



## mineral resources

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Department:  
Mineral Resources  
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: Sizisa Ukhanyo Trading 830 CC

REFERENCE NUMBER: NC 30/5/1/1/2/10184 MP

# **ENVIRONMENTAL MANAGEMENT PLAN**

**SUBMITTED  
IN TERMS OF SECTION 39 AND OF REGULATION  
52 OF THE MINERAL AND PETROLEUM  
RESOURCES DEVELOPMENT ACT, 2002,  
(ACT NO. 28 OF 2002) (the Act)**

## STANDARD DIRECTIVE

Applicants for prospecting rights or mining permits, are herewith, in terms of the provisions of Section 29 (a) and in terms of section 39 (5) of the Mineral and Petroleum Resources Development Act, directed to submit an Environmental Management Plan strictly in accordance with the subject headings herein, and to compile the content according to all the sub items to the said subject headings referred to in the guideline published on the Departments website, within 60 days of notification by the Regional Manager of the acceptance of such application. This document comprises the standard format provided by the Department in terms of Regulation 52 (2), and the standard environmental management plan which was in use prior to the year 2011, will no longer be accepted.

### IDENTIFICATION OF THE APPLICATION IN RESPECT OF WHICH THE ENVIRONMENTAL MANAGEMENT PLAN IS SUBMITTED.

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## **1 REGULATION 52 (2): Description of the environment likely to be affected by the proposed prospecting or mining operation**

1.1 The environment on site relative to the environment in the surrounding area.

### Status of the cultural environment that may be affected

The Namaqualand copper mines and their associated infrastructure and cultural landscape reflect the beginnings of the mining industry in South Africa in all the myriad ways in which that industry influenced and continues to influence society through the movement and housing of people, the development of transport and other infrastructure and industries and in the development of technological and scientific endeavour.

Any form of mining or prospecting will therefore be a continuation of the socio-cultural aspects of the area.

### Status of any heritage environment that may be affected

The terrain is underlain almost entirely by different granitic intrusives. The granites more resistant to weathering form Pluto's (mountain) in the form of granite domes, with its long axis striking northwest-southeast. In the surrounding flat-lying areas the granites are less resistant to weathering and are indicated by sporadic small outcrops. The granitic rocks have been highly metamorphosed and there is very little chance of fossils being preserved in these rocks. No fossils have yet been reported from any of the adjacent granite mines and the chance to unearth any fossils or artefacts is therefore very little. Mining will also continue from an historic granite quarry so any potential impact on heritage resources would have occurred during historic mining activities. No other heritage resources such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves of victims of conflict, and cultural landscapes or viewsapes are present on the 1.5Ha mining area applied for.

### Status of any current land uses and the socio-economic environment that may be directly affected

Approximately 90% of the region is used for livestock grazing and production, with the remainder comprising of agriculture and urban development. Tourism is a seasonal but rapidly growing feature – with visitors to the region arriving almost exclusively between July and October in order to take in the world renowned yearly flower display. Urban development is not a major feature of the landscape, and is not expected to increase much in the coming years.

Mining will only be a temporary land use (2 years) where after land use will revert back to the pre-mining land use grazing. Productivity of the land with regard to land use is very low and mining will have no impact on the productivity of the area.

### Status of any infrastructure that may be affected

No infrastructure will be affected as no infrastructure is present on the proposed mining area. Existing roads and tracks will be used and in the case of new tracks to be developed it will be addressed at final closure and rehabilitation.

## Status of the biophysical environment that may be affected

### **Topography**

Namaqualand is a unique and diverse environment – owing in large part to the presence of four distinct biogeographically regions within its boundaries. The Orange River valley lies to the north and is characterized by very dry desert conditions. In the west the area is composed of coastal plains – which transition into granite hills that straddle the escarpment, before transforming into low lying Bushmanland plains to the East of Springbok.

The area is characterized by an expansive, undulating landscape. The area is dominated by a plain of dry grasslands with scattered ancient rocky outcrops, named Inselbergs.

