




IN ASSOCIATION WITH INKANYEZI YETHU





**NOVEMBER 2019**  
**ENVIRONMENTAL MANAGEMENT PROGRAM**  
**RAY NKONYENI LOCAL MUNICIPALITY**  
**AFRICAN LIME QUARRY**  
**KZN 30/5/1/3/2/10628MP**


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## Contents

<b>SECTION 1 INTRODUCTION, PROJECT AND SITE DESCRIPTION .....</b>	<b>4</b>
1.1. Section 1 (a) Contact Details of.....	4
1.1.1. Section 1 (a) (i) the EAP Who Prepared the Report .....	4
1.1.2. Section 1 (a) (ii) The Qualifications of The EAP (With Evidence) .....	4
1.2. Section 1 (b) Detailed Description of the Aspects of the Activity Covered by the EMPr as Identified By the Project Description .....	4
1.3. Section 1 (c) Provide a Map at an Appropriate Scale .....	4
1.4. Section 1 (d) Description of Impact Management Outcomes .....	6
1.4.1. Management Outcomes .....	6
1.4.2. Section 1 (d) (i) Planning and Design.....	6
1.4.3. Section 1 (d) (ii) Pre-Construction Activities.....	6
1.4.4. Section 1 (d) (iii) Construction Activities.....	6
1.4.5. Section 1 (d) (iv) Rehabilitation Of The Environment After Construction And Where Applicable Post Closure .....	7
1.4.6. Section 1 (d) (v) Operational Activities .....	9
<b>SECTION 2 IMPACT MANAGEMENT ACTIONS DURING CONSTRUCTION &amp; OPERATION.....</b>	<b>11</b>
2.1. Section 1 (f) Description of Proposed Impact Management Actions.....	11
<b>SECTION 3 REHABILITATION &amp; CLOSURE.....</b>	<b>31</b>
3.1. Section 1 (f) Description of Proposed Impact Management Actions.....	31
<b>SECTION 4 FINANCIAL PROVISION .....</b>	<b>34</b>
4.1. Section 1 (f) Description of Proposed Impact Management Actions.....	34
<b>SECTION 5 MONITORING &amp; COMPLIANCE .....</b>	<b>36</b>
5.1. Section 1 (g) Method of Monitoring the Implementation Of The Impact Management Actions Contemplated In Section (f) .....	36
5.2. Section 1 (h) Frequency Of Monitoring The Implementation Of The Impact Management Actions Contemplated In Section (f) .....	36
5.3. Section 1 (i) Persons Responsible For Implementation Of The Impact Management Actions .....	36
5.4. Section 1 (j) The Time Periods Within Which The Impact Management Actions Contemplated In Section (f) Must Be Implemented .....	36
5.5. Section 1 (k) The Mechanism For Monitoring Compliance With The Impact Management Actions Contemplated In Section (f).....	36
5.6. Section 1 (l) A Program For Reporting On Compliance, Taking Into Account The Requirements As Prescribed By The Regulations .....	36
5.7. Section 1 (m) An Environmental Awareness Plan Describing The Manner In Which.....	39
5.8. Section 1 (n) Any Specific Information That May Be Required By The Competent Authority .....	39
<b>SECTION 6 DEFINITIONS.....</b>	<b>40</b>
<b>SECTION 7 RECORDS.....</b>	<b>41</b>

## Tables

Table 1: Section 1 (a) (i) EAP Details .....	4
Table 2: Section 1 (a) (ii) EAP Qualifications .....	4
Table 3: Section 1 (f) Financial Provision Calculation: Sensitivity of Area .....	34
Table 4: Section 1 (s) Financial Provision Calculation – Rehabilitation Rates.....	35
Table 5: Section 1 (s) Financial Provision Calculation: Rehabilitation Cost Estimate.....	35
Table 6: Section 1 (g) (h) and (j) Regarding Monitoring, Frequency Of Monitoring And Time Periods For Implementation Of Impact Management Measures Contemplated In Section (f).....	36

## Figures

Figure 1: Section 1 (c) Aerial Map showing proposed African Lime Quarry in the Ray Nkonyeni Local Municipality, uGu District Municipality, KwaZulu-Natal; Farm Name: Portion 9 of Farm West Slopes 5828 (farm boundaries in white). Applicant: African Lime (Pty) Ltd. Proposed Mining Area shown in red (4.9ha) source: QGIS v3.8.3, 2019. ....	5
Figure 2: Red dash/ dotted line indicating the section of existing access road where widening is recommended (in the formally cultivated and degraded vegetation types).....	12
Figure 3: <i>Sideroxylon inerme</i> protected under the National Forest Act. ....	16
Figure 4: Plant species protected under the Provincial Nature Ordinance (a) <i>Kniphofia coddiana</i> (photograph c/o David Styles), (b) <i>Boophone disticha</i> , (c) <i>Dierama igneum</i> , (d) <i>Merwillia plumbea</i> . <sup>4</sup> .....	16

## SECTION 1 INTRODUCTION, PROJECT AND SITE DESCRIPTION

### 1.1. Section 1 (a) Contact Details of

#### 1.1.1. Section 1 (a) (i) the EAP Who Prepared the Report

Table 1: Section 1 (a) (i) EAP Details	
Company	EnviroPro
Name of The Practitioner	Josette Oberholzer
Contact	Rowan Buhrmann / Stephanie Denison / Josette Oberholzer
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#### 1.1.2. Section 1 (a) (ii) The Qualifications of The EAP (With Evidence)

Table 2: Section 1 (a) (ii) EAP Qualifications	
Josette Oberholzer	BSc (Hons) (Pmb) MSc (Dbn) & EAPSA certified
Stephanie Denison	BSc (Hons) MPhil Marine & Environmental Law
Rowan Buhrmann	BSc (Hons) MSc (Dbn)

Please see Appendix A of the Basic Assessment Report for Proof of qualifications.

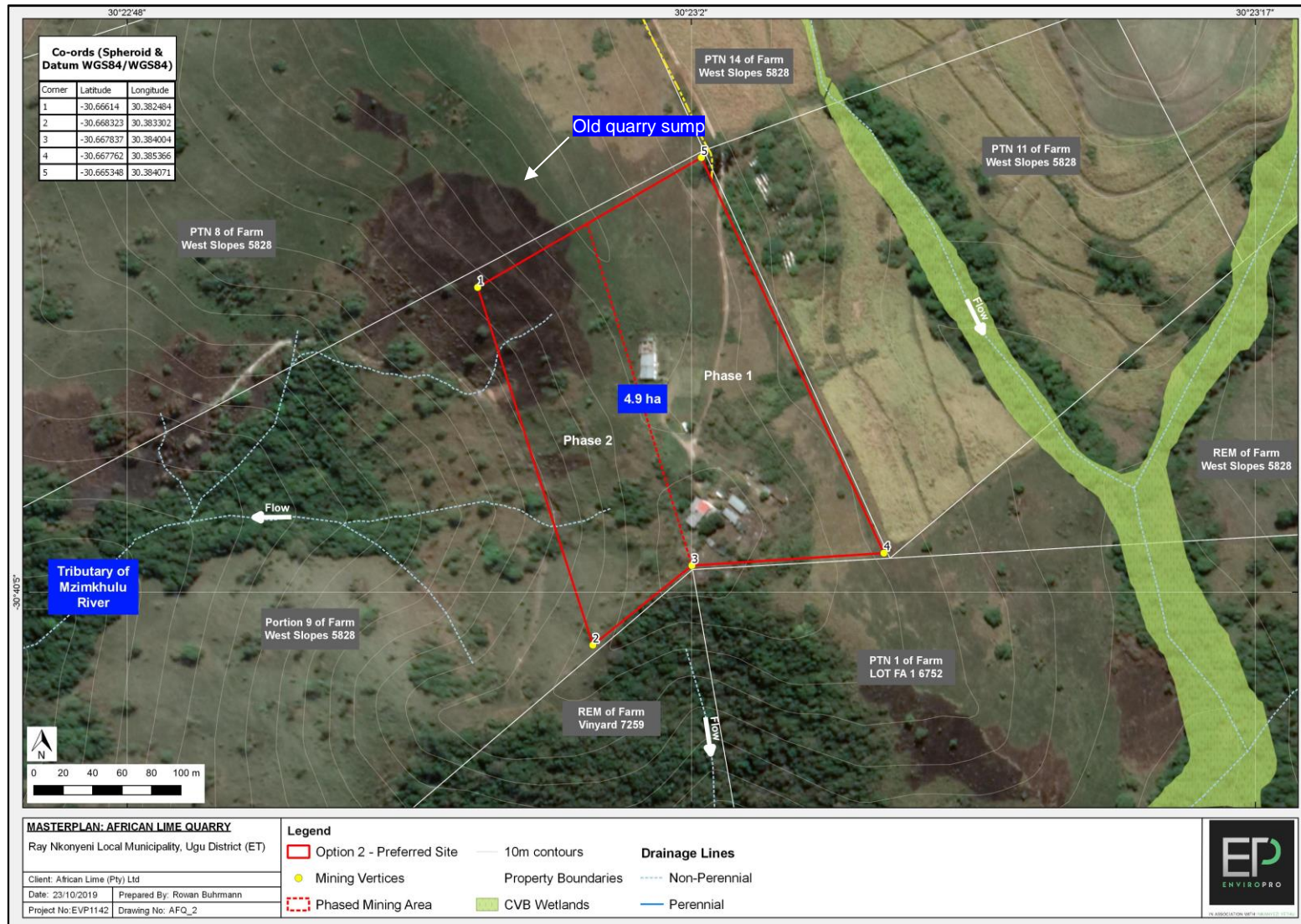
### 1.2. Section 1 (b) Detailed Description of the Aspects of the Activity Covered by the EMPr as Identified By the Project Description

African Lime (Pty) Ltd have applied for a Mining Permit in terms of section 27 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002, MPRDA), to mine limestone on a privately-owned portion of land in Ward 14 of the Ray Nkonyeni Local Municipality, uGu District Municipality. African Lime (Pty) Ltd own Portion 9 of Farm West Slopes 5828, where the mining will take place. The mining area, including all stockpile areas, offices, parking etc. will ultimately measure a total area of 4.9 hectares. The material will be used in the manufacturing of cement. Please see section 6 of the Basic Assessment Report which covers all aspects of section 1 (h) of Appendix 1 to the EIA regulations in terms of describing the aspects of the activity to be covered in the EMPr.

### 1.3. Section 1 (c) Provide a Map at an Appropriate Scale

*Provide a map 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.*

**Figure 1: Section 1 (c) Aerial Map showing proposed African Lime Quarry in the Ray Nkonyeni Local Municipality, uGu District Municipality, KwaZulu-Natal; Farm Name: Portion 9 of Farm West Slopes 5828 (farm boundaries in white). Applicant: African Lime (Pty) Ltd. Proposed Mining Area shown in red (4.9ha) source: QGIS v3.8.3, 2019.**



#### 1.4. Section 1 (d) Description of Impact Management Outcomes

Including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases.

##### 1.4.1. Management Outcomes

The purpose of this EMPr is to provide guidance to all contractors and site workers on how to operate in a responsible manner so as to achieve these goals and ensure that the requirements of the legislation are met. This EMPr is a working document to be used during operation and closure of this mining activity and has been generated to ensure that:

- The environment is protected during the operational and closure periods of the quarry.
- All emissions to air, water, and soil are controlled and managed to mitigate impacts on the environment and surrounding communities.
- Nuisance factors associated with mining activities during operation are controlled as far as possible.
- The correct management principles are followed from the start of mining activity thereby reducing frustrations on the part of the contractor when asked to comply with the strictures of the EMPr and relevant environmental legislation.
- Site rehabilitation is carried out correctly to avoid significant environmental impacts and meet the legislated requirements.

This EMPr is subject to change as brought about by variations in the project specification and any changes must be approved by the relevant authorities.

