



**mineral resources**

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

**BASIC ASSESSMENT REPORT**  
**And**  
**ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT 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:** Department of roads and Public Works - Eastern Cape

**TEL NO:** 0406024335

**FAX NO:**

**POSTAL ADDRESS:** P/Bag X0022, Bisho, 5605

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**FILE REFERENCE NUMBER SAMRAD:** N/A

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## 1. IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 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 cannot 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, significance, 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 ASSSMENT AND BASIC ASSESSMENT REPORT**

**3. Contact Person and correspondence address**

**a) Details of**

**i) Details of the EAP**

Name of The Practitioner: Louis De Villiers (Eko Environmental)

Tel No.: 051 444 4700

Fax No. : 086 697 6132

e-mail address: louis@ekogroup.co.za

**ii) Expertise of the EAP.**

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

(with evidence). B.sc. degree in Environmental Geography

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

(In carrying out the Environmental Impact Assessment Procedure) Relevant past projects involved with:

- Obtaining mining authorizations for the establishment of a borrow pit on the farm Sydenham 422 outside Bloemfontein for the mining of gravel used to upgrade the N6 road,
- Obtaining mining permit for Tau-Pele Construction on communal land outside Indwe, Eastern Cape, which will be used to blast, excavate and crush dolerite,
- Obtaining mining permit for African Mobile Crushers for mining and crushing of dolerite on the farm Koonap Poort 277/1, Adelaide, Eastern Cape,
- Obtaining mining permit for African Mobile Crushers for mining and crushing of dolerite on the farm Plooyfontein 93/1, Hanover, Northern Cape.

**b) Location of the overall Activity.**

<b>Farm Name:</b>	Lower Telle 15 (Communal Land)
<b>Application area (Ha)</b>	4.7
<b>Magisterial district:</b>	Sterkspruit
<b>Distance and direction from nearest town</b>	14.3km east from Sterkspruit Musong village located 200 m north
<b>21 digit Surveyor General Code for each</b>	Communal land

farm portion	
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**c) Locality map**

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

**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 the aforesaid main and listed activities, and infrastructure to be placed on site

Attached in Appendix 1

**(i) Listed and specified activities**

<b>NAME OF ACTIVITY</b>  (E.g. For prospecting - drill site, site camp, ablution facility, 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.)	<b>Aerial extent of the Activity</b> <b>Ha or m<sup>2</sup></b>	<b>LISTED ACTIVITY</b> <b>Mark with an X where applicable or affected.</b>	<b>APPLICABLE LISTING NOTICE</b> <b>(GNR 544, GNR 545 or GNR 546)</b>
Mining, crushing, clearance of vegetation, stockpiling, transportation	4.7 ha	Activity 21	GNR 983
Mining, crushing, clearance of vegetation, stockpiling, transportation	4.7ha	Activity 27	GNR 983

**(ii) Description of the activities to be undertaken**

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

Activities applied for in terms of the NEMA listed activities under the 2014 EIA Regulations are the following:

- GN 983, Activity 21: The mining of an area which requires a mining authorisation in terms of Section 27 of the MPRDA (Act No. 28 of 2002), including the associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource, including exempted activities i.t.o. Section 106 of the MPRDA.
- GN 983, Activity 27: The clearance of approximately 5 ha of indigenous vegetation.

The main activities will be:

- a) Clearing of road from entrance road to mining area,
- b) Stripping of topsoil for the first cut (first blast)
- c) Storing of topsoil next to the excavation
- d) Prepare the rock face for drilling and blasting (if necessary)
- e) Crushing of the broken rock with a crusher
- f) Loading of material on tipper trucks for dispatch to construction site.

#### 1.1.1 Plan of the main activities with dimensions

- The current rock face will advance at approximately 10 m with each blast event to break the in situ dolerite. Each cut will be approximately 10 x 40 x 3 m.
- After the product is crushed through crushers, it will be loaded and removed from the site
- Blasting activities will occur only when necessary. Rock crushers will be used.
- 2 000 m<sup>3</sup> of dolerite will be mined every month from the borrow pit.

#### 1.1.2 Description of construction, operational, and decommissioning phases:

Construction phase:

- a) The clearing of vegetation and topsoil to prepare the first blast (if necessary).
- b) The proposed mining area should be fenced off / clearly demarcated to prevent easy access to the site
- c) Arrival of the equipment on site
- d) Preparation of the access road
- e) There will be no permanent buildings or structures constructed
- f) Bunded areas to be constructed for storage of fuel.

Operational phase:

- a) Best practices should be implemented during blasting events and a blasting contractor that implement the necessary blasting procedures should be appointed if blasting will occur.
- b) Description of the minimum procedures to be implemented when any blasting activities are conducted:
  1. No person may keep, store or be in possession of any explosives on any premises other than in an explosives magazine
  2. The inspector appointed for the area should be notified of any loss of explosives within 24 hours of the loss being discovered
  3. The type, duration and timing of blasting should be planned with cognisance of other land uses and structures in the vicinity
  4. Local landowners and communities should be informed ahead of any blasting event
  5. When blasting under power lines is planned, the power lines should be temporarily switched off or be removed. Compliance with the requirements of ESKOM is required and the applicant will inform ESKOM in reasonable time of the intention to blast
  6. Inspection of structures in the vicinity of the proposed blasting area should be carried out. These structures should be inspected and their condition photographically recorded prior to blasting
  7. The area within which inspection of structures must be undertaken will depend on the blasting method used and the magnitude of the blasts