### **Soil**

The sands and calcrete are of Quarternary sediments. The area is mostly representing the Af land type, with deep red sands predominant. Rainfall is low, 70-110 mm per annum, mostly falling in late summer to autumn. Average minimum and maximum temperatures in the area are 15°C to 38°C in summer and 0°C to 18°C in winter. The days in the summer are long (sunrise at around 6:00am, sunset close to 8:00pm), and short in the winters (sunrise after 07:30am, sunset before 6:00pm). The soils in a regional context are reddish, moderately shallow, sandy, and often overlay layers of calcrete of varying depths and thickness. The soils are typically weakly structured with low organic content. These soils drain freely which results in a soil surface susceptible to erosion, especially wind erosion when the vegetation cover is sparse and gully erosion in areas where storm-water is allowed to concentrate. The soils in the area are generally not suitable for dry land crop production and the only area where intensive crop cultivation is feasible is along the Orange River where irrigation is possible therefore the pre-prospecting land capacity is categorized as Class III grazing land. The productivity of the area is very low at 8Ha/SSU.

The mining area has been classified into the following classes of land capability:

Arable land:	0 %
Grazing land:	100%
Wetland:	0 %
Wilderness land:	0 %
Urban and mining	0%

### **Natural vegetation / plant life**

The mining area is situated within the Nama-Karoo Biome. The vegetation consist of Bushmanland Arid Grassland vegetation type covering an area of 45478.96 Ha that is rated as least threatened with little of the area transformed less than 0.6%. Erosion is very low (60%) and low (33%). Altitude varies mostly from 600–1 200 m. The dominant vegetation is sparse open grassland, with *Stipagrostis* species prominent, together with scattered, drought resistant dwarf shrubs. Prominent species are as follow:

Dwarf shrubs

<i>Aridaria noctiflora</i>	<i>Eriocephalus microphyllus</i>	<i>Galenia fruticosa</i>
<i>Lycium bosciifolium</i>	<i>Pentzia spinescens</i>	<i>Plinthus karroicus</i>
<i>Pteronia mucronata</i>	<i>Rhigozum trichotomum</i>	<i>Rosenia humilis</i>
<i>Sarcostemma viminalis</i>	<i>Tetragonia arbuscula</i>	

**Grasses**

<i>Aristida adscensionis</i>	<i>Aristida congesta</i>	<i>Centropodia glauca</i>
<i>Enneapogon desvauxii</i>	<i>Schmidtia kalahariensis</i>	<i>Stipagrostis brevifolia</i>
<i>Stipagrostis ciliate</i>	<i>Stipagrostis obtusa</i>	

**Forbs**

<i>Barleria rigida</i>	<i>Berkheya spinosissima</i>	<i>Crassula muscosa</i>
<i>Dicoma capensis</i>	<i>Gazania lichtensteinii</i>	<i>Grielum humifusum</i>
<i>Hermannia spinosa</i>	<i>Hirpicium echinus</i>	<i>Manulea nervosa</i>
<i>Monechma incanum</i>	<i>Peliostomum leucorrhizum</i>	<i>Requienia</i>
<i>sphaerosperma</i>	<i>Ruschia robusta</i>	<i>Salsola tuberculata</i>
<i>Senecio cotyledonis</i>	<i>Sesamum capense</i>	<i>Tribulus zeyheri</i>
<i>Zygophyllum flexuosum</i>	<i>Zygophyllum microphyllum</i>	

**Animal Life**

Various small mammals and reptiles occur. Larger indigenous herbivore species are absent due to the conflicting land use. The habitat is well represented in the surrounding area.

**Surface Water**

No drainage channels with permanent water occur within the prospecting area and there is no dendritic system which could be disturbed. Surface water only accumulates in the drainage channels after exceptional good rains. Given the variability of semi-arid rainfall, the calculation of the mean annual runoff (MAR) would be of no use. The MAR is in any event very low given the low rainfall less than 200 mm per year occurring mainly in the summer months, high evaporation rates, and shallow grade of the slope toward the drainage channels and the permeability of the soils

The surface water quality (when available) is suitable for animal consumption but not for potable water.