##### 1.4.2. Section 1 (d) (i) Planning and Design

In determining the preferred location of the quarry, the EAP has taken into account the location of the existing impacts, quality and type of vegetation (delineated by the vegetation specialist) and the drainage lines to the west (identified as a biodiversity feature that contains numerous species of conservation concern by the faunal specialist), as well as the location of the provincially protected species. The preferred (Option 2) mining area has been strategically positioned by the EAP to avoid as much of the good quality grassland vegetation as possible while still providing enough area to mine.

##### 1.4.3. Section 1 (d) (ii) Pre-Construction Activities

Prior to any mining operations commencing, the following needs to be carried out:

- Baseline water quality results are to be obtained for (a) the Mzimkhulu River, both upstream and downstream of the quarry site, (b) the drainage lines located to the west of the site, (c) the wetland system to the east of the site, (d) the adjacent property's borehole to the east of the site [30°39'44.97"S, 30°23'23.95"E].
- A desktop palaeontological assessment is required prior to the commencement of mining.
- A conservation management plan for the control of alien plants within 100m of the quarry site must be created.
- A plan must be put in place to ensure the Primary Pondoland-Ugu Coastal Sourveld grassland is burnt every two years.
- Permits are required from Ezemvelo KZN Wildlife (EKZNW) for the removal and relocation of the plants protected by the provincial conservation ordinance. Where possible, and required by EKZNW, protected plant species must be relocated. A copy of the EKZNW permit is to be retained at the site camp during mining.

##### 1.4.4. Section 1 (d) (iii) Construction Activities

The site has existing buildings that will be utilised as offices during mining. There will be setting up of screening and crushing plants within the mining footprint. The existing access road may require grading and upgrading in sections.

NO.	NAME OF ACTIVITY	POTENTIAL IMPACT
1	Upgrading of the existing access road.	Excessive clearing of vegetation along the edge of the existing road.

#### 1.4.5. Section 1 (d) (iv) Rehabilitation Of The Environment After Construction And Where Applicable Post Closure

On closure, the quarry will be rehabilitated to reduce visual and safety impacts, and to control risk of erosion and slippage. The site will not be used further once it has been closed. The area will be shaped and re-vegetated to ensure that it does not pose a safety or erosion and environmental hazard.

The following impact has been identified and assessed in the basic assessment report.

NO.	NAME OF ACTIVITY	POTENTIAL IMPACT
22	Closure of the site and rehabilitation of the quarry.	If the quarry is not rehabilitated upon completion of the activity, the current activity will create an on-going safety risk and be a danger to animals who may fall off the cliff edges or be hurt by unstable collapsing rock faces. It will continue to have a visual impact on the landscape and there may be further slippage of unshaped slopes and erosion of soil above unstable slopes.

Top soil conservation and management during operation forms part of the preparation for closure and rehabilitation

- Top soil removed during the excavations must be kept aside for use in rehabilitation.
- The topsoil can be used as stormwater berms above and below the quarry site.
- All topsoil must be stored more than 50m from the old quarry sump.
- The topsoil must be re-used for rehabilitation purposes once a section of the quarry has been closed or when the site has been exhausted and will not be mined further.
- Soil stockpiles must not exceed 2m in height, must be covered, or grassed to prevent erosion caused by exposure to heavy wind or rain.

The following points must be followed to ensure appropriate closure:

- Rehabilitation will occur as soon as practically possible on completion of mining, following the cessation of the work in a specific section.
- No more than one month will pass between cessation of mining and rehabilitation.
- Any infrastructure erected for mining will be demolished and removed i.e. fencing.
- All equipment, concrete footings, fencing, etc. will be removed from site.
- All waste will be removed from site and disposed of at an approved landfill.
- Soil contaminated with oil, grease, fuel may not be disposed of in the excavation but will be disposed at a permitted landfill.
- The floor of the quarry will be left level and ripped to allow re growth of vegetation and topsoil removed at the beginning of the process can be used to cover this area.
- Before placing topsoil, all visible weeds will be removed.
- The topsoil will be spread evenly over the prepared surface to a depth of 75 to 150mm on slopes of 1:3 or steeper.
- Topsoil placement will occur in a phased manner, concurrent with the phased operation of the quarry. Topsoil will be placed in the same area from which it was stripped.
- Where soil volumes are inadequate to cover the entire area, slopes will receive priority treatment.

- Visual screening including the planting of vegetation, such as trees, shrubs, or tall grasses will be conducted during rehabilitation.
- Site access will be blocked to ensure that other operators or opportunists do not re-visit closed areas and continue to remove material.
- Re-vegetation will only take place once all operations are complete.
- Re-vegetated areas will be protected until vegetation has become established. No vehicles or equipment will be allowed access to areas that have been vegetated.
- Any runnels or erosion channels that develop after re-vegetation will be backfilled and consolidated and the areas restored to a proper stable condition. The erosion will not be allowed to develop on a large scale before effecting repairs and all erosion damage should be repaired as soon as possible.
- Any large rocks uncovered by the mining activity must be placed in the pit and covered with overburden material and topsoil.



**1.4.6. Section 1 (d) (v) Operational Activities**

The following impacts were assessed in the basic assessment report.

NO.	NAME OF ACTIVITY	POTENTIAL IMPACT
2	Site camp establishment.	Fuel, lubricants and chemicals brought onto site as well as the setting up of ablution facilities for staff. This could lead to spills and contamination of soil / groundwater.
3	Removal of material and creation of a mining face.	Risk of collapse of the mining face if the angle of removal is not correctly planned and managed. This could lead to slippage and collapse of the slope causing damage to the surrounding environment and on-site workers.
4	Clearance of indigenous vegetation from within the mining footprint.	Physical disturbance of vegetation (Vegetation Impact Assessment). There will be clearing of up to 4.9ha of vegetation as the mining area is expanded. Disturbance stimulating a greater amount of alien plant invasion in the mining area and adjacent vegetation (Vegetation Impact Assessment). Clearance of plant species protected under the National Forest Act (No. 84 of 1998) and the KZN Nature Conservation Ordinance (No. 15 of 1974).
5	Cumulative impact: Clearance of vegetation from within the mining footprint.	Cumulative impact on biodiversity due to further loss of this vegetation type and limestone habitat in this area and on the property.
6	Blasting of material within the quarry footprint.	Generation of flyrock as a result of blasting causing damage or injuries to neighbouring property and people.
7	Noise generation during operation of plant equipment (crushing, screening and blasting) and trucks.	Noise nuisance may impact on mining workers and nearby residents.
8	Dust generation during excavation of the hill and from vehicles travelling on the dirt access road.	Dust may impact air quality in the immediate area and create a nuisance and potential health risk for nearby residents. Dust coats and contributes to deterioration of adjacent vegetation (Vegetation Impact Assessment).
9	Generation of emissions from vehicles.	Emissions for the construction vehicles on site and travelling on the access road may impact air quality in the immediate area.
10	Increase in heavy truck traffic as trucks enter and leave the site to transport material to where it is required.	Safety and nuisance impact on existing traffic and pedestrians. The increase in traffic will increase the risk of collection or removal of medicinally valuable plants (Per comms Lukas Scheepers – Previous Land Owner).
11	Operation of excavators and trucks on site.	Petrochemical spills from excavators and trucks.
12	Poor stormwater management during operation – “Dirty” water mixing.	Poorly managed stormwater run-off resulting in “dirty” water from within the quarry mixing.
13	Poor stormwater management during operation and closure – Erosion on site.	Poorly managed stormwater run-off resulting in erosion of the site.
14	Risk to water quality on nearby watercourses and wetlands.	Poorly managed stormwater run-off will cause erosion on site and may lead to deposition of material and sediment into the drainage lines to the west, and channelled valley bottom wetland to the east.
15	Insufficient number of toilet facilities on site	Contamination of the surrounding environmental as a result of insufficient number of toilet facilities.
16	Location of mine.	Suitability of operation with respect to surrounding land use i.e. a visual impact, and impact on sense of place.
17	Generation of waste during course of operation.	Improper storage and disposal of waste generated by drivers i.e. domestic waste, toilet waste, oil contaminated soils percolating into the natural areas around the quarry.

18	Degradation of the Primary Grassland.	Isolation of the Primary grassland located below the preferred quarry site. Encroachment of scrub and woody vegetation into the primary grassland below quarry site (Vegetation Impact Assessment).
19	Quarrying contaminating the groundwater.	Contamination of the groundwater impacting the adjacent farms and borehole users.
20	Effect of operation on surrounding community.	Potential positive impacts for local employment opportunities.
21	Cumulative impact on air quality.	Increase in the volume of dust produced which may impact air quality in the immediate area and create a nuisance and potential health risk for nearby residents.

**SECTION 2 IMPACT MANAGEMENT ACTIONS DURING CONSTRUCTION & OPERATION**

**2.1. Section 1 (f) Description of Proposed Impact Management Actions**

Identifying the manner in which the impact management outcomes contemplated in (d) will be achieved and must where applicable include actions to  
 i. Avoid Modify Remedy Control or Stop Any Activity Which Causes Pollution or Environmental Degradation  
 ii. Comply With Prescribed Environmental Management Standards Or Practice

2.2. Construction Phase / Site set up					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
1.	Upgrading of the existing access road.	Excessive clearing of vegetation along the edge of the existing road.	<p>Approximately 900m of the dirt access track may require grading to allow tip trucks to easily access the mining area. The following must be adhered to should the road require upgrading:</p> <ul style="list-style-type: none"> <li>• Only the existing road is to be graded.</li> <li>• Should sections of the track be widened to allow trucks to pass each other, this should be done in the formally cultivated / degraded vegetation areas (indicated in Figure 17).</li> <li>• No excessive clearing of vegetation to take place. Only the cultivated vegetation on the edge of the road is to be removed if permission has been granted by the land owner.</li> <li>• Should there be a need to remove vegetation not directly in the footprint of the proposed road upgrade, the ECO must be consulted.</li> </ul>	National Environmental Management Act & Regulations; National Environmental Management: Biodiversity Act	Contractor

Figure 2: Red dash/ dotted line indicating the section of existing access road where widening is recommended (in the formally cultivated and degraded vegetation types).



2.3. Mining Face					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
2.	Site camp establishment.	Fuel, lubricants and chemicals brought onto site as well as the setting up of ablution facilities for staff. This could lead to spills and contamination of soil / groundwater.	All mining equipment is to be retained in the site camp, which is to be located within the mining footprint area. The Existing buildings on site will be retained and used as offices until the mining area expands. It is unlikely that there will be any hazardous materials brought to site however these are to be stored in a designated area which is hard surfaced, bunded and covered. Adequate spill kits and containers for spilled and contaminated material to be on standby on site. If a spill occurs, stop the source, contain it, clean up in accordance with MSDSs and notify relevant authorities. The stormwater management system is to be established prior to any excavation taking place to ensure the separation of clean and "dirty" water. A berm is to be established around the mine area and the location of the sumps determined. The berm will divert water away from the mine area, as well as contain water inside the quarry. This impact can be managed.	National Environmental Management Act & Regulations; National Environmental Management: Biodiversity Act	Engineer / Contractor
3.	Removal of material and creation of a mining face.	Risk of collapse of the mining face if the angle of removal is not correctly planned and managed. This could lead to slippage and collapse of the slope causing damage to the surrounding environment and on-site workers.	<p>If the appropriate mining technique is not used and slippage occurs, it could potentially have a significant impact in terms of risk to the workers on site, on-going instability issues and on-going erosion. The risk of this impact occurring is relatively low, provided proper mining techniques are used and the angle of removal is appropriately planned, implemented and monitored. The following mitigation measures apply:</p> <ul style="list-style-type: none"> <li>• The mine works operator is to determine the width of the working bench widths, which will only be reduced under special conditions. This will allow machines to work safely providing ample turning space.</li> <li>• A suitably qualified mine operator is to ensure the vertical height of the bench benches is suitable as well as the angle.</li> <li>• A safety berm should be erected around the working area.</li> <li>• The slope face must not be heavily undercut as this could lead to collapse of the slope.</li> <li>• Undercutting of the slope and creation of over-steep slopes must not be permitted.</li> <li>• No loose material must be left on the face after blasting.</li> <li>• Mining activity needs to take into account the final shape of the excavated area so as to reduce the risk of potential collapse and shifting.</li> <li>• The slope angle and stability must be regularly evaluated by the resident engineer and adjustments made to the area and angle of excavation as needed.</li> <li>• The maintenance of proper drainage away from the working area.</li> <li>• This impact can be prevented and managed.</li> </ul>	Mineral Petroleum & Resources Development Act & Regulations; National Water Act; National Environmental Management Act & Regulations	Engineer / Contractor