8. Make use of nitrate-free explosives wherever possible
  9. Make use of noise mufflers and / or soft explosives during blasting
  10. When blasting, take measures to limit flyrock
  11. A siren is to be effective within 1km radius and will be used for 10 minutes in advance of a blast and until completion of the blasting works
  12. Flyrock which falls beyond the cleared working area that pose to be nuisance / hazard should be collected and treated as rock spill
  13. It is suggested that a seismograph should be used to record all three axis as well as the noise levels at the nearest building or structure (receptor) from the blasting area during blasting activities
  14. The blasting will be done according to the Occupational Health and Safety Act 1993 (Act No. 85 of 1993) Explosive Regulations of 17 January 2003.
- c) Once the blast is completed, broken rock will be processed through a crusher from where it will be loaded on a truck and removed from site
  - d) When all the broken material is removed, the rock face will be prepared for the next blast
  - e) Each blast will be approximately 40m in length, 10m wide and  $\pm 3$  meters deep on average, resulting in a quarry with an average depth of  $\pm 15$  meters
  - f) The total estimated rock to be mined is 2 000 m<sup>3</sup>/month
  - g) There will be no permanent buildings or structures constructed
  - h) Fuel will be kept inside a bunded area that can contain 110% of the volume of the fuel. Lubricants will be kept in a bunded oil store and spares will be kept on site.
  - i) Any waste generated on site will be managed appropriately and according to best practices.

Decommissioning phase:

- a) All the equipment will be removed from the site.
- b) Any residual waste will be collected and removed from site. General waste will be disposed of at the authorised landfill site in the area, while recyclable waste (e.g. scrap metal) will be recycled as far possible. Any potential hazardous material left on site will be managed appropriately and disposed of at an authorised hazardous waste facility.
- c) The rock face will be blasted in such a manner to create a slope of 90° or less
- d) Overburden and oversized material will be used for filling or sloping especially the areas to be made safe (e.g. steep cuts)
- e) Available topsoil will be used to cover exposed areas / roads to be rehabilitated for the establishment of vegetation
- f) The area will be fenced off in order to provide a safe environment and to prevent easy access to the site



**e) Policy and Legislative Context**

<b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</b> (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)	<b>REFERENCE WHERE APPLIED</b>	<b>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</b>  (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
National Environmental Management Act (Act 107 of 1998) 2014 Regulations	Department of Environmental Affairs	Notified of the project.
National Water Act (Act 36 of 1998)	Department Water and Sanitation	Notified of project. No WULA applied for
Conservation of Agriculture Resources Act (Act 43 of 1993)	Department of Agriculture, Forestry and Fisheries	Notified of project. None
National Heritage Resources Act (Act 25 of 1999)	South African Heritage Resource Agency	Phase 1 HIA conducted
Occupational Health and Safety Act and Regulations (Act 85 of 1993)	Department of Labour	None (Implemented by contractor on site)
Minerals and Petroleum Resources Development Act (Act 28 of 2002)	Department of Mineral Resources	Environmental Authorization applied for

**f) Need and desirability of the proposed activities.**

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

The activity is part of a project by the department of Roads and Transport in the Eastern Cape to provide material for the upgrade (i.e. surfacing) of the road through Musong. The road to be surfaced is 6.2 km. The road will improve travelling in the village.

The project will create numerous jobs for people from the local community. It will furthermore develop skills for local people. Individuals employed at the borrow pit and road construction sites will earn an income of which will be used to create better living conditions for themselves.

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

The preferred site is located in an area which have been disturbed by previous mining activities and therefore poses to have a less significant impact on the environment. It has also been degraded by animal grazing and other human activity.

Proposed activities on the site is that associated with mining of gravel and dolerite (i.e. blasting, excavation, crushing, stockpiling, screening, loading and hauling from site). These are the most cost- and operational effective methods to be used to mine the materials. Furthermore, the activities used on site are more labour intensive and will ensure that jobs are created for local residents.

The technology used in the mining of the material for road construction are a known practice used frequently and it is proven to be effective. The technology and methods used are at "top of the range" and is therefore the fastest in mining material. Other technology will be timely and may be more dangerous.

## **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.

There are no feasible alternatives for the proposed project due to the following reasons:

- **Property/location alternative**

The proposed site for the establishment was chosen by the applicant as there is an already disturbed mining area on the site which will be mined further. Establishing the borrow pit on another site will result in a new area to be disturbed by mining activities and will have a more significant impact on the environment. Furthermore, it was determined that the quality of the material on the proposed site is sufficient for its intended purpose.

- **Type of activity**

Mining of gravel will have to be undertaken in order to obtain material for the construction/upgrade of the nearby existing road. There are no nearby commercial sources to obtain the material from. The cost of transporting the material over such a long distance and the impact on the environment will be very high and will not be feasible.

Material cannot be obtain by means other than mining.

- **Design and layout**

The design and layout of the site was chosen by the applicant as it will be the most efficient to undertake the mining activity. Consideration was given as to where the best material is located on the site.

- **Operational aspects**

A rock breaker will be used to break large rocks. Should this however be insufficient, blasting will be done to loosen material before it can be crushed and transported.

- **No-go alternative**

The no-go alternative will result in the loss of the opportunity to create employment for residents of the local community. Furthermore, the road will not be upgraded as no material will be available to do so.

## 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 following measures were implemented to ensure that the public is notified:

- A site notice was placed on site,
- An advert was placed in the local newspaper,
- Written notifications were sent to all authorities,
- A public meeting was held in the village.