**Groundwater**

The majority of towns and farms rely on groundwater resources for potable water. Thus, the higher rainfall areas are key recharge zones for these groundwater resources. Consequently, land use management of these catchment areas is critical for the maintenance of the quality and quantity of water sourced from each area. For example, water courses and wetlands that have been cleared for agricultural purposes, or overgrazed, will not only cause soil erosion, but most importantly cause increased water runoff, thus reducing the amount of water that feeds back into the water table for consumption.

The average water level measured at 'rest' in the region is about 120m depending on the season.

**Air Quality**

The air background quality in the area is very good due to low industrial activity and very low population density. Given the surrounding extent of semi-desert, dust generation is high under windy conditions (dust storm) however under normal conditions no extreme dust conditions are noted on site.

**Noise**

Background noise level is the same as for other small settlements and at present such noise levels are low, below 55dBA.

- 1.2 The specific environmental features on the site applied for which may require protection, remediation, management or avoidance.

Mining will continue from an existing granite quarry and all the impacts described below are already present on the site. The applicant has reached an agreement with the Regional director and landowner to take over all historic environmental liabilities as set out in the closure plan attached as appendix 1.

#### Description of potential impacts identified on the cultural heritage environment

The rocks have been highly metamorphosed there is very little chance of fossils being preserved in these rocks. No fossils have yet been reported in any of the mining operations. Should any fossils be discovered or unearthed in the process of mining, the mining permit holder will contact a South African Museum or University which employs palaeontologists so that the necessary palaeontological salvage operations can take place. No other heritage resources such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or views are present on the small (1.5Ha) mining area.

#### Description of potential impacts identified on the socio- economic conditions

The only other land use in the area is small stock grazing and due to the small extent of the mining operation there will be no impact on productivity.

#### Description of potential impacts identified on: employment opportunities, community health, and community proximity

Mining operations will however have a positive impact on the socio-economic environment in the form of skills development and job creation.

#### Description of potential impacts identified on the biophysical environment

This impact assessment only deals with significant impacts and as the total footprint of mining operations will be very small (1.5 ha) the overall impact on the biophysical environment will be insignificant. Mining will also take place in an area that has been disturbed by historic mining activities and the implementation of the mitigating and management measures prescribed in the EMP will address all impacts and after implementation of the mitigating measures most impacts can be regarded as insignificant especially when looking at the current state of the environment

### **Geology**

Significance/Magnitude	Duration	Probability	Timing
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High	Permanent	Certain	Activity
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Mining by means of cutting blocks will have an impact on the geology, but this will be minimal as the area where blocks will be cut is very small less than 1Ha in total. The cuts will also disturb the geologic sequence of sediment on a small scale. Due to the removal of the granite block a cut face of maximum 1 meters high will remain.

## Topography

Significance/Magnitude	Duration	Probability	Timing
High	Long term	Certain	Activity

Mining will have a significant impact on the visual aspect of the generally flat topography. During the new operation mining will started from the historic works and the new cutting will be done according to benches not higher than 1meters so as to ensure at final closure no high wall will be left that needed to be profiled and the remaining steps will blend in with the natural topography of the area. Ferri-oxide will be used to alter the colour of the cut rock so it blend in with the natural rock.

If waste generated during the new operation will be more than can be backfilled then surplus waste will be dumped on the existing waste dump to minimise the area to be covered by waste dumps. In this case the profiling of the historic waste dump will also be the responsibility of Sizisa Ukhanyo Trading 830 CC with the understanding that no back filling will be done only profiling of the historic waste dump.

## Soils

Significance/Magnitude	Duration	Probability	Timing
Low	Permanent	Certain	Activity

No topsoil is available on the granite outcrop were mining will take place therefore there will be no impact on the soil.

Development areas and excavations for waste rock require topsoil to be removed and stockpiled. Such topsoil will be replaced over the affected area once backfilled with waste rock. All topsoil must be removed ahead of any development or disturbance of natural veld (including roads and stockpile areas). This topsoil must be stockpiled in berms which never exceed 2m in height to be placed on the high side (if applicable) of the development. This will, in the unlikely event of sheet flow from rainfall, act as storm water cut-off ridges. The topsoil thus retained will be used in the rehabilitation of the site as growth medium to be spread over areas ready for final rehabilitation. Any oil or fuel leaks caused must be removed with the saturated soil and placed in bags or drums for disposal at a suitable site as directed by the Municipality Health office.