2.4. Vegetation					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
4.	Clearance of indigenous vegetation from within the mining footprint.	Physical disturbance of vegetation (Vegetation Impact Assessment). There will be clearing of up to 4.9ha of vegetation as the mining area is expanded.	<ul style="list-style-type: none"> <li>The quarry footprint consists of five vegetation components: Transformed and Alien (2.13 ha), Secondary Grassland (0.67 ha), Degraded Primary Grassland – Pondoland-Ugu Coastal Sourveld (0.58 ha), Thicket-Grassland Transitional (0.28 ha), and good quality Primary Grassland – Pondoland-Ugu Coastal Sourveld (1.17 ha).</li> <li>To avoid the better-quality vegetation, but remain with a quarry of an adequate size, the Primary Grassland – Pondoland-Ugu Coastal Sourveld cannot be entirely avoided and therefore this impact cannot be fully mitigated.</li> <li>This impact cannot be fully mitigated as it will result in the loss of 1.05ha of KwaZulu-Natal Coastal Belt Thornveld (CB 6), and 3.85ha of KwaZulu-Natal Coastal Belt Grassland (CB 3).</li> <li>Partial mitigation will only occur when the site is closed and rehabilitated and parts of the site are re-vegetated. Some areas such as the slopes may not be suitable for re-vegetating.</li> <li>Vegetation clearing must only take place within the quarry footprint area.</li> <li>Vehicles must remain within the mining footprint and access road.</li> <li>Vegetation may only be cleared when the current mining footprint requires expansion (i.e. at intervals and not all at once).</li> </ul>	National Environmental Management Act & Regulations; Conservation of Agricultural Resources Act; National Environmental Management: Biodiversity Act	Applicant / ECO
		Disturbance stimulating a greater amount of alien plant invasion in the mining area and adjacent vegetation (Vegetation Impact Assessment).	<ul style="list-style-type: none"> <li>There was a large quantity of alien vegetation noted in the preferred quarry footprint. The further establishment of alien vegetation during mining therefore needs to be monitored and managed.</li> <li>Vehicles and pedestrians must remain within the mining footprint and access road, reducing the area of disturbance.</li> <li>The surrounding natural area is to be treated as a No-Go area.</li> <li>Restrictions associated with the surrounding natural area are to be included in the environmental induction training, which is to take place when mining commences. A register is to be retained in the site environment file as proof of training and attendance.</li> <li>An alien plant control programme must be implemented once vegetation clearing commences. This includes: <ul style="list-style-type: none"> <li>Alien plant identification training, which is to take place during the environmental induction training;</li> <li>Clearing of aliens within at least 100m of the quarry, which must take place more frequently during the months of September – November (Spring).</li> </ul> </li> </ul>	Conservation of Agricultural Resources Act; National Environmental Management: Biodiversity Act	Applicant / ECO

			<ul style="list-style-type: none"> <li>- Use of chemical pesticides must be avoided and mechanical removal by hand is preferred.</li> <li>- The independent Environmental Control Officer (ECO) auditing the site, is to comment on the level of alien plant invasion and ensure the alien plant control programme is being implemented.</li> </ul>		
		<p>Clearance of plant species protected under the National Forest Act (No. 84 of 1998) and the KZN Nature Conservation Ordinance (No. 15 of 1974).</p>	<ul style="list-style-type: none"> <li>• No tree species protected under the NFA were located within the proposed mining area. However, one <i>Sideroxylon inerme</i> (White Milkwood) was identified on the boundary of the preferred quarry site.</li> <li>• Six plant species protected under the KZN Provincial Conservation Ordinance are located in the preferred mining area (<i>Aloe maculata</i>, <i>Boophone disticha</i>, <i>diorama igneum</i>, <i>Kniphofia coddiana</i>, <i>Merwillia plumbea</i>, and <i>Watsonia cf. densiflora</i>; Figures 9, 18 and 19). A permit from Ezemvelo KZN Wildlife is required prior to the clearing / relocation of these plants.</li> <li>• The protected species that are at risk should be relocated outside of the mining footprint. The plants are easily relocated and the following procedure should be followed: <ul style="list-style-type: none"> <li>- The development areas (and any adjacent area at risk of disturbance) should be searched for protected and Red Listed plants during the summer months, as some are inconspicuous or invisible during the winter.</li> <li>- Plants should also only be relocated in the summer months, and be carried out by suitably qualified persons (such as a horticulturist), with due care and incurring minimal disturbance to roots or bulbs. Depending on the species involved, watering and maintenance will need to be carried out (<i>Aloe</i> species and bulbs do not need much more than initial watering but species that are not succulent or lack bulbs require extended watering).</li> <li>- Plants must be planted into similar habitat. For example, plants occurring in rocky places should be planted in a similar location.</li> </ul> </li> </ul>	<p>National Environmental Management: Biodiversity Act; National Forest Act; KZN Nature Conservation Ordinance.</p>	<p>Applicant / ECO</p>



Figure 3: *Sideroxylon inerme* protected under the National Forest Act.<sup>1</sup>



Figure 4: Plant species protected under the Provincial Nature Ordinance (a) *Kniphofia coddiana* (photograph c/o David Styles), (b) *Boophone disticha*, (c) *Dierama igneum*, (d) *Merwillia plumbea*.<sup>4,2</sup>

5.	Cumulative impact: Clearance of vegetation from within the mining footprint.	Cumulative impact on biodiversity due to further loss of this vegetation type and limestone habitat in this area and on the property.	<ul style="list-style-type: none"> <li>Although the study area falls within an area of moderate importance for faunal and vegetation diversity, the faunal specialist (Appendix B) concluded that the preferred mining area (Option 2) is of lower importance, and the priority area lies on the western banks, within the drainage lines. No conservation important fauna were located within the mining footprint.</li> <li>Furthermore, most part of the eastern portion of the proposed mining area has been previously disturbed due to previous habitation and clearing.</li> <li>Any snails and frog species that are encountered during the clearing process must be carefully removed and placed outside of the quarry footprint area.</li> <li>Vehicles and pedestrians must remain within the mining footprint and access road, reducing the area of disturbance.</li> </ul>	National Environmental Management Act & Regulations Conservation of Agricultural Resources Act; National Environmental Management: Biodiversity Act	Contractor
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<sup>1</sup> Images can be accessed on [www.sanbi.org](http://www.sanbi.org).

<sup>2</sup> Images can be accessed on <http://www.africanplants.senckenberg.de>



			<ul style="list-style-type: none"> <li>• A 30m buffer must be maintained between the streams located on the western bank and the mining operations.</li> <li>• A berm is to be constructed along the ridge line, separating Phase 1 (mining of the eastern bank), and Phase 2 (mining of the western bank). Phase 2 will only commence after Phase 1 is complete and will be dependent on the quantity and quality of material, and whether expansion into Phase 2 is justified.</li> <li>• Additional berms must be created along the northern and southern side of the quarry, reducing the surface runoff entering the quarry.</li> </ul> <p>No waste or materials of any kind must be allowed to enter the surrounding natural environment and old quarry sump.</p>		
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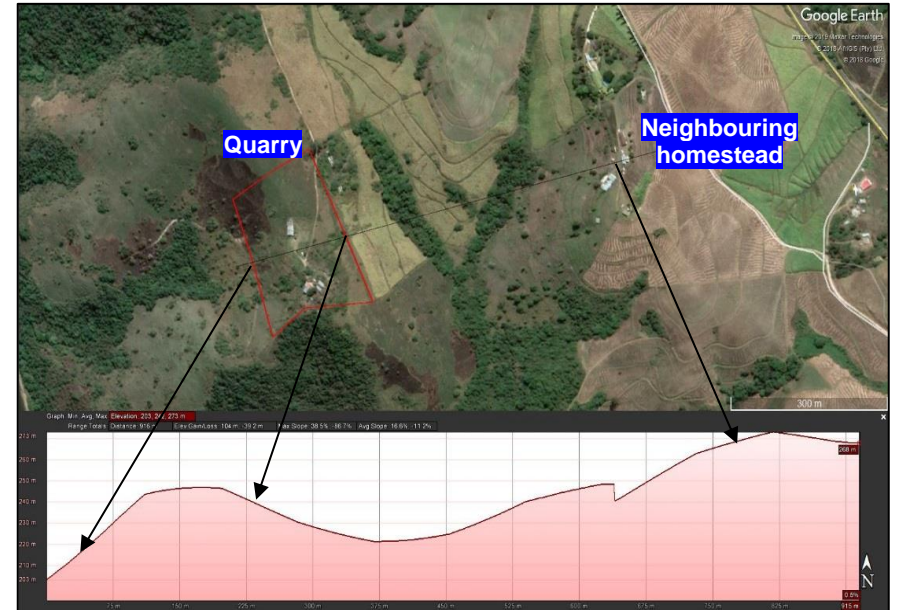
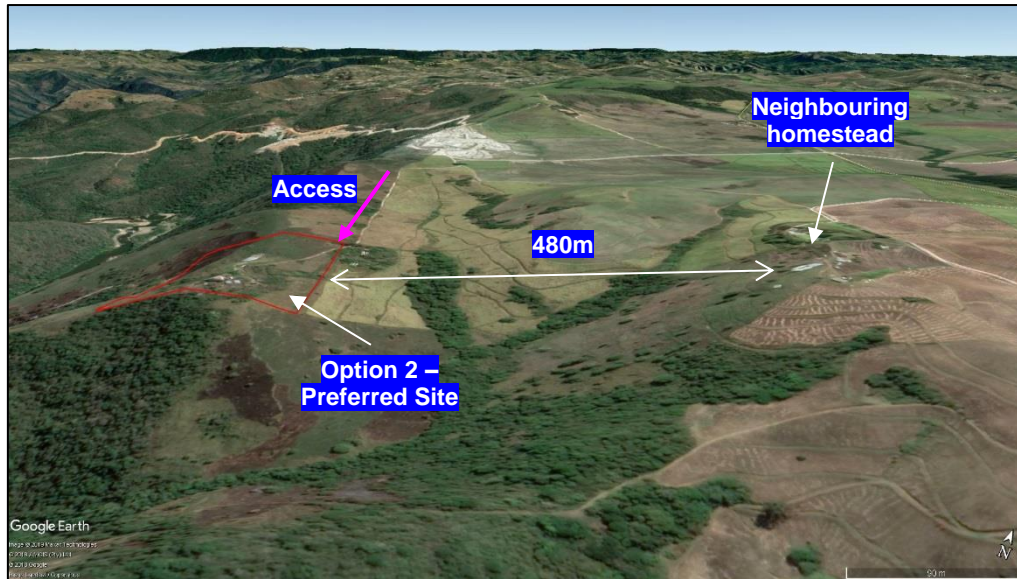
2.5. Blasting					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
6.	Blasting of material within the quarry footprint.	Generation of flyrock as a result of blasting causing damage or injuries to neighbouring property and people.	<p>Mitigation is generally applied when mining comes to within 100m of any structure and whenever the ground vibration is likely to cause damage to the structure.</p> <p>Blasting generates short duration events that are noticeable only by communities and individuals living in the immediate environment. The blasting is to be carried out by a suitably qualified Contractor.</p> <ul style="list-style-type: none"> <li>• No unauthorised persons shall enter blast area.</li> <li>• A siren will sound 5 min prior to blast and then again 3 minutes before blast.</li> <li>• All persons shall be vacated from blast area</li> <li>• The blasting is to be carried out by a suitably qualified Contractor.</li> <li>• An assessment of ground conditions and desired fragmentation is to be done on each blast and blasting strategies and techniques are tailored to deliver the desired outcomes.</li> <li>• This impact can be prevented and mitigated.</li> </ul>	Environmental Conservation Act; National Environmental Management Air Quality Act; National Environmental Management Act & Regulations.	Contractor