The following authorities were notified of the project by written notifications and background information documents (BID):

- Joe Gqabi District Municipality
- Senqu Local Municipality
- Municipal Manager
- Ward 6 ward councillor
- Public Relations Councillor
- South African Heritage Resource Agency
- Eastern Cape Provincial Heritage Resource Agency
- Department of Water Affairs
- Department of Agriculture
- Department of Economic Development and Environmental Affairs
- Department of Rural Development and Land Reform

No comments were received regarding the proposed project

A public meeting was held on 20 February 2015 between the engineers office (i.e. Dibanani Consulting Engineers), Eko Environmental, the ward councilors in the area, the PR councilor from the municipality and the community regarding the projects. The following issues/questions were raised by the community members:

1. Will the construction company employ local residents,
2. Where is the start of the new road,
3. Are there any quarries available for material,
4. Is the Environmental and Civil Consultants allowed by the communities to work on the quarries,
5. What is the construction period?

The following responses were given to the questions raised in the meeting:

1. The project is labour intensive and will therefore require local labourers to assist,
2. The new road will be constructed from the end of the existing tarred road to the end of Musong village,
3. Two quarries have been identified for the excavation of material for the road construction,
4. The headman and community agreed that quarries located within the community must be utilized,
5. The project will run for one year (approximately)

Refer to Minutes of the meeting in Appendix 4.



iii) **Summary of issues raised by I&Aps**  
 (Complete the table summarising comments and issues raised, and reaction to those responses)

Interested and Affected Parties		Date	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.
List the names of persons consulted in this column, and Mark with an <b>X</b> where those who must be consulted were in fact consulted.		Comments Received			
<b><u>AFFECTED PARTIES</u></b>					
Landowner/s	<b>X</b>				H(ii)
Headman of land	X	20/02/2015	See comments from residents	See response to residents	
Lawful occupier/s of the land					H(ii)
Residents of Musong Village	X	20/02/2015	<ul style="list-style-type: none"> <li>- Will the construction company employ local residents,</li> <li>- Where is the start of the new proposed road (upgrade),</li> <li>- Are there any quarries available for material,</li> <li>- Are the Environmental and Civil Consultants allowed by the communities to work on the quarries,</li> <li>- What will the period of construction/mining be.</li> </ul>	<ul style="list-style-type: none"> <li>- The project is labour intensive and will therefore require local labourers to assist,</li> <li>- The new road will be constructed from the end of the existing tarred road to the end of Musong village,</li> <li>- Two quarries have been identified for the excavation of material for the road construction,</li> <li>- The headman and community agreed that quarries located within the community must be utilized,</li> <li>- The project will run for one year (approximately).</li> </ul>	

<b>Landowners or lawful occupiers on adjacent properties</b>	<b>X</b>				H(ii)
Communal land. Landowners involved in public meeting	X	20/2/2015	Refer to comments from residents	Refer to response to residents	
<b>Municipal councillor</b>	<b>X</b>	14/05/2015	No comments received	N/A	
<b>Municipality</b>	<b>X</b>	13/05/2015	No comments received	N/A	
<b>Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e</b>					
DWS	X	13/05/2015	No comments received	N/A	
<b>Communities</b>	X	20/2/2015	Refer to comments from meeting	Refer to response during meeting	
<b>Dept. Land Affairs</b>					
DRDLR	X	13/05/2015	No comments received	N/A	
<b>Traditional Leaders</b>					
Community (Headman)	X	20/2/2015	Refer to comments from meeting	Refer to response during meeting	
<b>Dept. Environmental Affairs</b>					
DEEA	X	13/05/2015	No comments received	N/A	
<b>Other Competent Authorities affected</b>					







**iv) The Environmental attributes associated with the alternatives.(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)**

**(1) Baseline Environment**

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

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

- Geology:

The site is located in the Db222 land type which mainly consists of alluvium and brownish-red and grey mudstone and sandstone of the Elliot Formation with Karoo dolerite sills and dykes occurring.

Soils consists of prisma-cutanic and/or pedocutanic B diagnostic horizons. However, it should be noted that the site is located on the side slope of a hill, therefore, soil and overburden is very shallow.

- Topography:

The site is located at an altitude between 1725 m - 1650 m. The site is located on the side slope of a hill.

- Vegetation:

The proposed site is located in the Senqu Montane Shrubland (Gm2) vegetation type. Vegetation within the proposed borrow pit area have been extensively degraded by over grazing and human activities to such a degree that the vegetation at some parts have been completely transformed. There are some dwarf shrubs at borrow pit 1 (i.e. *Chrysocoma ciliata*) although the area is largely devoid of vegetation. No protected, rare or endangered species could be identified.

Refer to the ecological and biodiversity report by Mr. Van Rensburg.

- Animals:

It is considered highly unlikely that mammals of concern would occur at the site due to over grazing and human presence on, and close to, the site.

However, there are some Red Data terrestrial mammals which may occur in the region, such as:

- \* South African Hedgehog
- \* Aardwolf
- \* African Wild Cat
- \* Small-spotted cat
- \* Bat-Eared Fox
- \* Striped Weasel

The likelihood of these species occurring on the site is highly unlikely.

Please refer to the ecological and biodiversity report.

- Climate

The area is located within a summer rainfall region with an average mean annual precipitation of 687 mm. This information is based on the rainfall within the Gm2 vegetation type.

**(b) Description of the current land uses.**

The proposed mining area is located on communal land which is used for agricultural purposes (i.e. grazing). However, it should be noted that the site was previously mined for gravel.

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

There is no infrastructure on the proposed site. The proposed area is located on the slope of a hill/mountain. A small stream is located on the eastern side of the site. A buffer of 30 m will be established around the watercourse where no mining activities may occur. Please refer to the biodiversity and ecological report by Mr. Darius van Rensburg in Appendix 3.

