPPING AND STOCKPILING OF TOPSOIL			Site establishment / Construction phase		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.	Due to the small size of the proposed operation the noise impact should be contained within the boundaries of the property.		<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 with hydrocarbons or hazardous waste materials.	Contamination may cause surface or ground water contamination if not addressed		<u>Control & Remedy:</u> Implementation of waste management	• 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.
EXCAVATION	Visual intrusion associated with the excavation activities	The visual impact will be contained to the boundaries of the site and will therefore only affect the landowner.	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 land occupiers.		<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).

EXCAVATION	Noise nuisance generated by excavation equipment.	Due to the small size of the proposed operation the noise impact should be contained within the boundaries of the property.	Operational 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.
	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
	Negative impact on the fauna and flora of the area.	Biodiversity		<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.	Spillage 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.
LOADING AND TRANSPORTING	Dust nuisance from loading and vehicles transporting the material.	Dust will be contained within the property boundaries and will therefore affect only the land occupiers.	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).
	Degradation of access roads.	All road users will be affected.		<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 additional trucks travelling on the access road could have an impact on the surrounding environment.		<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 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.
SLOPING AND LANDSCAPING DURING REHABILITATION	Soil Erosion	Biodiversity	Decommissioning Phase	<u>Control:</u> 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		<u>Control:</u> Health and safety monitoring and management.	• The impact should be avoided through compliance with the standards of the

		property.			MHSA, 1996, OHSA, 1993 and OHSAS 18001
SLOPING AND LANDSCAPING DURING REHABILITATION	Dust nuisance caused during sloping and landscaping activities.	Dust will be contained within the property boundaries and will therefore affect only the land occupiers.	Decommissioning 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 caused by machinery.	Due to the small size of the proposed operation the noise impact should be contained within the boundaries of the property.		<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	Contamination may cause surface or ground water		<u>Control:</u> Waste management	• The impact should be avoided through the implementation the mitigation

	materials.	contamination if not addressed.			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.	Control: 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.	Control: 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.
EXCAVATION	Visual intrusion associated with the excavation activities	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.
	Dust nuisance due to excavation 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).
EXCAVATION	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 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	• The impact should be avoided through the implementation the mitigation measures stipulated in this document.

			Environmental Control Officer.	• 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.
LOADING AND TRANSPORTING	Dust nuisance from loading and vehicles transporting the material.	<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).
	Degradation of access roads.	<u>Control & Remedy:</u> Road management	To be implemented when necessary throughout the operational phase: • Daily compliance monitoring by	• The impact should be avoided through the implementation of the mitigation measures

			site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.	proposed in this document.
	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 areas	Control: Health and safety monitoring and 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 compliance with the standards of the MHSA, 1996, OHSA, 1993 and OHSAS 18001
	Dust nuisance caused during sloping and landscaping activities.	Control: 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.	Control: 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 be sloped at 40˚ to the pit floor to prevent soil erosion.

Compacted soil will be ripped and levelled in order to re-establish a growth medium. 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 40˚ to the pit floor to prevent soil erosion. The rehabilitation of the mining area as indicated on the rehabilitation plan attached as Appendix D will comply with the minimum closure objectives as prescribed by DMR and detailed below, and therefore is deemed to be compatible:

Rehabilitation of the excavated area:

- 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.

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, temporary equipment 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	Gravel
Saleable mineral by-product	None

Risk ranking

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

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

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Limited

Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)		No
2(A)	Demolition of steel buildings and structures		No
2(B)	Demolition of reinforced concrete buildings and structures		No
3	Rehabilitation of access roads		No
4(A)	Demolition and rehabilitation of electrified railway lines		No
4(B)	Demolition and rehabilitation of non-electrified railway lines		No
5	Demolition of housing and facilities		No
6	Opencast rehabilitation including final voids and ramps	Yes	
7	Sealing of shafts, adits and inclines		No
8(A)	Rehabilitation of overburden and spoils	Yes	
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)		No
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)		No
9	Rehabilitation of subsided areas		No
10	General surface rehabilitation, including grassing of all denuded areas	Yes	
11	River diversions		No
12	Fencing		No
13	Water management (Separating clean and dirty water, 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 0 (Remaining Extent) of Lot 23 Umfolozi No 13734**			**Location:**	**Mtubatuba**		
Evaluators:	**C Fouche**			**Date:**	**2015-06-20**		
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	2	189 071	0.04	1.1	R16 638.25
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	0.89	126 047	1	1.1	R123 400.01
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	156 989	1	1.1	R 0.00
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	0.5	99 851	1	1.1	R54 918.05

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	R194 956.31
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R194 956.31		**Sub Total 1**	R204 704.13

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R12 282.25
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R20 470.41
		Sub Total 2 (Subtotal 1 plus management and contingency)	R237 456.79
		Vat (14%)	R33 243.95
		GRAND TOTAL (Subtotal 3 plus VAT)	**R270 700.74**

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 **R270 700.74**.