2.6. Noise					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
7.	Noise generation during operation of plant equipment (crushing, screening and blasting) and trucks.	Noise nuisance may impact on mining workers and nearby residents.	<p>The noise from machinery, trucks and loading of limestone will be on-going during operation and can't be completely mitigated against but can be minimised.</p> <p>The nearest household is located approximately 480m east of the quarry (Figure 4).</p> <p>Due to the distance from the site, and the topography (household on the opposite side of the hill), the noise from machinery (front end loaders, excavators, screener and crusher) and trucks will be significantly reduced before it reaches the adjacent farm houses. The noise from the quarry cannot be completely mitigated during its operating hours:</p> <p>All vehicles will be fitted with standard silencers and will be maintained regularly to prevent undue noise. The noise from machinery, trucks and loading of stone will be on-going during operation and can't be completely mitigated against. This noise will occur during the quarry operating hours.</p> <p>Typically, blasting is intermittent and at maximum capacity will only occur once a week or less. The smaller scale once off blasts will likely register in the vicinity of 140 dBA at source. As a point of comparison, traffic noise generates about 80-90dBA, the sound of breaking glass is 151dBA. The volume of noise will dissipate as one moves away from the blast area. In terms of topography, the site is cut into a hill and the work face will continue into the hill so sound will tend to be directed into the hillside. Blasting will only occur during daylight hours. The primary type of sounds expected will be fairly sharp, percussive sounds during operation of crusher and loading into trucks etc. which are more likely to travel longer distances. The surrounding vegetated hillsides will partially absorb this sound as it will be less likely to ricochet off these softened surfaces. As previously mentioned, the mining activity will be into the side of the hill such that some of the noise will be absorbed into the hillside, though some will also ricochet back.</p> <p>The table below provides noise levels experienced by operators of front end loaders and excavators<sup>3</sup>.</p>	National Environmental Management Act & Regulations; Occupational Health and Safety Act.	Contractor

<sup>3</sup> Workers Compensation Board of BC, Engineering Section Report; Stuart Eaton, February 2000

Plant/equipment	Operator, L <sub>ex</sub> , dBA		Trades/Tools	L <sub>eq</sub> dBA
	Ave.	Range		
Dozers, Dumpers	96	89-103	Plumber	90
Front end loaders	88	85-91	Elevator installer	96
Excavators	87	86-90	Rebar worker	95
Backhoes	86.5	79-89	Carpenter	90
Scrapers	96	84-102	Concrete form finisher	93
Mobile Cranes	100	97-102	Dry wall installer	90
Compressors	79	62-92	Steel stud installer	96
Pavers	101	100-102	Labourer – road construction	86
Rollers (compactors)	90	79-93	Labourers – formwork	88
Bar Benders	95	94-96	Labourers – shovel hardcore	94
Pneumatic breakers	106	94-111	Labourers – concrete pour	97
Hydraulic breakers	95.5	90-100	Hoist operator	100
Graders, trucks, concrete pumps & mixers, generators	< 85		Labourers-- drains & roughing concrete	100
Concrete batch plant operator	< 85		Tile setter	92
Poker vibrators	94.5	87-98	Pneumatic chipper/chisel	109
Saws	88.5	78-95	Compactor	108
Piledrivers (diesel & pneum.)	98	82-105	Electric drill	102
Pile drivers (gravity, bored)	82.5	62-91	Air track drill	113

Table 1. Noise levels, L<sub>eq</sub>, in construction jobs (UK) <sup>3</sup>



2.7. Dust					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
8.	Dust generation during excavation of the hill and from vehicles travelling on the dirt access road.	<p>Dust may impact air quality in the immediate area and create a nuisance and potential health risk for nearby residents.</p> <p>Dust coats and contributes to deterioration of adjacent vegetation (Vegetation Impact Assessment).</p>	<p>The area of impact is expected to be relatively low. Dust suppression is however to take place along the dirt access track as well as inside the quarry area itself.</p> <ul style="list-style-type: none"> <li>Dust will require management and the applicant must comply with the National Dust Regulations (Government Notice R827, 2013) with regards to dust levels produced on site.</li> <li>Mining benches are only to be cleared of vegetation as and when required for mining. This will reduce the amount of soil exposed to high winds creating dust.</li> <li>Perimeter monitoring of dust will be conducted to monitor dust levels to ensure they remain within legislated limits.</li> <li>Vehicle speeds must be reduced to 40kms within the quarry area and a water cart and water truck must be in operation to ensure dust is controlled.</li> <li>Machines to be fitted with dust suppression equipment and localised water spraying with the addition of wetting agents will also reduce dust from specific activities and equipment.</li> <li>If legislated dust levels are exceeded, shielding of this equipment (use of hoods or enclosing within shade cloth barriers) as well as placement of equipment so that it is sheltered from prevailing winds will be implemented to assist in managing dust.</li> <li>The material being transported off site in the back of the trucks must be covered.</li> <li>Dust generation will be primarily managed through application of water from the borehole and sump area, which will be created during mining.</li> <li>The previous landowner has confirmed the presence of three boreholes on the property, however only one is currently functioning.</li> <li>Dust is an impact associated with on-going operation of a quarry and even with mitigation, some dust will still be released. It is therefore important that it is monitored to ensure levels remain within the legislated parameters and that all necessary mitigation measures are implemented.</li> </ul>	<p>National Environmental Management Act; National Dust Regulations; National Environmental Management Act &amp; Regulations</p>	<p>Contractor / Engineer / HSE Officer</p>

2.8. Emissions					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
9.	Generation of emissions from vehicles.	Emissions for the construction vehicles on site and travelling on the access road may impact air quality in the immediate area.	All construction vehicles will be fitted with the appropriate silencers and exhausts. Emissions generated from these vehicles is not expected to significantly affect the workers on site or neighbouring farmers. This impact can be managed and mitigated.	National Environmental Management Air Quality Act; National Environmental Management Act & Regulations; Occupational Health and Safety Act.	Applicant / Contractor

2.9. Vehicle traffic					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
10.	Increase in heavy truck traffic as trucks enter and leave the site to transport material to where it is required.	Safety and nuisance impact on existing traffic and pedestrians.  The increase in traffic will increase the risk of collection or removal of medicinally valuable plants (Per comms Lukas Scheepers – Previous Land Owner).	This cannot be avoided as traffic will increase slightly with the haulage trucks moving to and from the property. As shown in Figure 17 above, the access road through Portion 14 of Farm West Slopes 5828 is located more than 500m west of the neighbouring households, with alternative access available for these households. The access road joins the P68-2, which is a main road heading north from the N2. It is unlikely that the number of trucks from the African Lime Quarry operations will significantly increase the traffic on the P68-2. There is an existing impact of heavy trucks transporting material from the Rossmin Quarry. The following mitigation measures are included in the EMPr to manage this impact: <ul style="list-style-type: none"> <li>All drivers must operate within the speed limits and due caution must be exercised especially when pedestrians are on the road.</li> <li>All drivers must be appropriately licenced and trained.</li> <li>Roads must not be located within adjoining properties and must remain on the existing dirt track on Portion 14 of Farm West Slopes 5828.</li> <li>No ad hoc haulage roads or turning areas may be created.</li> <li>Limit vehicle entry point to the designated access point and ensure no other point of entry is used.</li> </ul>	National Environmental Management Act & Regulations	Contractor / HSE Officer

		<ul style="list-style-type: none"> <li>All vehicles to remain within the designated quarry site.</li> <li>Vehicles travelling to and from the quarry are not permitted to stop. Thereby reducing the likelihood of the collection of medicinally valuable plants.</li> </ul>		
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**2.10. Machinery operating on Site**

No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
11.	Operation of excavators and trucks on site.	Petrochemical spills from excavators and trucks.	<ul style="list-style-type: none"> <li>All vehicles to be properly maintained and serviced.</li> <li>All vehicles to be equipped with drip trays.</li> <li>Drip trays are to be used under all leaking vehicles and equipment.</li> <li>All small machinery used on site must be situated on a drip tray (i.e. pumps, generators, compressors etc).</li> <li>All vehicles to be regularly maintained and maintenance records must be made available on request.</li> <li>Any vehicles that are leaking must not be allowed entry to site.</li> <li>Vehicles leaking oils must be removed from site and repaired.</li> <li>All spills must be contained, placed in a hazardous waste container and removed off site to be disposed of at a licensed hazardous waste landfill site.</li> <li>Adequate spill kits and containers for spilled and contaminated material to be on standby with the vehicles on site.</li> <li>If a spill occurs, stop the source, contain it, clean up in accordance with MSDSs and notify relevant authorities.</li> <li>All staff must be trained on how to react in the case of an emergency.</li> <li>Make staff aware of emergency phone numbers to use in the case of a large spill.</li> <li>No major equipment or vehicle servicing to occur on site i.e. major disassembly and repair work, clutch replacements and oil or lubricant changes must be carried out at a suitably equipped workshop.</li> <li>Only minor emergency repairs, i.e. those necessary to get the vehicle moving so that it can be taken to a repair facility to be carried out i.e. stopping of oil leaks, lubricating of hydraulics, changing of buckets / breakers on Excavators and TLBs or changing of tyres.</li> </ul>	National Environmental Management Act & Regulations; National Water Act; National Environmental Management Waste Act.	Contractor

2.11. Stormwater Management					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
12.	Poor stormwater management during operation – “Dirty” water mixing.	Poorly managed stormwater run-off resulting in “dirty” water from within the quarry mixing.	<p>Provision must be made to control stormwater runoff, especially down the slope of the mine face. The aim of the stormwater management is to ensure that clean water running off surrounding slopes does not enter the mine area and “dirty” water from within the mine area does not leave the mine area. This will be assessed as part of the WULA submitted to DWS. The following measures will be taken to manage runoff in and around the mine area:</p> <ul style="list-style-type: none"> <li>• Strategic placement of diversion berms and ditches around the mine area to divert clean water away from the mine and prevent potentially contaminated run off from leaving the mine area.</li> <li>• The ditches and berm area must be vegetated.</li> <li>• A sump/s are to be created at the low point of the quarry to capture runoff from within the mine area. This water is considered “dirty” and will be stored on the site and used for dust suppression.</li> <li>• The sump area may need to move as the mining area changes and moves.</li> <li>• This impact can be avoided, managed and mitigated.</li> </ul>	National Environmental Management Act & Regulations; National Water Act	Contractor / Engineer
13.	Poor stormwater management during operation and closure – Erosion on site.	Poorly managed stormwater run-off resulting in erosion of the site.	<p>Provision must be made to control stormwater runoff, especially down the slope of the exposed mine face to prevent erosion and excess sediment entering the sump and surrounding environment. Temporary stormwater protection measures must be established before operational activities commence.</p> <ul style="list-style-type: none"> <li>• Install appropriate erosion barriers (berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric) in order to prevent substances from entering exposed drains or channels.</li> <li>• Identify steeper areas where erosion is more likely to occur and ensure adequate protection of these slopes through planting of vegetation, placement of berms or use of hessian material. Regularly check and clean material from behind erosion barriers.</li> <li>• This impact can be managed and mitigated.</li> </ul>	National Environmental Management Act & Regulations; National Water Act	Engineer / Contractor
14.	Risk to water quality on nearby watercourses and wetlands.	Poorly managed stormwater run-off will cause erosion on site and may lead to deposition of material and sediment into the drainage lines to the west, and channelled valley bottom wetland to the east.	<ul style="list-style-type: none"> <li>• Due to the topography of the site (i.e. a ridge line), water runoff will naturally run in a westerly and easterly direction into the surrounding environment.</li> <li>• The water runoff from the floor of the quarry, where mining is taking place, will be directed into a sump which is to be created at the lowest point of the quarry, located to the east during Phase 1.</li> </ul>	National Environmental Management Act & Regulations; National Water Act	Engineer / Contractor