**(d) Environmental and current land use map.**

(Show all environmental, and current land use features)

Attached in Appendix 1.

**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).

Refer to the impact assessment in Appendix 5

**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).

Refer to the Impact Assessment in Appendix 5

**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)

Note:

No alternative sites were identified for the project (refer to section ix for motivation)

The advantages and disadvantages of establishing the borrow pit on the proposed are as follows:

\* Advantages:

- The proposed mining area is located closer to the proposed construction site. This will reduce transportation costs of the material and have a smaller environmental footprint,
- The establishment of the borrow pit on the proposed area will result in the creation of jobs for local residents. Should commercial sources be used, no jobs will be created and transportation costs will be very high,
- The proposed site has been previously disturbed by mining activities, over grazing and other human activities. The ecological status of the site is therefore very degraded.

\* Disadvantages:

- The proposed site is located within close proximity of some of the residents. These residents may experience high noise and dust levels associated with the mining activities (i.e. blasting, crushing, excavation, loading, hauling, etc.).
- Blasting may cause damage to houses located in a very close proximity,
- Mining activities will result in a change in land use until the site is rehabilitated. This will prevent residents to use the land for grazing for their animals.

**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 mitigations 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).

No comments were received from the I&APs regarding the impact of the borrow pit on the environment. Comments were directed towards the socio-economic state of the mining. However, the following mitigation measures will be implemented in order to minimize potential impacts on the environment:

- Surface and groundwater quality and quantity:

- \* No excavating activities will exceed the level of the natural water table.
- \* Storm water management measures will be implemented.
- \* Comply with all conditions of the National Water Act (Act 36 of 1998).
- \* Any water used on the quarry site will be obtained lawfully.
- \* Any spill of potentially hazardous substances (e.g. oil, grease, etc.) should be cleaned and the spill managed immediately.
- \* Storm water mitigation measures will be implemented to ensure that clean run-off water is not contaminated by any activities related to the proposed project

- Ambient Air Quality:

- \* A dust monitoring system will be implemented to monitor dust emissions from the operation.
- \* If dust becomes problematic, further management of the dust must be implemented.
- \* The speed of trucks and other vehicles on the access road should be limited to 40 km/hour to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used.

- Noise Levels:

- \* Vehicles should be equipped with silencers.
- \* Vehicles should be maintained in a road worthy condition.
- \* Authorities and adjacent landowners should be informed before blasting will occur.
- \* No blasting, or other work that may increase noise levels, will be done after normal working hours.

- Waste:

- \* Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., shall be disposed and stored in a suitable container at a collecting point and collected on a regular basis and disposed of at an authorized waste disposal facility in the area. Specific precautions shall be taken to prevent refuse from being dumped on or in the vicinity of the site.

- \* Suitable covered receptacles shall be available at all times and conveniently placed for the disposal of waste for general and hazardous waste.
  - \* Spills of any product such as paint, oil, cleaning agents etc. should be cleaned up immediately by removing the spillage together with the polluted soil and by disposing it at a recognised facility.
  - \* All used oils, grease or hydraulic fluids, paints, thinners etc. that cannot be re-used shall be placed in a hazardous waste container for disposal at a suitable waste disposal facility.
  - \* Temporary toilet facilities must be made available on site during construction, operational and decommissioning phase.
  - \* Sewage from these toilets should be managed appropriately and not be disposed of on site or the surrounding environment to cause water or other pollution.
- Loss Of Vegetation:
- \* It is not anticipated that the vegetation on adjacent property will be influenced due to the proposed mining activities as these activities will be carried out on a specific site.
  - \* In addition, no open fires will be allowed on site as the site will be treated as a fire-free zone.
  - \* A permit must be obtained to transplant protected / red data species to other areas where it will not be disturbed.
- Soil loss
- \* Topsoil will be removed and stockpiled to preserve the soil for re-use during rehabilitation.
  - \* Topsoil will not be used for filling or construction.
- Safety:
- \* No employee at the proposed quarry will be allowed to wander on adjacent land to the quarry.
  - \* No animals in the surrounding area to the quarry will be injured or killed.
  - \* Employees at the quarry will cook food and eat at home and will not be allowed to gather food from the environment surrounding the proposed quarry site.
  - \* Employees will be transported to and from work before and after every shift to ensure that no one trespasses on adjacent property.
  - \* No employee will be permitted to stay at the quarry if it is not during his shift. Employees not working, should be transported to their homes in town.
  - \* Adjacent landowners and authorities will be notified well in advance of blasting to ensure that all precautionary measures are taken to ensure that livestock and humans are safe during and after the blasting event

## **ix) Motivation where no alternative sites were considered.**

Note:

There are no feasible alternatives for the proposed project due to the following reasons:

- Property/location alternative

Two mining areas were identified (refer to the other borrow pit on the communal land Lower Telle 15) to be used for the mining of dolerite and gravel.

The proposed site for the establishment was chosen by the applicant as there is an already disturbed mining area on the site which will be mined further. Establishing the borrow pit on another site will result in a new area to be disturbed by mining activities and will have a more significant impact on the environment.

Furthermore, it was determined that the quality of the material on the proposed site is sufficient for its intended purpose (i.e. construction of a road).

- Type of activity

Mining of gravel will have to be undertaken in order to obtain material for the construction/upgrade of the nearby existing road. There are no nearby commercial sources to obtain the material from. The cost of transporting the material over such a long distance and the impact on the environment will be very high and will not be feasible.

Material cannot be obtained by means other than mining.

- Design and layout

The design and layout of the site was chosen by the applicant as it will be the most efficient to undertake the mining activity. Consideration was given as to where the best material is located on the site.