(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 • Excavation • Loading 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.	
• Stripping and Stockpiling of topsoil • Excavation • Loading 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.	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.
• Stripping and Stockpiling of topsoil • Excavation	Management of weed or invader plants • The presence of weed and/or invader plants should be continuously monitored, and any unwanted plants should be	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	Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

	removed.		plant control management plan. • Control declared invader or exotic species on the rehabilitated areas. • Keep the temporary topsoil stockpiles free of weeds.	
• 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 landscaped 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 and access roads to prevent erosion and loss of material. • Conduct mining in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose.	Throughout Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.
• Excavation • Loading 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	Role: • Site Manager to ensure compliance with the guidelines as stipulated in the EMPr. • Compliance to be monitored by the Environmental Control Officer. Responsibility:	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

		the mining activities.	• Ensure that workers have access to the correct PPE as required by law.	
• Excavation • Loading 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 off-site 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 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	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

			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 Mtubatuba. Prevent refuse from being dumped on or in the vicinity of the mine area. • Biodegradable refuse to be handled as indicated above.	
• Loading and transporting	Management of Access Roads • The condition of the access road should be continuously monitored.	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: • 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.	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.
• Stripping and Stockpiling of topsoil	Topsoil Handling • When topsoil has been removed	Topsoil Handling: • Excavating equipment to remove the first 300mm of topsoil from the	Role: • Site Manager to ensure compliance with the guidelines	Throughout Construction, Operational and Decommissioning Phase • Daily compliance monitoring

	from any area the topsoil heaps need to be continuously protected against loss of soil due to wind and water erosion.	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.	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 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. • Divert storm- and runoff water around the stockpile area and access roads to prevent erosion.	by site management. • Quarterly compliance monitoring of site by an Environmental Control Officer.

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**

Signature of the environmental assessment practitioner:

Greenmined Environmental

Name of Company:

14 September 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**	**Low – 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:			
Excavation:	**Duration of operational phase minimum of 3 years**		
▪ Visual intrusion associated with the excavation activities.		**Definite**	**Low - Medium Concern**
▪ Dust nuisance due to excavation activities.		**Low Possibility**	**Low Concern**

▪ Noise nuisance generated by excavation equipment. ▪ Unsafe working conditions for employees. ▪ Negative impact on the fauna and flora of the area. ▪ Contamination of area with hydrocarbons or hazardous waste materials. ▪ Weed and invader plant infestation of the area.		**Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility**	**Low - Medium Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern**
<u>Loading and transporting:</u> ▪ Dust nuisance from loading and vehicles transporting the material. ▪ Degradation of access roads. ▪ Noise nuisance caused by vehicles. ▪ Contamination of area with hydrocarbons or hazardous waste materials.	**Duration of operational phase minimum of 3 years**	**Possible** **Low Possibility** **Low Possibility** **Low Possibility**	**Low Concern** **Low – Medium Concern** **Low Concern** **Low Concern**
<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</u>	**Duration of decommissioning phase**	**Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility**	**Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low Concern**

<u>disturbed area:</u> ▪ Loss of reinstated topsoil due to the absence of vegetation. ▪ Infestation of the area by weed and invader plants.		**Low Possibility** **Low Possibility**	**Low Concern** **Low Concern**

APPENDIX G

FINANCIAL AND TECHNICAL COMPETENCE

APPENDIX H

PHOTOGRAPHS OF THE SITE

PHOTOGRAPHS OF THE PROPOSED MINING AREA PREVIOUSLY USED FOR CROP PRODUCTION – TOWARDS THE NORTH-WEST

PROPOSED MINING AREA – TOWARDS THE NORTH-EAST

ADJACENT PLANTATION OF MONDI

APPENDIX I

CV AND EXPERIENCE RECORD OF EAP