			<ul style="list-style-type: none"> <li>• Phase 2 will only commence after Phase 1 is complete and will be dependent on the quantity and quality of material, and whether expansion into Phase 2 is justified.</li> <li>• When Phase 2 begins, a new sump will be created prior to mining the western face. This will be located at the lowest point on the western face (as per Figure 4).</li> <li>• This preferred flow path is to be monitored for signs of erosion during the operation of the quarry.</li> <li>• A 30m buffer must be maintained between the drainage lines within the valley to the west of the quarry (i.e. outside the mining footprint).</li> <li>• Identify any steeper areas where erosion is more likely to occur and ensure adequate protection of these slopes. This can be achieved through planting of vegetation, placement of berms or use of hessian material.</li> <li>• Provision must be made to control stormwater runoff, especially down the slope of the mine face.</li> <li>• Stormwater to be managed through placement of diversion berms and ditches at the top of the eastern perimeter of the site and at 10m intervals down the sides of the slope which will act to divert and slow water flow down the slope and prevent water from dispersing off the western side of the site.</li> <li>• The ditches and berm area must be vegetated.</li> <li>• Install appropriate erosion barriers (berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric) in order to prevent substances from entering exposed drains or channels associated with the access road.</li> <li>• Regularly check and clean material from behind any erosion barriers.</li> <li>• Channelled flow must not be permitted to leave the site or enter any watercourses where it can erode the banks and damage the drainage channels.</li> <li>• Sediment / soil must not be permitted to enter any watercourse.</li> <li>• The water quality of the drainages line to the west of the quarry, the wetland system to the east, and the Mzimkhulu river (upstream and downstream) must be tested quarterly for the duration of the project, as well as one-year post closure.</li> <li>• Phase 2 of mining can only commence once the material in phase 1 has been exhausted. Prior to mining continuing over the ridgeline (i.e. into Phase 2), a detailed mine methodology, prepared by a suitable qualified mine engineer, must be submitted to the ECO for review and approval. The mine methodology must include provision for a sump to contain stormwater runoff (as per the stormwater runoff plan to address the concerns raised by the faunal specialist).</li> </ul>		
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2.12. Toilets					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
15.	Insufficient number of toilet facilities on site	Contamination of the surrounding environmental as a result of insufficient number of toilet facilities.	<p>Workers on site will require an appropriate number of toilet facilities on site.</p> <ul style="list-style-type: none"> <li>• Appropriate and sufficient toilet facilities (1 toilet per 15 employees) must be provided by the applicant;</li> <li>• All toilet facilities must be checked on a daily basis;</li> <li>• All toilet facilities must be emptied and cleaned on a weekly basis.</li> <li>• A registered waste removal contractor must remove effluent waste from site or effluent waste must be disposed of at a permitted Waste Water Treatment Site.</li> </ul>	National Environmental Management Act & Regulations; National Water Act; Waste Management Act & Regulations	Engineer / Contractor

2.13. Location					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
16.	Location of mine.	Suitability of operation with respect to surrounding land use i.e. a visual impact, and impact on sense of place.	<ul style="list-style-type: none"> <li>• The site is situated on a private property, in a rural area which is not a noted tourist destination, therefore there should not be an economic impact as a result of this impact.</li> <li>• In terms of surrounding land use, the property is surrounded by other privately-owned farms which are mainly used for agriculture (sugar cane), or have been undisturbed and remain vegetated. The nearest residential household is 480m east and is located on the opposite side of the valley.</li> <li>• As the mine is not in direct conflict with surrounding land use, this impact is considered manageable.</li> <li>• During operation, the site must be maintained and shaped on an ongoing basis to manage and reduce the visual impact as far as possible.</li> <li>• Once the site is closed, rehabilitation in the form of topsoil and hydroseeding must take place to allow for the re-growth of vegetation on this site.</li> </ul>	National Environmental Management Act & Regulations; National Water Act	Engineer / Contractor

2.14. Waste Management					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person

17.	Generation of waste during course of operation.	Improper storage and disposal of waste generated by drivers i.e. domestic waste, toilet waste, oil contaminated soils percolating into the natural areas around the quarry.	<ul style="list-style-type: none"> <li>• Suitable and sufficient waste bins must be brought to site to allow proper disposal of domestic waste generated by staff and also for disposal of any contaminated soils as a result of oil leaks / spills.</li> <li>• A register of all waste generated and disposed of must be maintained.</li> <li>• Waste to be disposed of at a registered landfill site.</li> <li>• Proof of safe disposal of solid waste must documented and these records must be maintained on site for review by DMR.</li> <li>• There must be no illegal dumping or burying of waste on site or on adjacent properties under any circumstances.</li> <li>• Waste material and refuse must not percolate into the remaining natural areas otherwise regular checks and clean-ups will be necessary. This is to be monitored by the ECO.</li> <li>• Chemical toilets must be provided on site for duration of mining activity.</li> <li>• Chemical toilets must be regularly emptied by registered companies and record of waste disposal must be maintained.</li> <li>• Safe disposal certificates for toilet waste must be obtained and kept on site as assurance that the waste was properly disposed of.</li> <li>• Toilets must not be situated on slopes or within 30m of the drainage lines and must be secured to prevent them tipping over.</li> <li>• Staff must make use of facilities or arrangements provided and are not permitted to use surrounding properties or vegetated areas as toilet facilities.</li> <li>• Hazardous materials that require disposal (old fuel / oil, contaminated soils etc.) must be disposed of at a registered hazardous landfill site.</li> <li>• These materials must be removed by an appropriate hazardous waste contractor. Proof of appropriate disposal must be available to the ECO for scrutiny and kept on record.</li> </ul>	National Environmental Management Waste Management Act & Regulations; National Environmental Management Act & Regulations	Contractor / HSE Officer
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2.15. Grassland Degradation					
No.	Activity	Impact	Mitigation	Environmental Standards Of Practice	Responsible person
18.	Degradation of the Primary Grassland.	Isolation of the Primary grassland located below the preferred quarry site.  Encroachment of scrub and woody vegetation into the primary grassland below quarry site (Vegetation Impact Assessment).	Although the location of the quarry avoids the majority of the Primary grassland, it will isolate this vegetation type to the western bank. Isolation of the grassland could increase the possibility of scrub and woody plant encroachment overtime (Vegetation Impact Assessment). The specialist recommended that a burning regime be implemented, and that the grassland below the quarry is burnt once every two years.	National Environmental Management Act & Regulations; National Environmental Management: Biodiversity Act;	Applicant

2.16. Groundwater					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
19.	Quarrying contaminating the groundwater.	Contamination of the groundwater impacting the adjacent farms and borehole users.	The quarry is located at the top of a watershed, with water flowing towards both the east and west. There is a borehole located approximately 650m north east of the proposed quarry area. The adjacent landowner raised a concern that the proposed quarry will negatively affect the quality of the water within their borehole (see Appendix G, Comments and Response Table). Feedback from the water resource specialist (see Appendix G, Comments and Response Table) stated that without knowing the extent of the aquifer, the depth of the borehole, and the planned depth of the quarry, there is no certainty that there will or will not be an impact on the borehole. However, the borehole is located upstream and at a higher gradient to the proposed mining area. It is recommended that the water be tested prior to commencement of mining, as well as during the mining process.	National Environmental Management Act & Regulations; National Water Act	Applicant

2.17. Community					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
20.	Effect of operation on surrounding community.	Potential positive impacts for local employment opportunities.	This is a positive impact, however it is to be noted that local labour must be sought, where possible, for the mining of this site.	National Environmental Management Act & Regulations	Applicant

2.18. Cumulative					
No.	Activity	Impact	Mitigation	Environmental Management Standards Of Practice	Responsible person
21.	Cumulative impact on air quality.	Increase in the volume of dust produced which may impact air quality in the immediate area and create a nuisance and potential health risk for nearby residents.	Air emissions from the quarry will be dust related and to some extent will add to the cumulative impact on air quality in the area. The nearest dust generating activity is the Rossmine Mine (approximately 1 km north). Although dust cannot be completely prevented due to the nature of the activity, it will be mitigated to a large extent through a dust watering program as well as management and screening of certain equipment. Perimeter dust monitoring will be carried out as per the requirements of the legislation to ensure that levels remain within legislated limits. Water from the onsite sump will be used to suppress dust on site. A water tanker will be	National Environmental Management Act & Regulations; National Environmental Management Act & Regulations; Occupational	Engineer / Contractor

		permanently on site to provide an alternative borehole supply, should water from the sump run out. No water will be abstracted from nearby water resources. A complaints register has been attached to section 7 of the EMPr, which will be kept on site. Any complaints received are to be addressed in a timeously fashion. A review of the complaints and close out register are to be included in environmental auditing for the quarry. This impact can be managed and mitigated.	Health and Safety Act.	
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Additional standard requirements to ensure good environmental practice on site.

2.19. Administration & Records			
Activity / Document	Required Action / Remediation To Control Environmental Impact	Environmental Management Standards Of Practice	Responsible Person
<b>EMPr</b>	<ul style="list-style-type: none"> <li>Keep a hard copy of the approved EMPr on site and ensure that it has been signed.</li> <li>Ensure all contractors as well as all engineers and the ECO have a copy of the EMPr prior to coming on to site.</li> </ul>	Environmental Authorisation	Contractor / HSE Officer
<b>Records</b>	<ul style="list-style-type: none"> <li>Keep records and proofs of all agreements, meetings etc. so as to demonstrate compliance with this EMPr.</li> </ul>	Environmental Authorisation	Contractor / HSE Officer
<b>Incident records &amp; Photographs</b>	<ul style="list-style-type: none"> <li>Keep records of incidents that have occurred and how they were remediated. Take photographs when incidents occur and follow up pictures to demonstrate remediation and keep these on record.</li> <li>These records must be kept on site for review by DMR.</li> <li>Please see the definition of an incident in section 4 below.</li> </ul>	National Environmental Management Act & Regulations; National Water Act	Contractor / HSE Officer
<b>Appointment of ECO / EO</b>	<ul style="list-style-type: none"> <li>Appoint an ECO (Environmental Control Officer) who will carry out annual environmental audit.</li> <li>Keep proof of appointment and contact details as well as dates of audits.</li> </ul>	National Environmental Management Act & Regulations;	Applicant
<b>Emergency response plan</b>	<ul style="list-style-type: none"> <li>An emergency response plan must remain on site as must a copy of the EMPr and the Environmental Authorization.</li> </ul>	National Environmental Management Act & Regulations; National Water Act	Contractor / HSE Officer
<b>Audits</b>	<ul style="list-style-type: none"> <li>A record of audits conducted on the site as well as findings must be kept on site.</li> </ul>	National Environmental Management Act & Regulations	Contractor / HSE Officer
<b>MSDSs</b>	<ul style="list-style-type: none"> <li>Material Safety Data Sheets (MSDSs) are to be kept on site for all hazardous material that is kept on site.</li> </ul>	National Environmental Management Act & Regulations	Contractor / HSE Officer

2.20. Training			
Activity / Document	Required Action / Remediation To Control Environmental Impact	Environmental Management Standards Of Practice	Responsible Person
<b>Who should be trained &amp; Frequency of training</b>	<ul style="list-style-type: none"> <li>All mining staff must have basic environmental awareness training, which can be conducted at the same time as the required health &amp; safety training.</li> <li>Staff must be trained on their environmental responsibilities before commencing work and refresher sessions can be conducted during toolbox talks on specific areas causing problems.</li> <li>Staff must sign training register and Records of training must be kept.</li> <li>These records must be maintained on site for review by DMR.</li> </ul>	National Environmental Management Act & Regulations;	Contractor / HSE Officer
<b>Proof of training</b>	<ul style="list-style-type: none"> <li>Keep training attendance registers on file at all times.</li> </ul>	Best Environmental Practice	Contractor / HSE Officer
<b>Training Content and staff conduct</b>	<ul style="list-style-type: none"> <li>Training must include                             <ul style="list-style-type: none"> <li>Reasons for conserving and protecting the environment within and around the quarry footprint;</li> <li>How the following activities can impact the environment: - Not using assigned ablutions, hazardous materials, uncleaned spills, waste management i.e. use of waste receptacles and waste separation for recycling, vehicle washing polluting soil &amp; ground water; litter;</li> <li>Why and how the steep banks of the quarry should be shaped at a 1:3 ratio.</li> <li>Consideration of neighbours.</li> <li>Use only the chemical toilets provided.</li> <li>No dumping to occur in sensitive areas on site.</li> <li>Use waste bins provided.</li> <li>Use drip trays provided on parked vehicles.</li> <li>Do not build fires for any purpose on the site.</li> <li>How to manage alien invasive vegetation on site.</li> <li>Behave in socially acceptable manner and do not use drugs or alcohol on site.</li> <li>There is to be no hunting of wildlife on the site and no setting of snares or traps. No animals are to be harmed or harassed.</li> </ul> </li> </ul>	National Environmental Management Act & Regulations;	Contractor / HSE Officer