## Natural vegetation / Plant life

Significance/Magnitude	Duration	Probability	Timing
Low	Transient	Certain	Activity

No natural vegetation is present on the granite dome to be mined. As far as possible, existing roads would be used to access the mining area. As described above the area to be disturbed by mining is small, and the veldt regenerates well if topsoil is placed over areas where development has taken place. The effect on plant life would therefore be low and transient.

The area to be disturbed by excavation to burry waste rock is small and it is proposed to remove the 300mm topsoil with vegetation content to a berm. The berm is to be limited to 2m in height in order to retain a viable seed bank. In addition, by locating the berm uphill of the excavation, the berm will act as a storm water control ridge in the unlikely event of surface water sheet flow.

The following general aspects will be implemented to reduce any potential impact:

- Movement and stockpile areas will be clearly demarcated and any movement outside of these areas must not be allowed
- No ad hoc roads, dumping or topsoil borrowing

## Ground water

Significance/Magnitude	Duration	Probability	Timing
Low	Point	Unlikely	Activity

Due to the shallow nature of operations the impact on the groundwater is considered insignificant. The absence of a waste handling program can however have a significant impact through oil and fuel spills and soil contamination.

### **Air Quality**

Significance/Magnitude	Duration	Probability	Timing
Low	Transient	Certain	Activity

The effect of mining is considered minimal due to the small scale of the operations. While existing dust generation has no noteworthy environmental impact on surround areas, dust should be controlled in the interest of improved worker health and safety. In this instance periodic wetting of the manoeuvring areas or even an annual application of a dust palliative can be considered. (No used oil or diesel is to be sprayed on the roadway for dust suppression).

### **Noise**

Significance/Magnitude	Duration	Probability	Timing
Low	Transient	Certain	Activity

The noise generated is considered minimal due to the short time frame, the small scale of the operations and the isolation of the site. Despite noise having no impact on other uses / public given the isolation of the site, continue to pursue methods of mining which reduce noise in the interest of worker health and safety

### **Visual aspects**

Significance/Magnitude	Duration	Probability	Timing
High	Long term	Certain	Activity

Due to the change in topography there is a significant impact on visual aspects. This impact can be increased with the absence of an adequate waste management system. The mining area is not readily visible from any main through fare.

The management and mitigating measures with regard to topography will also address the visual impact.