- Operational aspects

A rock breaker will be used to break large rocks. Should this however be insufficient, blasting will be done to loosen material before it can be crushed and transported.

- No-go alternative

The no-go alternative will result in the loss of the opportunity to create employment for residents of the local community. Furthermore, the road will not be upgraded as no material will be available to do so.

**x) Statement motivating the alternative development location within the overall site. (Provide a statement motivating the final site layout that is proposed)**

The layout of the site will be established in such a manner to have an open void (i.e. excavation area) and stockpiles. Stockpiles will be made on the highest part of the borrow pit in order to act as berms to divert storm water around the site to enter the natural drainage patterns. Machinery (i.e. crusher, screens, etc.) will be placed within the excavation area. Roads will only be established at the entrance to have the smallest distance on the site.

**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.)**

An impact assessment was compiled for the impacts on the site. During the operation on site, risk assessments and further impact assessments will be carried out to identify, assess and rank the impacts and risks that the activity will have on the site.

The impacts identified were the following:

- Impact on geology and soil:

loss of dolerite and topsoil,

- Land use and capability:

Land cannot be used for grazing when mining activities occur,

- Loss/damage of flora and fauna:

Vegetation will be removed and the habitat of certain animal species on site will be damaged,

- Impact on surface- and groundwater:

Spillages of hazardous waste, littering or effluent spills may cause contamination of water,

- Air quality:

Dust generation may cause higher dust levels in the area which will pollute the area,

- Noise levels:

Drilling, blasting, excavation, crushing, loading and hauling of material will have an impact on the ambient noise levels,

- Aesthetics:

The mining activities will have an impact on the aesthetic of the residents in the area.

- Impact on cultural and heritage resources/sites:

Although highly unlikely, there may be an impact on artefacts on the uncovering thereof,

- Socio-economic conditions:

There will be a positive impact on the socio-economic condition of the residents of the village with more job opportunities created.

(ii) Extent to which the risks/impacts can be avoided or minimized by mitigation measures:

-Impact on soil and geology:

The loss of dolerite cannot be avoided as the material will be used for road construction. However, soil loss can be avoided if soil is stockpiled correctly to avoid erosion on the site. If soil is stockpiled and not used for other purposes, the impact will be avoided.

- Land use and capability:

The land use of the mining area will change and grazing of animals will not be possible on large areas of the site. However, the impact will be temporary as the site will be rehabilitated to the original land use (i.e. agriculture) at the end of the project.

- Loss/damage of flora and fauna:

Vegetation will be lost during the clearing of the site. However, the impact will be temporary as the site will be revegetated during rehabilitation.

Due to the degraded state of the site and the presense of people on the site, there are not expected to be many animals on the proposed area. However, any existing animal habitats may be disturbed/damaged and animals present on site will leave the site. They will return after rehabilitation of the site.

- Impact on surface- and groundwater:

With the implementation of the correct mitigation measures and best practices for the storage and handling of hazardous substances, the impact on soil- and groundwater can be avoided.

- Air quality:

It is likely that there will be dust emissions from the blasting, crushing and loading of the material. However, dust emissions can be minimized by not operating the plant during very windy conditions. If dust becomes a problem, dust control measures will be implemented.

- Noise levels:

Noise will be generated on the borrow pit site as a result of mining activities. The impact can be minimized by mitigation, but cannot be avoided. Regular servicing of vehicles and machinery, working at daytime hours and the notification of residents of activities associated with high noise levels will minimize the impact.

- Aesthetics:

The borrow pit will always be visible to nearby residents. However, the impact can be minimized by always keeping the site clean and neat by correct waste disposal measures and housekeeping.

- Impact on cultural and heritage resources/sites:

It is not expected that there will be any impact on the cultural or historic sites/artefacts as no sites were identified. Impacts on any possible artefacts can be avoided if they are identified early enough.

- Socio-economic conditions:

There will be a positive impact on the socio-economic condition of the residents of the village with more job opportunities created.

**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).

<b>NAME OF ACTIVITY</b>  (E.g. For prospecting - drill site, site camp, ablution facility, 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.)	<b>POTENTIAL IMPACT</b> (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...)	<b>ASPECTS AFFECTED</b>	<b>PHASE</b> In which impact is anticipated  (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)	<b>SIGNIFICANCE if not mitigated</b>	<b>MITIGATION TYPE</b>  (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..	<b>SIGNIFICANCE if mitigated</b>
Blasting	Dust Noise Fly rock	Geology Soil Residents Air	Commissioning, Operational, Rehabilitation	Medium	Blasting controls: Notification of residents in close proximity to borrow pit in advance of blasting.	Low
Excavation	Dust (air pollution), Noise, Surface disturbance, Soil loss, Loss of dolerite, Surface- and ground water contamination, Loss of	Geology Soil Water Vegetation	Commissioning, Operational, Rehabilitation	Medium	Noise control measures, Dust control measures, Stockpiling of topsoil, Maintenance of vehicles and machinery to prevent petrochemical spills,	Low

	vegetation					
Stockpiles	Alien vegetation, Loss of topsoil, Erosion, Soil contamination	Soil	Commissioning, Operational, Rehabilitation	High	Stockpiling of topsoil in the correct manner, Erosion control measures (i.e. berms and trenches), Control and removal of alien species, Cleaning and prevention of all spills on stockpiles	Low
Loading, hauling and transport	Soil compaction, Dust, Vegetation loss, Noise,	Soil, Vegetation, Air	Commissioning, Operational, Rehabilitation	High	Vehicle maintenance, Noise control measures, Dust control measures, Maintaining and using access roads,	Low
Ablution facilities	Ground- and surface water contamination, Soil contamination,	Soil, Water	Commissioning, Operational, Rehabilitation	Medium	Establishment and management of temporary chemical toilets	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.
Heritage Impact Assessment	Operation will cease if any artefacts of cultural or heritage importance are uncovered and a heritage specialist will be contacted.	X	
Biodiversity and ecological report	A buffer of 30 m should be kept around the seasonal stream at the borrow pit. No endangered plant or animal species were identified on the site due to the disturbed nature of the proposed site.	X	

Attach copies of Specialist Reports as appendices



## **l) Environmental impact statement**

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

The correct storage and handling of hazardous substances and hazardous waste is very important as this may cause contamination of ground and soil- and ground water.