2.21. Incidents			
Activity / Document	Required Action / Remediation To Control Environmental Impact	Environmental Management Standards Of Practice	Responsible Person
All incidents are to be recorded.	<ul style="list-style-type: none"> <li>• <b>Minor incidents:</b> small spills less than 5 l that do not enter stormwater or the stream/river, minor noncompliance with EMPr that does not cause major environmental impact i.e. housekeeping issues etc.                             <ul style="list-style-type: none"> <li>○ <b>Action:</b> Supervisor and staff on site to record and address and notify ECO. Take photos of spill. Prevent spill from spreading and contain. Collect spilled material and contaminated soil and place in sealed container for disposal. ECO to advise on remediation measures and to follow up on actions taken to address incident.</li> <li>○ <b>Records:</b> On site incident register.</li> </ul> </li> <li>• <b>Major incidents:</b> Large spills or any spills that enter stormwater or the stream/river, fires, explosions. Please see definition of a reportable incident provided below.                             <ul style="list-style-type: none"> <li>○ <b>Action:</b> Report immediately to ECO, action to be taken to prevent further damage and incident to be reported to authorities. ECO to advise on remediation measures and to follow up on actions taken to address incident.</li> <li>○ <b>Records:</b> On site incident register and report to authorities.</li> </ul> </li> </ul>	National Environmental Management Act & Regulations; National Water Act	Contractor / HSE Officer

**SECTION 3 REHABILITATION & CLOSURE**

**3.1. Section 1 (f) Description of Proposed Impact Management Actions**  
*iii. Comply With Any Applicable Provisions Of The Act Regarding Closure*

Activity / Document	Required Action / Remediation To Control Environmental Impact	Environmental Management Standards Or Practice	Responsible Person
<b>Rehabilitation of the excavated area</b>	<ul style="list-style-type: none"> <li>Rehabilitation must occur as soon as a section of the quarry will no longer be mined further or when the quarry is exhausted and will no longer be mined further.</li> <li>Cleared areas to be re-grassed on completion. Indigenous grasses to be used and the use of vetiver or kikuyu grass is not supported.</li> <li>Slopes must not be left at an angle steeper than 1:3. This will also act as a safety measures as it will clearly demarcate the edge of the slope and make it less easy for people or animals to fall off the top of the slope of the cut face.</li> <li>Where possible, vegetation that was removed during clearing must be kept aside and re-used. This can be kept on site in nursery areas or if the replanting occurs within a few days of clearing, can be kept to one side and immediately re-planted.</li> <li>Grass can be reintroduced by Hydroseeding or planting of grass plugs.</li> <li>Re-vegetation must not only take place at the end of operation but must on an on-going process.</li> <li>Cleared areas may not be left exposed for long periods of time and must be re- vegetated in stages as each section is completed.</li> <li>Where habitats have been damaged these must be reported to the ECO and procedures for rehabilitation of these habitats must be undertaken.</li> </ul>	National Environmental Management Act & Regulations; Mineral Petroleum Resources Development Act	Applicant
<b>Top Soil</b>	<ul style="list-style-type: none"> <li>Top soil removed during the excavations must be kept to one side (stored more than 32m from watercourse) and re-used in the same area that it was excavated from. Much of this topsoil, especially the top 30cm will retain grass and vegetation seeds.</li> <li>This top soil to be used when re-vegetating and rehabilitating areas cleared for operation/ excavation.</li> <li>All weeds must be removed from site before placing the topsoil on the excavated areas.</li> <li>Top soil must be spread evenly over the prepared surface, with a thickness between 75-150mm.</li> <li>Slopes must receive priority treatment of topsoil.</li> </ul>	National Environmental Management Act & Regulations; Mineral Petroleum Resources Development Act	Contractor / Applicant

<p><b>Rehabilitation of eroded areas</b></p>	<ul style="list-style-type: none"> <li>Any erosion damage caused during operation must be repaired. The affected area must be reshaped and soil replaced.</li> <li>The eroded area must be re-vegetated or measures put in place to control further erosion.</li> </ul>	<p>National Environmental Management Act &amp; Regulations; Mineral Petroleum Resources Development Act</p>	<p>Contractor</p>
<p><b>Removal of alien invasive species</b></p>	<ul style="list-style-type: none"> <li>Alien invasive species must be removed on an on-going basis.</li> <li>Use of chemical pesticides must be avoided and mechanical removal by hand is preferred.</li> </ul>	<p>National Environmental Management Act &amp; Regulations; National Environmental Management: Biodiversity Act</p>	<p>Contractor</p>
<p><b>Damage to watercourses</b></p>	<ul style="list-style-type: none"> <li>Where a watercourse habitat has been damaged the following measures are to be taken to ensure appropriate restoration of the habitat:                             <ol style="list-style-type: none"> <li>ECO must assess the damaged area</li> <li>Any operation debris or contaminants within the watercourse must be removed</li> <li>Original soil structure must be restored</li> <li>Any impedance or diversion to waterflow must be removed</li> <li>Area must be vegetated with suitable riparian or wetland species</li> </ol> </li> <li>No loose soil or damaged banks can be left behind after operation.</li> </ul>	<p>National Environmental Management Act &amp; Regulations; National Water Act</p>	<p>Contractor / Applicant</p>
<p><b>Closure of the Site</b></p>	<ul style="list-style-type: none"> <li>Any infrastructure erected for mining will be demolished and removed i.e. fencing.</li> <li>All equipment, fencing, etc. will be removed from site.</li> <li>All waste will be removed from site and disposed of at an approved landfill.</li> <li>Soil contaminated with oil, grease, fuel may not be disposed of in the excavation but will be disposed at a permitted landfill.</li> <li>The floor of the quarry will be left level and ripped to allow re growth of vegetation and topsoil removed at the beginning of the process can be used to cover this area.</li> <li>Before placing topsoil, all visible weeds will be removed.</li> <li>The topsoil will be spread evenly over the prepared surface to a depth of 75 to 150mm on slopes of 1:3 or steeper.</li> <li>Topsoil placement will occur in a phased manner, concurrent with the phased operation of the quarry. Topsoil will be placed in the same area from which it was stripped.</li> <li>Where soil volumes are inadequate to cover the entire area, slopes will receive priority treatment.</li> <li>Visual screening including the planting of vegetation, such as trees, shrubs, or tall grasses will be conducted during rehabilitation.</li> <li>Site access will be blocked to ensure that other operators or opportunists do not re-visit closed areas and continue to remove material.</li> <li>Re-vegetation will only take place once all operations are complete.</li> <li>Re-vegetated areas will be protected until vegetation has become established. No vehicles or equipment will be allowed access to areas that have been vegetated.</li> </ul>	<p>National Environmental Management Act &amp; Regulations; National Water Act; Mineral Petroleum Resources Development Act</p>	<p>Applicant</p>



	<ul style="list-style-type: none"> <li>• Any runnels or erosion channels that develop after re-vegetation will be backfilled and consolidated and the areas restored to a proper stable condition. The erosion will not be allowed to develop on a large scale before effecting repairs and all erosion damage should be repaired as soon as possible.</li> <li>• Any large rocks uncovered by the mining activity must be placed in the pit and covered with overburden material and topsoil.</li> </ul>		
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**SECTION 4 FINANCIAL PROVISION**

**4.1. Section 1 (f) Description of Proposed Impact Management Actions**

*iv. Comply With Any Provisions Of The Act Regarding Financial Provision For Rehabilitation*

Financial provision is required for rehabilitation of the site once mining is complete. The applicant is responsible for and must ensure that the site has been rehabilitated in full before leaving the site. The applicant has allocated sufficient budget for payment of the financial rehabilitation fee. The amount allocated for financial provision depends on the size and state of the cleared area requiring rehabilitation. Table 3 below extracted from the DMR standard rehabilitation guideline<sup>4</sup> provides guidance on rehabilitation fees applicable for mines based on sensitivity and area affected. The highlighted items are applicable to the site in question.

Table 3: Section 1 (f) Financial Provision Calculation: Sensitivity of Area			
Impacts and Mitigations			
Sensitivity	Sensitivity criteria		
	Biophysical	Social	Economic
Low	<ul style="list-style-type: none"> <li>Largely disturbed from natural state.</li> <li>Limited natural fauna and flora remains.</li> <li>Exotic plant species evident.</li> <li>Unplanned development.</li> <li>Water resources disturbed and impaired.</li> </ul>	<ul style="list-style-type: none"> <li>The local communities are not within sighting distance of the mining operation.</li> <li>Lightly inhabited area (rural).</li> </ul>	<ul style="list-style-type: none"> <li>The area is insensitive to development.</li> <li>The area is not a major source of income to the local communities.</li> </ul>
Medium	<ul style="list-style-type: none"> <li>Mix of natural and exotic fauna and flora.</li> <li>Development is a mix of disturbed and undisturbed areas, within an overall planned framework.</li> <li>Water resources are well controlled.</li> </ul>	<ul style="list-style-type: none"> <li>The local communities are in the proximity of the mining operation (within sighting distance).</li> <li>Peri-urban area with density aligned with a development framework.</li> <li>Area developed with an established infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>The area has a balanced economic development where a degree of income for the local communities is derived from the area.</li> <li>The economic activity could be influenced by indiscriminate development.</li> </ul>
High	<ul style="list-style-type: none"> <li>Largely in natural state.</li> <li>Vibrant fauna and flora, with species diversity and abundance matching the nature of the area.</li> <li>Well planned development.</li> <li>Area forms part of an overall ecological regime of conservation value.</li> <li>Water resources emulate their original state.</li> </ul>	<ul style="list-style-type: none"> <li>The local communities are in close proximity of the mining operation (on the boundary of the mine).</li> <li>Densely inhabited area (urban/dense settlements).</li> <li>Developed and well-established communities</li> </ul>	<ul style="list-style-type: none"> <li>The local communities derive the bulk of their income directly from the area.</li> <li>The area is sensitive to development that could compromise the existing economic activity.</li> </ul>

Table 4 below extracted from the DMR standard rehabilitation guideline<sup>5</sup> provides guidance on rehabilitation fees applicable for mines based on rate per area depending on sensitivity.

<sup>4</sup> DMR Financial Provision Guideline, 2005.

<sup>5</sup> DMR Financial Provision Guideline, 2005.

<b>Table 4: Section 1 (s) Financial Provision Calculation – Rehabilitation Rates</b>			
	<b>Environmental Sensitivity of Mine Area</b>		
	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Rate per hectare to determine the quantum</b>	R 20 000.00	<b>R 50 000.00</b>	R 80 000.00
<b>Minimum amount</b>	R 245 000.00		

As per tables 3 and 4 above, the sensitivity of the site is medium. The standard DMR guideline for determining financial provision for a site of 4.90 ha in a 'medium sensitivity' area would amount to R245 000.00. The DMR standard rehabilitation guideline<sup>6</sup> has been used in conjunction with the costing spreadsheet below. As per Table 5 below, the rehabilitation cost for rehabilitating this site measuring 4.90 ha is R144 250.00.