### **Regional socio-economic structure**

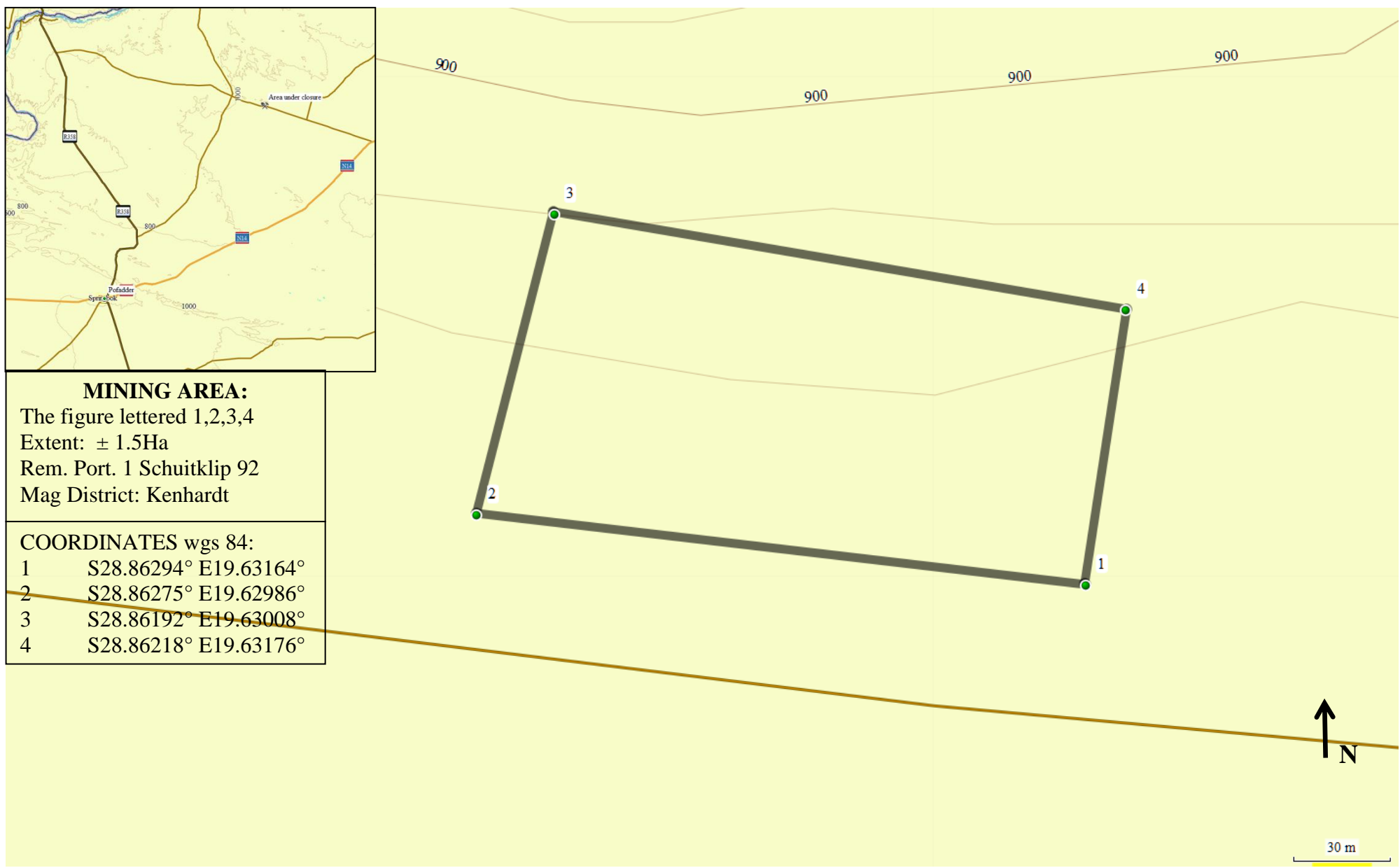
Significance/Magnitude	Duration	Probability	Timing
Highly Beneficial	Life of mine	Certain	Activity

As far as possible, local labour will be used by the applicants. Stimulation of the supporting industries will naturally occur as many supplies will be obtained from the surrounding towns.



1.3 Map showing the spatial locality of all environmental, cultural/heritage and current land use features identified on site.

a) **Diagram 1: Layout of mining area**



b) Diagram 2: Landscape



- 1.4 Confirmation that the description of the environment has been compiled with the participation of the community, the landowner and interested and affected parties,

Personal communication has taken place with the landowner.

All other interested parties by means of an advertisement in the local press.

All comments received were addressed in this EMPR.

## **2 REGULATION 52 (2) (b): Assessment of the potential impacts of the proposed prospecting or mining operation on the environment, socio-economic conditions and cultural heritage.**

- 2.1 Description of the proposed mining operation.

- 2.1.1 Plan of the main activities with dimensions

The plan submitted under paragraph 1.3 show the main land uses on the proposed mining area and as can be seen the area is zoned as agricultural or unspecified land use. With regard to the proposed mining activities no additional infrastructure including roads will be constructed that needs to be indicated on the plan.

The plans as contemplated in regulation 2.2, of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) will be updated on an annual basis with regard to the actual progress of the establishment of surface infrastructure, mining operations and rehabilitation together with an Performance assessment report as contemplated in regulation 55(1) (c) on the implementation of the Environmental Management Plan.

Plans with regard to inherited responsibilities with regard to rehabilitation also form part of the rehabilitation plan appendix 1.

- 2.1.2 Description of construction, operational, and decommissioning phases

### **Construction phase**

No infrastructure or roads will be constructed due to the small scale of mining. Infrastructure at the operations on the adjacent property will be used and the infrastructure is covered by the EMP of the specific operation together with financial provision for decommissioning and closure.