Due to the slope at which the proposed mining area is located, it is very crucial that runoff is diverted around the site correctly, that topsoil is stockpiled correctly in order to be preserved and to prevent erosion.

### **(ii) Final Site Map**

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

Refer to Appendix 1

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

The advantages and disadvantages of establishing the borrow pit on the proposed are as follows:

#### \* Advantages:

- The proposed mining area is located closer to the proposed construction site. This will reduce transportation costs of the material and have a smaller environmental footprint,
- The establishment of the borrow pit on the proposed area will result in the creation of jobs for local residents. Should commercial sources be used, no jobs will be created and transportation costs will be very high,
- The proposed site has been previously disturbed by mining activities, over grazing and other human activities. The ecological status of the site is therefore very degraded.

#### \* Disadvantages:

- The proposed site is located within close proximity of some of the residents. These residents may experience high noise and dust levels associated with the mining activities (i.e. blasting, crushing, excavation, loading, hauling, etc.).
- Blasting may cause damage to houses located in a very close proximity,
  - Mining activities will result in a change in land use until the site is rehabilitated. This will prevent residents to use the land for grazing for their animals.

## **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 conditions of authorisation.**

- Surface and groundwater quality and quantity:
- \* No excavating activities will exceed the level of the natural water table.
- \* Storm water management measures will be implemented.

- \* Comply with all conditions of the National Water Act (Act 36 of 1998).
- \* Any water used on the quarry site will be obtained lawfully.
- \* Any spill of potentially hazardous substances (e.g. oil, grease, etc.) should be cleaned and the spill managed immediately.
- \* Storm water mitigation measures will be implemented to ensure that clean run-off water is not contaminated by any activities related to the proposed project

- Ambient Air Quality:

- \* A dust monitoring system will be implemented to monitor dust emissions from the operation.
- \* If dust becomes problematic, further management of the dust must be implemented.
- \* The speed of trucks and other vehicles on the access road should be limited to 40 km/hour to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used.

- Noise Levels:

- \* Vehicles should be equipped with silencers.
- \* Vehicles should be maintained in a road worthy condition.
- \* Authorities and adjacent landowners should be informed before blasting will occur.
- \* No blasting, or other work that may increase noise levels, will be done after normal working hours.

- Waste:

- \* Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., shall be disposed and stored in a suitable container at a collecting point and collected on a regular basis and disposed of at an authorized waste disposal facility in the area. Specific precautions shall be taken to prevent refuse from being dumped on or in the vicinity of the site.
- \* Suitable covered receptacles shall be available at all times and conveniently placed for the disposal of waste for general and hazardous waste.
- \* Spills of any product such as paint, oil, cleaning agents etc. should be cleaned up immediately by removing the spillage together with the polluted soil and by disposing it at a recognised facility.
- \* All used oils, grease or hydraulic fluids, paints, thinners etc. that cannot be re-used shall be placed in a hazardous waste container for disposal at a suitable waste disposal facility.
- \* Temporary toilet facilities must be made available on site during construction, operational and decommissioning phase.
- \* Sewage from these toilets should be managed appropriately and not be disposed of on site or the surrounding environment to cause water or other pollution.

- Loss Of Vegetation:

- \* It is not anticipated that the vegetation on adjacent property will be influenced due to the proposed mining activities as these activities will be carried out on a specific site.
- \* In addition, no open fires will be allowed on site as the site will be treated as a fire-free zone.
- \* A permit must be obtained to transplant protected / red data species to other areas where it will not be disturbed.

- Soil loss

- \* Topsoil will be removed and stockpiled to preserve the soil for re-use during rehabilitation.
- \* Topsoil will not be used for filling or construction.

- Safety:

- \* No employee at the proposed quarry will be allowed to wander on adjacent land to the quarry.
- \* No animals in the surrounding area to the quarry will be injured or killed.
- \* Employees at the quarry will cook food and eat at home and will not be allowed to gather food from the environment surrounding the proposed quarry site.
- \* Employees will be transported to and from work before and after every shift to ensure that no one trespasses on adjacent property.
- \* No employee will be permitted to stay at the quarry if it is not during his shift. Employees not working, should be transported to their homes in town.
  - \* Adjacent landowners and authorities will be notified well in advance of blasting to ensure that all precautionary measures are taken to ensure that livestock and humans are safe during and after the blasting event

**n) Aspects for inclusion as conditions of Authorisation.**

Any aspects which must be made conditions of the Environmental Authorisation

No water will be abstracted from sources without the necessary water use license applications submitted to Department of Water and Sanitation

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

(Which relate to the assessment and mitigation measures proposed)

No assumptions, uncertainties and gaps in knowledge.