<b>Table 5: Section 1 (s) Financial Provision Calculation: Rehabilitation Cost Estimate</b>				
Description	UNIT	QTY	RATE	Amount R
<b>LANDSCAPING AND PLANTING</b>				
Trimming	m <sup>2</sup>	3000	2	R 6 000.00
<b>Preparing areas for grassing</b>				
Topsoiling within the quarry reserve	m <sup>3</sup>	1000	20	R 20 000.00
<b>GRASSING</b>				
Hydroseeding	ha	4.79	15000	R 73 500.00
<b>LABOUR</b>				
Unskilled labour	Hour	40	20	R 800.00
Semi-Skilled	Hour	40	30	R 1 200.00
Skilled	Hour	20	60	R 1 200.00
<b>PLANT WORK</b>				
Tracked excavator (Bell HD 820 or similar)	Hour	40	300	R 12 000.00
Tracked Loader Backhoe (CAT 428 or similar)	Hour	40	220	R 8 800.00
Tip Truck (10m <sup>3</sup> )	Hour	50	225	R 11 250.00
Water Tanker (10 000 litre)	Hour	50	190	R 9 500.00
<b>Total</b>				<b>R144 250.00</b>

<sup>6</sup> DMR Financial Provision Guideline, 2005.

**SECTION 5****MONITORING & COMPLIANCE****5.1. Section 1 (g) Method of Monitoring the Implementation Of The Impact Management Actions Contemplated In Section (f)**

The method of monitoring the impact management actions is indicated in table 6 below.

**5.2. Section 1 (h) Frequency Of Monitoring The Implementation Of The Impact Management Actions Contemplated In Section (f)**

The frequency of monitoring of specific impact management actions is indicated in table 6 below.

Given the nature of this project, it is recommended that annual ECO audits be carried out for the duration of the operation of this site. One post operation audit should be conducted once operation is complete. The EMPr details the rehabilitation and closure objectives which will be monitored by the ECO and compliance authorities.

**5.3. Section 1 (i) Persons Responsible For Implementation Of The Impact Management Actions**

The persons responsible for implementing the required impact management actions are indicated in the tables in section 2 above providing the impact management actions.

**5.4. Section 1 (j) The Time Periods Within Which The Impact Management Actions Contemplated In Section (f) Must Be Implemented**

The time periods for implementation of the required implementation management actions are indicated in table 6 below.

**5.5. Section 1 (k) The Mechanism For Monitoring Compliance With The Impact Management Actions Contemplated In Section (f)**

The mechanisms for monitoring compliance with the impact management actions are indicated in table 6 below.

**5.6. Section 1 (l) A Program For Reporting On Compliance, Taking Into Account The Requirements As Prescribed By The Regulations**

The program for reporting on compliance is indicated in table 6 below.

<b>NO.</b>	<b>NAME OF ACTIVITY</b>	<b>Method of Monitoring (1g) Frequency of Monitoring (1h)</b>	<b>Time periods for implementation 1(j)</b>	<b>Mechanism for Monitoring Compliance (k) and Program For Reporting On Compliance (l)</b>
1.	Removal of material and creation of a mining face.	<ul style="list-style-type: none"> <li>It will be necessary to monitor the stability of the pit walls to detect any potential failures of ground which could become hazardous.</li> <li>The angle of excavation will be visually monitored on a daily basis by the contractor and on a monthly basis by the engineer.</li> <li>Records of the monthly checks to be maintained and signed off by the engineer.</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing mining will constantly affect the slope and stability of the mine face therefore management actions as contemplated in section 2 above must be implemented from commencement of the activity and continued throughout the operational period.</li> </ul>	<ul style="list-style-type: none"> <li>HSE officer to check for proof of monthly reports and any logbooks of potential failures on a quarterly basis and ECO to check on an annual basis that records are being maintained.</li> </ul>

Table 6: Section 1 (g) (h) and (j) Regarding Monitoring, Frequency Of Monitoring And Time Periods For Implementation Of Impact Management Measures Contemplated In Section (f)				
NO.	NAME OF ACTIVITY	Method of Monitoring (1g) Frequency of Monitoring (1h)	Time periods for implementation 1(j)	Mechanism for Monitoring Compliance (k) and Program For Reporting On Compliance (l)
		<ul style="list-style-type: none"> <li>Signs of potential failures are to be recorded in the log book and reported to the applicant e.g.               <ul style="list-style-type: none"> <li>Formation or widening of cracks, e.g. tension cracks on bench crests.</li> <li>Rock falls or rock ejection.</li> <li>Raveling of rock within the slope face.</li> <li>Bulging of the slope face or toe.</li> <li>Increased water seepage.</li> </ul> </li> </ul>		
2.	Clearance of indigenous vegetation from within the mining footprint.	<ul style="list-style-type: none"> <li>Contractor to maintain photographic records of the state of the vegetation with photographs to be taken on a monthly basis and before commencement of activity within the quarry and to be kept on record.</li> </ul>	<ul style="list-style-type: none"> <li>Photographic records to be implemented from commencement and continue throughout the operational period i.e. every month if operation is continual for more than 2 months or before and after clearing if operation is for less than one month.</li> </ul>	<ul style="list-style-type: none"> <li>ECO to check on an annual basis that records are being maintained.</li> <li>ECO to comment on the level of alien plant invasion and ensure the alien plant control programme is being implemented.</li> </ul>
3.	Cumulative impact: Clearance of vegetation from within the mining footprint.	<ul style="list-style-type: none"> <li>Applicant to keep a copy of any permits received from DAFF and KZN Wildlife in the environmental file on site.</li> <li>The alien plant control programme must be implemented with clearing of aliens taking place more frequently during the months of September – November (Spring)</li> </ul>		
4.	Noise from excavators removing material and loading into trucks.	<ul style="list-style-type: none"> <li>The vehicles and service intervals to be maintained and managed by the contractor who must keep records and proof of servicing which are to be available on request.</li> <li>Applicant to review complaints register and investigate complaints received.</li> <li>Complaints to be addressed through appropriate remediation and effectiveness of remediation must be reviewed and complaints closed out.</li> </ul>	<ul style="list-style-type: none"> <li>Vehicle maintenance and servicing to be implemented for the life of the vehicle and therefore proofs to be made available from commencement of the operation until operations cease on the site.</li> </ul>	<ul style="list-style-type: none"> <li>HSE officer to confirm on a quarterly basis that records for servicing and maintenance of vehicle are being maintained.</li> <li>ECO to check on an annual basis that records are being maintained.</li> </ul>
5.	Dust generation as material is removed and from the roads as vehicles access and leave the site.	<ul style="list-style-type: none"> <li>Dust generation to be visually monitored on a daily basis by the contractor and must be suppressed with a water cart if this becomes necessary as determined by the HSE officer, ECO or contractor.</li> <li>Complaints register to be maintained on site.</li> <li>HSE officer to monitor complaints register and determine need for further dust suppression / monitoring based on complaints received. HSE officer</li> </ul>	<ul style="list-style-type: none"> <li>Visual monitoring of dust levels to be implemented on commencement of the operation and long term dust fall out monitoring to be implemented within the first quarter.</li> <li>Dust suppression to be implemented depending on the outcome of the visual</li> </ul>	<ul style="list-style-type: none"> <li>HSE officer to check records on a quarterly basis.</li> <li>ECO to check on an annual basis that records are being maintained.</li> </ul>

<b>NO.</b>	<b>NAME OF ACTIVITY</b>	<b>Method of Monitoring (1g) Frequency of Monitoring (1h)</b>	<b>Time periods for implementation 1(j)</b>	<b>Mechanism for Monitoring Compliance (k) and Program For Reporting On Compliance (l)</b>
		<p>/ contractor to investigate complaints received and address through appropriate remediation ensuring effectiveness of remediation is assessed and complaints are closed out.</p> <ul style="list-style-type: none"> <li>Shade cloth to be erected around the site if deemed necessary by the HSE officer, ECO, contractor or engineer</li> <li>Long term dust monitoring programs must be implemented i.e. dust fallout sampling and records must be kept and be available on request.</li> </ul>	<p>monitoring and results of the long term monitoring programs.</p> <ul style="list-style-type: none"> <li>Results to be interpreted by the HSE officer, ECO, contractor or engineer and based on these results further mitigation measures such as use of water carts or shade cloth to be implemented.</li> </ul>	
6.	Increase in heavy truck traffic as trucks enter and leave the site to transport material to where it is required.	<ul style="list-style-type: none"> <li>Contractor to monitor and provide proof of licensing etc. and monitor appropriate driver behavior on request.</li> </ul>	<ul style="list-style-type: none"> <li>From commencement and for entire operational period.</li> </ul>	<ul style="list-style-type: none"> <li>Records to be checked by HSE officer on quarterly basis and by ECO on annual basis.</li> </ul>
7.	Operation of excavators and trucks on site.	<ul style="list-style-type: none"> <li>Incident records to be maintained on site and record of any spills cleaned and removed from site to be maintained with photographic evidence of spill and clean up measures to be kept on file.</li> <li>Contractor to monitor new excavations and check no archaeological and historical residues as well as graves or fossils are exposed.</li> </ul>	<ul style="list-style-type: none"> <li>Vehicle maintenance and servicing to be implemented for the life of the vehicle and therefore proofs to be made available from commencement of the operation until operations cease on the site.</li> </ul>	<ul style="list-style-type: none"> <li>Records to be checked by HSE officer on quarterly basis and ECO on annual basis.</li> <li>Contractor and HSE officer to conduct monthly checks for drip trays on all vehicles.</li> </ul>
8.	Stormwater management during operation.	<ul style="list-style-type: none"> <li>Engineer to implement stormwater management measures on commencement of operation and to monitor efficacy and state of such measures on a quarterly basis.</li> <li>Site to be checked for signs of erosion and by HSE officer / Engineer on a monthly basis.</li> </ul>	<ul style="list-style-type: none"> <li>Engineer to implement stormwater management measures on commencement of operation and monitoring to commence with start of operation and continue for life of operation.</li> </ul>	<ul style="list-style-type: none"> <li>Site to be checked for signs of erosion and by HSE officer on a quarterly basis and by ECO on annual basis.</li> </ul>
9.	Location of mine.	<ul style="list-style-type: none"> <li>Complaints register to be maintained on site.</li> </ul>	<ul style="list-style-type: none"> <li>To be implemented from start of operation and continued or life of operation.</li> </ul>	<ul style="list-style-type: none"> <li>Register to be monitored monthly by HSE officer and annually by ECO.</li> </ul>
10.	Generation of waste during course of operation.	<ul style="list-style-type: none"> <li>Waste register to be maintained by contractor and monitored by HSE officer on a monthly basis and checked by ECO on annual basis.</li> </ul>	<ul style="list-style-type: none"> <li>To be implemented from start of operation and continued or life of operation.</li> </ul>	<ul style="list-style-type: none"> <li>Register to be monitored monthly by HSE officer and annually by ECO.</li> </ul>

<b>NO.</b>	<b>NAME OF ACTIVITY</b>	<b>Method of Monitoring (1g) Frequency of Monitoring (1h)</b>	<b>Time periods for implementation 1(j)</b>	<b>Mechanism for Monitoring Compliance (k) and Program For Reporting On Compliance (l)</b>
		<ul style="list-style-type: none"> <li>Records providing proof of safe disposal to be maintained with register and HSE officer on a monthly basis and checked by ECO on annual basis.</li> </ul>		
11.	Effect of operation on community.	<ul style="list-style-type: none"> <li>Complaints register to be maintained on site and to be monitored monthly by HSE officer and annually by ECO.</li> </ul>	<ul style="list-style-type: none"> <li>To be implemented from start of operation and continued or life of operation.</li> </ul>	<ul style="list-style-type: none"> <li>Register to be monitored monthly by HSE officer and annually by ECO.</li> </ul>

**5.7. Section 1 (m) An Environmental Awareness Plan Describing The Manner In Which**

- i. The applicant intends to inform his or her employees of any environmental risk which may result from their work and
- ii. Risks must be dealt with in order to avoid pollution or degradation of the environment.

Please see section 2.12 above which indicates training to be carried out with staff to ensure awareness of the EMPr and its requirements with regards environmental and how they are to be addressed.

**5.8. Section 1 (n) Any Specific Information That May Be Required By The Competent Authority**

The holder of the Mining Permit will ensure that the financial provision is reviewed annually.

**SECTION 6****DEFINITIONS****Stormwater**

Clean rainwater which should be allowed to enter the stormwater system or natural water bodies without causing erosion. Stormwater should not be contaminated with any other substance including soaps, washings, hazardous materials, soil etc.