### **Operational phase**

Mining of dimension stone in South Africa traditionally takes place using diamonds wire saws to cut the sides of the block out of the solid rock body and drilling of closely-spaced holes with plug and feather blasting along the base and back of the block to release the block from the "host" rock.

The proposed mining method at the mine will be similar, except that the cutting will be supplemented by large circular saws as shown in photo 1 below.

The process entails the laying of tracks on the flat mine floor onto which two saws are fitted. The saws are run on electrical supply and continuously operate to cut blocks from the core body. The saws have a blade diameter of 4.2m. The base of the block is then cut loose by diamond wire, if required or drilling of closely-spaced holes with plug and feather blasting along the base to release the block from the "host" rock.

**Photo 1 Circular saws on tracks in operation**



**Photo 2 Circular saw with tracks being laid**



The block is removed from the excavation by front–end loader and transported to the dressing yard where pneumatic drills “dress” the material for final transport to the international market.

The mining will be conducted using the following equipment:

- Diamond wire saw/s.
- Diamond blade circular saws set up on tracks on the mining floor. These saws are electrically driven.
- Pneumatic drills used to drill the closely spaced holes at the base and behind the block.
- Front end loader to move material around the site and loading on haul trucks
- Haul trucks to transport blocks to stockpile area
- Excavator for moving waste rock to waste dump and dressing of waste dump

### **Decommissioning phase**

Regulations 56 to 62 outline the entire process of mine closure, both as a guide to the process to be followed for mine closure, and also to address the legal responsibility with regard to the proper closure of operations. In terms of Section 37 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), the holder of a right is liable for any and all environmental damage or degradation emanating from his operation, until a closure certificate is issued in terms of Section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).

"An application for a closure certificate must be accompanied by an environmental risk report which must include-

- (a) the undertaking of a screening level environmental risk assessment where-
- (b) the undertaking of a second level risk assessment on issues classified as
- (c) assessing whether issues classified as posing potential significant risks are acceptable without further mitigation;
- (d) issues classified as uncertain risks be re-evaluated and re-classified as either posing potential significant risks or insignificant risks;
- (e) documenting the status of insignificant risks and agree with interested and affected persons;
- (f) identifying alternative risk prevention or management strategies for potential significant risks which have been identified, quantified and qualified in the second level risk assessment;
- (g) agreeing on management measures to be implemented for the potential significant risks which must include-

Refer appendix 1 for rehab plan with quantum calculations for rehabilitation, decommissioning and closure

#### 2.1.3 Listed activities (in terms of the NEMA EIA regulations)

None of the mining activities except for mining itself is a listed activity in terms of the Environmental Impact Assessment Regulations published in terms of Chapter 5 the National Environmental Management Act (Act No. 107 of 1998).

## 2.2 Identification of potential impacts

### 2.2.1 Potential impacts

The potential impacts are listed in paragraph 1.2 above and the assessment of these impacts is provided for in paragraph 3 below.

### 2.2.2 Potential cumulative impacts

The only identified land use is small stock grazing and due to the temporarily nature of change in land use and small scale of the operation mining will not have any impact and the land will revert back to its former use grazing with no impact on production.

### 2.2.3 Potential impact on heritage resources

The rocks have been highly metamorphosed there is very little chance of fossils being preserved in these rocks. No fossils have yet been reported in any of the mining operations. Should any fossils be discovered or unearthed in the process of mining, the mining permit holder will contact a South African Museum or University which employs palaeontologists so that the necessary palaeontological salvage operations can take place. No other heritage resources such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes are present on the small (1.5Ha) mining area.

### 2.2.4 Potential impacts on communities, individuals or competing land uses in close proximity

The only other land use in the area is small stock grazing and due to the small extends of the mining operation there will be no impact on productivity.

Mining operations will however have a positive impact on the socio-economic environment in the form of skills development and job creation.

The area is farmland that is not close to any settlement therefore no land development projects are in progress.

### 2.2.5 Confirmation that the list of potential impacts has been compiled with the participation of the landowner and interested and affected parties

No proposals were received during the consultation process.