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

**i) Reasons why the activity should be authorized or not.**

The proposed activity should be authorized due to the following reasons:

- The proposed site has been disturbed by previous mining activities and the ecological status of the site is very low,
- The mining will provide numerous individuals from the local community with jobs and an income. Furthermore, there will be an increase in people to the village during the operational phase which will result in more money being spent in the village creating an indirect income for residents,
- The construction of the road through the village of Musong is dependant on the mining of gravel and Dolerite at the borrow pit. The cost of obtaining material from commercial sources will be very high due to transportation distances. There are no commercial sources within a close proximity.

**ii) Conditions that must be included in the authorisation**

- People from the local community must be employed at the borrow pit,
- An application for a water use license/registration of a water use will be submitted to the Department of Water and Sanitation if any water will be abstracted.

**q) Period for which the Environmental Authorisation is required.**

October 2015 - December 2016

**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.**

I confirm that the undertaking is provided.

**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.**

Due to the applicant being a state department (i.e. Department of Roads and Transport), they are exempted from delivering financial provisions.

**ii) Confirm that this amount can be provided for 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).

Refer to above.

**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 only persons directly affected by the mining of the borrow pits are the residents of the village of Musong. Impact on the residents are the following:

-Positive:

Local residents from the village will be employed at the borrow pit and the associated activities (i.e. road construction). They will earn an income for their services.

Furthermore, more people will be in the village and more money will be spent in the village as a result of this. This will have a positive impact on local businesses.

-Negative:

Local residents may be impacted upon due to higher noise and dust levels, especially close to the borrow pit and transportation routes. The impacts on the residents will however be temporary in nature.

**(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)(j)(vi) and (vii) of that 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).

There are no protected artefacts and/or buildings older than 60 years on the proposed site. It is unlikely that the proposed development will result in any significant archaeological impact within the boundaries of the borrow pit, if all activities are kept inside the borrow pit area. Refer to the Heritage Impact Assessment by Dr. Lloyd Rossouw in Appendix 3.

**u) Other matters required in terms of sections 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**).

Refer to the motivation in Section a.3.h.1 of this report.





# PART B

## ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

### 1) Draft environmental management programme.

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

Details included in Part A, Section 1(a).

- b) **Description of the Aspects of the Activity** (Confirm that the requirement 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).

Details 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)

Attached in Appendix 1

- 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 site will be rehabilitated to fit the end landuse as determined by the landowner (i.e. community). The land was used for agricultural purposes, in particular the grazing of livestock.

During rehabilitation the sides of the borrow pit will be sloped. Topsoil will be used to cover the surface of the borrow pit to ensure the re-growth of vegetation.

- ii) **Volumes and rate of water use required for the operation.**

No water used at the borrow pits. Should dust emissions become an issue and water will be needed for spraying, a water use license will be applied for.

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



iv) Impacts to be mitigated in their respective phases

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

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<p>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>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.)</p>	<p>(of operation in which activity will take place.</p> <p>State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).</p>	<p>(volumes, tonnages and hectares or m<sup>2</sup>)</p>	<p>(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)</p>	<p>(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-</p> <p>..</p> <p>Upon cessation of the individual activity or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>
Blasting	Operational Rehabilitation	4.7ha	Lose material will be excavated and removed from site. Landowners will be notified and evacuated before every blast to ensure their safety.		
Excavation	Operational Rehabilitation	4.7ha	The recommendations will prevent and manage any spills of hazardous substances.		
Stockpiles	Operational Rehabilitation	4.7ha	Recommendations will prevent and manage spills of hazardous substances. Recommendations will limit or prevent erosion from occurring.		
Loading, hauling and transportation	Operational		Recommendations will prevent and manage spills of hazardous		

			substances. Recommendations will prevent excessive noise and dust levels.		

### e) Impact Management Outcomes

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

<b>ACTIVITY</b> (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.).	<b>POTENTIAL IMPACT</b>  (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)	<b>ASPECTS AFFECTED</b>	<b>PHASE</b> In which impact is anticipated  (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)	<b>MITIGATION TYPE</b>  (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. <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> <li>• Remedy through rehabilitation..</li> </ul>	<b>STANDARD TO BE ACHIEVED</b>  (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Blasting	Dust, Noise, Surface disturbance, Fly rock,	Geology Soil Residents Air	Commissioning, Operational, Rehabilitation	Blasting controls: Notification of residents in close proximity to borrow pit in advance of blasting.	Noise and dust levels according to standards, No damage or injuries from fly rock
Excavation	Dust (air pollution), Noise, Surface disturbance, Soil loss, Loss of dolerite, Surface- and ground water contamination, Loss of vegetation	Geology Soil Water Vegetation	Commissioning, Operational, Rehabilitation	Noise control measures, Dust control measures, Stockpiling of topsoil, Maintenance of vehicles and machinery to prevent petrochemical spills,	Noise and dust levels according to standards, No surface erosion, No soil loss, No contamination of ground- or surface water. Minimal spillages.
Stockpiles	Alien	Soil	Commissioning,	Stockpiling of topsoil in the	Minimal alien vegetation

	vegetation, Loss of topsoil, Erosion, Soil contamination		Operational, Rehabilitation	correct manner, Erosion control measures (i.e. berms and trenches), Control and removal of alien species, Cleaning and prevention of all spills on stockpiles	on site, No loss of soil, No erosion trenches, No contamination, No/minimal spillages.
Loading, hauling and transport	Soil compaction, Dust, Vegetation loss, Noise,	Soil, Vegetation, Air	Commissioning, Operational, Rehabilitation	Vehicle maintenance, Noise control measures, Dust control measures, Maintaining and using access roads,	No compaction other than roads, Noise and dust levels according to standards,
Ablution facilities	Ground- and surface water contamination, Soil contamination,	Soil, Water	Commissioning, Operational, Rehabilitation	Establishment and management of temporary chemical toilets	No effluent from chemical toilets, Toilets serviced regularly, No soil contamination.