***Raw materials for which source statement must be obtained***

Topsoil, sands, natural gravels, crushed stone, asphalt, clay liners, timber etc. E.G: sand may only be obtained from an approved sand winning operation which is licensed and has an approved EMPr for operation.

***Incidents***

All incidents should be recorded. Minor incidents could include small spills of less than 5l that do not enter a water body or any stormwater drains, as well as housekeeping issues and general small non compliances with the requirements of the EMPr. Major incidents are those that must be reported to the authorities and include all incidents involving contamination of a water body or stormwater or other reportable incidents as defined below.

***Reportable incident*** is defined as 'an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed' NEMA Section 30, 'includes any incident or accident in which a substance (a) pollutes or has the potential to pollute a water resource; or (b) has, or is likely to have, a detrimental effect on a water resource.' NWA Section 20.



**SECTION 7****RECORDS**

**Training Register – Record any training that has taken place.**

**Training Conducted:**

**Training provided by:**

Date of Training	Name	Signature

Non-conformance Record – Record any non-conformances i.e. small spills, overflowing waste bins etc.				
Date of Non conformance	Details of non-conformance	Mitigation required	Corrective action taken	Date action completed

**Complaints register – Record any complaints received from neighbours or the public regarding dust or pollution, noise or nuisance.**

Date of complaint	Complainant’s Name	Complainants Contact Number	Details of complaint	Corrective action taken	Date action completed

## Environmental Emergency Response and Definition of an Incident

<b>Aim of this document</b>	<ul style="list-style-type: none"> <li>• To effectively manage response to emergency incidents and control these incidents should they occur.</li> <li>• To ensure that such incidents are recorded and, where possible, all measures are taken to prevent them from re-occurring.</li> <li>• To provide a definition for what would be considered a reportable incident in terms of the environmental legislation.</li> </ul> <p>Activities covered in this procedure include:</p> <ul style="list-style-type: none"> <li>(i) Identification and definition of an incident and whether or not it needs to be reported to the authorities.</li> <li>(ii) Reporting to the relevant authorities in the event that a reportable incident occurs</li> <li>(iii) Procedure to follow in the event of a spill or fire.</li> </ul>
<b>Personnel Duties and Responsibilities</b>	<p>The contractor is responsible for:</p> <ul style="list-style-type: none"> <li>• Ensuring all activities are carried out as per this procedure and that the company complies with relevant legislation.</li> <li>• Maintaining a register of all incidents as well as ensuring that an incident report is generated for each incident, including details of the incident and how it was closed out.</li> <li>• Ensuring that safe disposal certificates are obtained for any waste materials generated as a result of an incident and that this waste is recorded.</li> <li>• Providing the necessary spill kit equipment and drums for storage of contaminated soil etc.</li> </ul>
<b>Training Requirements</b>	<ul style="list-style-type: none"> <li>• All personnel and manpower to undergo a site safety and environmental induction prior to starting work on site. All employees to be trained on how to respond to an environmental incident and who to contact in order to ensure that the incident is addressed and recorded and if necessary reported.</li> </ul>
<b>Definition of a “reportable incident”</b>	<ul style="list-style-type: none"> <li>• In terms of the National Environmental Management Act, major incidents must be reported to the authorities. In terms of the National Water Act, any incident involving a substance which has the potential to pollute a water resource must be reported i.e. any spill of into a watercourse or into the stormwater system must be reported. The relevant sections from the legislation are provided below:</li> </ul>
<b>National Environmental Management Act</b>	<p><i>As defined by NEMA, section 30 “Control of emergency incidents”.</i></p> <p><i>(1) In this section—</i></p> <p><i>(a) “incident” means an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed;</i></p> <p><i>(b) “responsible person” includes any person who—</i></p> <p><i>(i) is responsible for the incident;</i></p> <p><i>(ii) owns any hazardous substance involved in the incident; or</i></p> <p><i>(iii) was in control of any hazardous substance involved in the incident at the time of the incident;</i></p> <p><i>(c) “relevant authority” means—</i></p> <p><i>(i) a municipality with jurisdiction over the area in which an incident occurs;</i></p> <p><i>(ii) a provincial head of department or any other provincial official designated for that purpose by the MEC in a province in which an incident occurs;</i></p> <p><i>(iii) the Director General;</i></p> <p><i>(iv) any other Director General of a national department.</i></p>
<b>National Water Act</b>	<p><i>As defined by the National Water Act section 20 “Control of emergency incidents”</i></p> <p><i>(1) In this section “incident” includes any incident or accident in which a substance -</i></p>

	<p>(a) pollutes or has the potential to pollute a water resource; or  (b) has, or is likely to have, a detrimental effect on a water resource.</p>
<p><b>Reporting to the authorities</b></p>	<p>In the event that a reportable incident occurs, the Site Agent / Project Manager and Environmental Control Officer must be notified immediately. No site staff may communicate directly with the authorities.  The relevant sections from the legislation are included below:  As taken from NEMA, section 30: Control of Emergency Incidents:  (3) <i>The responsible person or, where the incident occurred in the course of that person’s employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available—</i>  (a) <i>the nature of the incident;</i>  (b) <i>any risks posed by the incident to public health, safety and property;</i>  (c) <i>the toxicity of substances or byproducts released by the incident; and</i>  (d) <i>any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment to—</i>  (i) <i>the Director General;</i>  (ii) <i>the South African Police Services and the relevant fire prevention service;</i>  (iii) <i>the relevant provincial head of department or municipality; and</i>  (iv) <i>all persons whose health may be affected by the incident.</i>  (4) <i>The responsible person or, where the incident occurred in the course of that person’s employment, his or her employer, must, as soon as reasonably practicable after knowledge of the incident—</i>  (a) <i>take all reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;</i>  (b) <i>undertake cleanup procedures;</i>  (c) <i>remedy the effects of the incident;</i>  (d) <i>assess the immediate and long term effects of the incident on the environment and public health.</i>  (5) <i>The responsible person or, where the incident occurred in the course of that person’s employment, his or her employer, must, within 14 days of the incident, report to the Director General, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including—</i>  (a) <i>the nature of the incident;</i>  (b) <i>the substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects;</i>  (c) <i>initial measures taken to minimise impacts;</i>  (d) <i>causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and</i>  (e) <i>measures taken and to be taken to avoid a recurrence of such incident.</i>  (6) <i>A relevant authority may direct the responsible person to undertake specific measures within a specific time to fulfil his or her obligations under subsections (4) and (5): Provided that the relevant authority must, when considering any such measure or time period, have regard to the following:</i>  (a) <i>the principles set out in section 2;</i>  (b) <i>the severity of any impact on the environment as a result of the incident and the costs of the measures being considered;</i>  (c) <i>any measures already taken or proposed by the person on whom measures are to be imposed, if applicable;</i>  (d) <i>the desirability of the State fulfilling its role as custodian holding the environment in public trust for the people;</i>  (e) <i>any other relevant factors.</i>  (7) <i>A verbal directive must be confirmed in writing at the earliest opportunity, which must be within seven days.</i>  (8) <i>Should—</i></p>

	<p>(a) the responsible person fail to comply, or inadequately comply with a directive under subsection (6);</p> <p>(b) there be uncertainty as to who the responsible person is; or</p> <p>(c) there be an immediate risk of serious danger to the public or potentially serious detriment to the environment, a relevant authority may take the measures it considers necessary to—</p> <p>(i) contain and minimise the effects of the incident;</p> <p>(ii) undertake cleanup procedures; and</p> <p>iii) remedy the effects of the incident.</p>
<b>National Water Act section 20: Control of emergency incidents</b>	<p>(2) In this section, "responsible person" includes any person who -</p> <p>(a) is responsible for the incident;</p> <p>(b) owns the substance involved in the incident; or</p> <p>(c) was in control of the substance involved in the incident at the time of the incident.</p> <p>(3) The responsible person, any other person involved in the incident or any other person with knowledge of the incident must, as soon as reasonably practicable after obtaining knowledge of the incident, report to -</p> <p>(a) the Department;</p> <p>(b) the South African Police Service or the relevant fire department; or</p> <p>(c) the relevant catchment management agency.</p> <p>(4) A responsible person must -</p> <p>(a) take all reasonable measures to contain and minimise the effects of the incident;</p> <p>(b) undertake clean-up procedures;</p> <p>(c) remedy the effects of the incident; and</p> <p>(d) take such measures as the catchment management agency may either verbally or in writing direct within the time specified by such institution.</p>
<b>Spill response</b>	
<b>Responsible Person/s</b>	<p>The spill is reported to the site foreman who must notify his superior.</p> <p>All employees should be made aware of the procedure in case of a spill.</p>
<b>Procedure</b>	<ul style="list-style-type: none"> <li>• Identify nature of spill e.g. paint, oil or lubricants</li> <li>• Locate spill kit</li> <li>• Contain spill according to the training provided</li> <li>• Where necessary, contact external spill control contractors</li> <li>• Ensure spill does not cause any external contamination (such as storm/ground water or soil)</li> <li>• Ensure that cleanup measures are taken if any contamination has occurred</li> <li>• Record in emergency response record the:             <ul style="list-style-type: none"> <li>• Nature of incident</li> <li>• Cause of incident</li> <li>• Clean up measures</li> <li>• Mitigation measures taken</li> </ul> </li> <li>• Record in non-conformance register</li> <li>• The ECO and Project Manager will determine if the event qualifies as an incident and take steps to report the incident to the necessary authorities i.e. DMR and DWS.</li> <li>• The ECO shall review all spill reports</li> </ul>
<b>Fire</b>	
<b>Responsible Person/s</b>	<p>The fire is reported to the site foreman</p>

	All employees should be made aware of the procedure in case of fire.
<b>Procedure</b>	<ul style="list-style-type: none"> <li>• Identify source and nature of fire.</li> <li>• In case of small fire extinguish with material appropriate to the nature of the fire</li> <li>• In case of a large fire contact Fire Department</li> <li>• In the site camp, seal off exposed stormwater drains to ensure fire water does not cause any external contamination. If on site, take measures to prevent fire water entering any water body.</li> <li>• Ensure that clean-up measures are taken if any contamination has occurred</li> <li>• Record in emergency response record the: <ul style="list-style-type: none"> <li>• Nature of incident</li> <li>• Cause of incident</li> <li>• Clean up measures</li> <li>• Mitigation measures taken</li> </ul> </li> <li>• Record in non-compliance register</li> <li>• The ECO and Project Manager will determine if the event qualifies as an incident and take steps to report to the authorities.</li> <li>• The EO shall review incident / non-conformance reports</li> <li>• Adjustments will be made, if necessary, to the operational and emergency procedures and the Environmental Management System to prevent future occurrences</li> </ul>
<b>Explosion</b>	
<b>Responsible Person/S</b>	The explosion is reported to the site foreman who must notify his superior. All employees should be made aware of the procedure in case of explosion.
<b>Procedure</b>	<ul style="list-style-type: none"> <li>• Identify source and nature of explosion.</li> <li>• In case of small fire as a result of the explosion, extinguish with material appropriate to the nature of the fire</li> <li>• In case of a large fire as a result of the explosion contact Fire Department</li> <li>• In the site camp, seal off exposed stormwater drains to ensure fire water does not cause any external contamination. If on site, take measures to prevent fire water entering any water body.</li> <li>• Ensure that clean-up measures are taken if any contamination has occurred</li> <li>• Record in emergency response record the: <ul style="list-style-type: none"> <li>• Nature of incident</li> <li>• Cause of incident</li> <li>• Clean up measures</li> <li>• Mitigation measures taken</li> </ul> </li> <li>• Record in non-compliance register</li> <li>• The ECO and Project Manager will determine if the event qualifies as an incident and take steps to report the incident to the necessary authorities i.e. DMR and DWS.</li> <li>• The ECO shall review spill reports</li> </ul>
<b>Resource Requirements</b>	
<b>Materials</b>	<ol style="list-style-type: none"> <li>1. Separate drums for contaminated soil.</li> <li>2. Spade and clean soil</li> <li>3. Fire equipment</li> </ol>