### 2.2.6 Confirmation of specialist report appended.

No specialist reports are deemed necessary as no sensitive areas are included in the proposed area and due to the small extend of the proposed mining area.

## **3 REGULATION 52 (2) (c): Summary of the assessment of the significance of the potential impacts and the proposed mitigation measures to minimise adverse impacts.**

### 3.1 Assessment of the significance of the potential impacts

#### 3.1.1 Criteria of assigning significance to potential impacts

All surface disturbances are rated high

Dust is rated low if only minimal dust is expected to accumulate over the mining area, medium if it is expected to require dust suppression such as watering, and high if there is a risk that it will migrate beyond the mining area.

Noise is rated low if no machinery is to be used, medium if machinery is to be used, and high if there is a potential for complaints from public and neighbours.

All drainage is rated high

All blasting is rated high

Drainage from ablution facilities are rated high.

### 3.1.2 Potential impact of each main activity in each phase, and corresponding significance assessment

#### Construction phase

No construction activities therefore no potential impact.

No infrastructure or roads will be constructed due to the small scale of operations as described in the operational phase below.

No processing will take place that need infrastructure to be constructed.

#### Operational phase

This impact assessment only deals with significant impacts and as the total footprint of mining operations will be very small (1.5 ha) the overall impact on the biophysical environment will be insignificant. Mining will also take place in an area that has been disturbed by historic mining activities and the implementation of the mitigating and management measures prescribed in the EMP will address all impacts and after implementation of the mitigating measures most impacts can be regarded as insignificant especially when looking at the current state of the environment

Possible risk factor	Qualitative impact level	If Insignificant, Why?
<i>Geology:</i>	Insignificant	Mining by means of cutting blocks will have an impact on the geology, but this will be minimal as the area where blocks will be cut is very small less than 1Ha in total. The cuts will also disturb the geologic sequence of sediment on a small scale. Due to the removal of the granite block a cut face of maximum 1 meter high will remain.
<i>Topography (Safety):</i>	Potential significant impact	Will require mitigation refer paragraph 3.2
Land Capability:	Insignificant	In the overall scheme of the surrounding landscape, the mining footprint of 1.5Ha can be considered minor and the remaining impact in this regard is insignificant.
<i>Soil:</i>	Insignificant	No topsoil is available on the granite outcrop were mining will take place therefore there will be no impact on the soil. Development areas and excavations for waste rock require topsoil to be removed and stockpiled. Such topsoil will be replaced over the affected area once backfilled with waste rock. All topsoil must be removed ahead of any development or disturbance of natural veld (including roads and stockpile areas). This topsoil must be stockpiled in berms which never exceed 2m in height to be placed on the high side (if applicable) of the development. This will, in the unlikely event of sheet flow from rainfall, act as storm water cut-off ridges. The topsoil thus retained will be used in the rehabilitation of the site as growth medium to be spread over areas ready for final rehabilitation. Any oil or fuel leaks caused must be removed with the saturated soil and placed in bags or drums for disposal at a suitable site as directed.

<i>Vegetation:</i>	Insignificant	No natural vegetation is present on the granite dome to be mined. As far as possible, existing roads would be used to access the mining area. As described above the area to be disturbed by mining is small, and the veldt regenerates well if topsoil is placed over areas where development has taken place. The effect on plant life would therefore be low and transient.
<i>Fauna.</i>	Insignificant	Minimal risk given the low density of fauna and the fact that the habitat is well represented in the adjacent area for dispersal.
<i>Surface water.</i>	Insignificant	No surface water present on the site. The hydrological integrity of drainage channels will not be altered by attenuating or diverting any of the natural flow.
<i>Groundwater.</i>	Insignificant	Due to the shallow nature of operations the impact on the groundwater is considered insignificant. The absence of a waste handling program can however have a significant impact through oil and fuel spills and soil contamination.
<i>Air Quality:</i>	Insignificant	Isolation of site and small scale of operation precludes any impact in this regard No FRD will be created on site Stockpiling, loading and hauling will also be minimal. While existing dust generation has no noteworthy environmental impact on surround areas, dust should be controlled in the interest of improved worker health and safety. In this instance periodic wetting of the manoeuvring areas or even an annual application of a dust palliative can be considered. (No used oil or diesel is to be sprayed on the roadway for dust suppression).
<i>Noise</i>	None	The noise of the circular saws is within the norm and activities will only take place during normal working hours. The noise generated is considered minimal due to the short time frame, the small scale of the operations and the isolation of the site. Despite noise having no impact on other uses / public given the isolation of the site, continue to pursue methods of mining which reduce noise in the interest of worker health and safety.
<i>Archaeology:</i>	None	Cuttings will be made into consolidated solid rock with no possibility of fossils
<i>Visual Impact:</i>	Potential significant impact	Will require mitigation refer paragraph 3.2
<i>Regional socio-economic structure</i>	Positive Impact	As far as possible, local labour will be used by the applicants. Stimulation of the supporting industries will naturally occur as many supplies will be obtained from the surrounding towns.