## f) Impact Management Actions

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

<p><b>ACTIVITY</b> whether listed or not listed.</p> <p>(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.).</p>	<p><b>POTENTIAL IMPACT</b></p> <p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p>	<p><b>MITIGATION TYPE</b></p> <p>(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)</p> <p>E.g.</p> <ul style="list-style-type: none"> <li>• Modify through alternative method.</li> <li>• Control through noise control</li> <li>• Control through management and monitoring</li> </ul> <p>Remedy through rehabilitation..</p>	<p><b>TIME PERIOD FOR IMPLEMENTATION</b></p> <p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-..</p> <p>Upon cessation of the individual activity</p> <p>or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>	<p><b>COMPLIANCE WITH STANDARDS</b></p> <p>(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)</p>
<p>Blasting</p>	<p>Dust Noise Fly rock</p>	<p>Blasting controls: Notification of residents in close proximity to borrow pit in advance of blasting.</p>	<p>Before blasting occurs</p>	<p>Dust fallout measures will be taken, Health test will be done on employees, Residence will be inspected for cracks or damage,</p>
<p>Excavation</p>	<p>Dust (air pollution), Noise, Surface disturbance, Soil loss, Loss of dolerite, Surface- and ground water contamination,</p>	<p>Noise control measures, Dust control measures, Stockpiling of topsoil, Maintenance of vehicles and machinery to prevent petrochemical spills,</p>	<p>Before excavation occurs</p>	<p>Dust fallout measures will be taken, Health test will be done on employees, Spills will be cleaned and waste management sufficient to prevent pollution or</p>

	Loss of vegetation			contamination, No areas outside mining area will be disturbed, The area will be rehabilitated.
Stockpiles	Alien vegetation, Loss of topsoil, Erosion, Soil contamination	Stockpiling of topsoil in the correct manner, Erosion control measures (i.e. berms and trenches), Control and removal of alien species, Cleaning and prevention of all spills on stockpiles	Commencement of stockpiling	Alien vegetation will be controlled, Spills and waste will be cleaned and managed appropriately to avoid contamination/pollution. Soil will be preserved.
Loading, hauling and transport	Soil compaction, Dust, Vegetation loss, Noise,	Vehicle maintenance, Noise control measures, Dust control measures, Maintaining and using access roads,	Throughout the project	Dust fallout measures will be implemented, Noise levels will comply to the of the OHS Act and medicals will be taken on employees.
Ablution facilities	Ground- and surface water contamination, Soil contamination,	Establishment and management of temporary chemical toilets	Throughout the project	Ground and surface water will comply to standards of DWS.



**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.**

All infrastructure will be removed from the borrow pit site and compacted surfaces will be ripped.

The borrow pit will be backfilled with available material on site and the sides sloped to an acceptable and safe slope.

If available, the borrow pit will be covered with topsoil and re-vegetated by use of hydro-seeding to ensure the re-growth of vegetation to support grazing.

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

It was decided that the borrow pit area will be used for agriculture after rehabilitation.

**(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.**

Refer to Appendix 1

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

The rehabilitation plan and objectives for closure indicates that the area will be used for agriculture after closure.

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

Please note that the Department of Roads and Transport is exempted from paying financial provisions.

However, the financial provision was calculated and included in Appendix 6.

(f)

**Confirm that the financial provision will be provided as determined.**

Department of Roads and Transport is exempted from paying financial provisions.

**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) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Blasting	Dust Noise Fly rock	Health test data and dust fallout results available. Complaints register on site.	SHE officer	Quarterly
Excavation	Dust (air pollution), Noise, Surface disturbance, Soil loss, Loss of dolerite, Surface- and ground water contamination, Loss of vegetation	Health test data and dust fallout results available, Complaints register on site, Surface and groundwater test results,	SHE officer	Quarterly
Stockpiles	Alien vegetation, Loss of topsoil, Erosion, Soil contamination	Stockpile monitoring reports, Spill report documents	SHE officer	Quarterly
Loading, hauling and transport	Soil compaction, Dust, Vegetation loss, Noise,	Health test data and dust fallout results available, Clearence registers	SHE officer	Qaurterly
Ablution facilities	Ground- and surface	Disposal certificates	SHE officer	Weekly

	water contamination, Soil contamination,			
Waste management	Pollution, Surface- and groundwater contamination	Disposal certificates	SHE officer	Monthly
Crushing (plant)	Dust, Noise, Contamination of ground and surface water	Health test data and dust fallout results available, Surface and groundwater test results, Spill reports.	SHE officer	Quarterly
Storm water management	Contamination of surface water	Surface and groundwater test results, Spill reports.	SHE officer	Quarterly

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

Quarterly

**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.**

- Toolbox talks before any activities occur,
- Weekly meetings
- Induction given to employees with employment
- Signage

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

Once risks are identified and assessed, employees will be made aware of risks associated with the activities on site. Employees will be made aware of how to manage certain pollutants and dangerous goods, waste and effluent to minimize the risks on site.

**n) Specific information required by the Competent Authority**

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

An annual performance assessment will be undertaken.

**2) UNDERTAKING**

The EAP herewith confirms

- a)** the correctness of the information provided in the reports
- b)** the inclusion of comments and inputs from stakeholders and I&APs ;
- c)** the inclusion of inputs and recommendations from the specialist reports where relevant; and

- d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein. ☒

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Signature of the environmental assessment practitioner:

Eko Environmental

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Name of company:

02/09/2015

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Date:

**-END-**