### **Decommissioning phase**

Successful implementation of the Environmental Management Program during the life of the mine will cover all the significant aspects affecting the environment.



### 3.1.3 Assessment of potential cumulative impacts.

The only cumulative impact that will remain after implementation of the mitigating measures will be the visual impact.

## 3.2 Proposed mitigation measures to minimise adverse impacts.

### 3.2.1 List of actions, activities, or processes that have sufficiently significant impacts to require mitigation.

Waste management will be the major activity that has sufficiently significant impacts to require mitigation.

Mining will also have a significant impact on the topography and visual aspect of the generally flat topography. Due to the removal of the granite blocks an un-natural cut face of maximum 3 high remain.

### 3.2.2 Concomitant list of appropriate technical or management options

#### 3.2.2.1 General requirements

##### Mapping and setting out

A copy of the layout plan as provided for in Regulation 2.2 must be available at the mining area for scrutiny when required.

The plan must be updated on a regular basis with regard to the actual progress of the establishment of surface infrastructure, mining operations and rehabilitation (a copy of the updated plan shall be forwarded to the Regional Manager on a regular basis).

A final layout plan must be submitted at closure of the operation or when operations have ceased.

##### Demarcating of prospecting area

The mining area must be clearly demarcated by means of beacons at its corners, and along its boundaries if there is no visibility between the corner beacons.

##### Restrictions on mining

No owner or manager shall carry on any mining operations under or within a horizontal distance of a 100 meters from buildings, roads, or any structure whatever, or under or within a horizontal distance of 100 meters from any surface which it may be necessary to protect, without first having given notice in writing to the Principle Inspector of Mines of his intention to do so and obtain his permission therefore.

No mine waste will be allowed to be deposited in natural drainage lines or erosion gullies without the necessary authorization from DWAF and a written permission from the DMD. Mining must be conducted in such a manner as to ensure that natural drainage lines are not destabilized and that surface and ground water quality is not impaired.

##### Responsibility

The environment affected by the mining operations shall be rehabilitated by the holder, as far as is practicable, to its natural state or to a predetermined and agreed to standard or land use which conforms with the concept of sustainable development. The affected environment shall be maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof. It is the responsibility of the holder of the mining permit to ensure that the manager on the site and the employees are capable of complying with all the statutory requirements which must

be met in order to mine, which includes the implementation of this EMP, the rehabilitation plan and the environmental awareness plan.

### Pollution Prevention Measures

#### • Domestic Waste Management Programmes

The owner will instruct the employees in the need for procedure/tasks as well as the actual handling of domestic waste, relating to domestic waste management.

Domestic waste (lunch wrappers, containers, food tins, bottles) of daily workers as well as the domestic waste from the mining logistics will be provided for and handled as follows:

- Provide waste collection drums at strategic points (workshops/personnel amenity area, residential and recreational facilities).
- Demarcate an area for and constructed as "temporary waste storage area" for temporary collection and storage of the drums, prior to delivery to municipal disposal site for disposal. (On-site dumping/burial is not allowed without registration/licensing of such a site with the Department of Water Affairs and Forestry in terms of the Environment Conservation Act).
- Instruct staff on the distinction between domestic refuse and industrial waste.

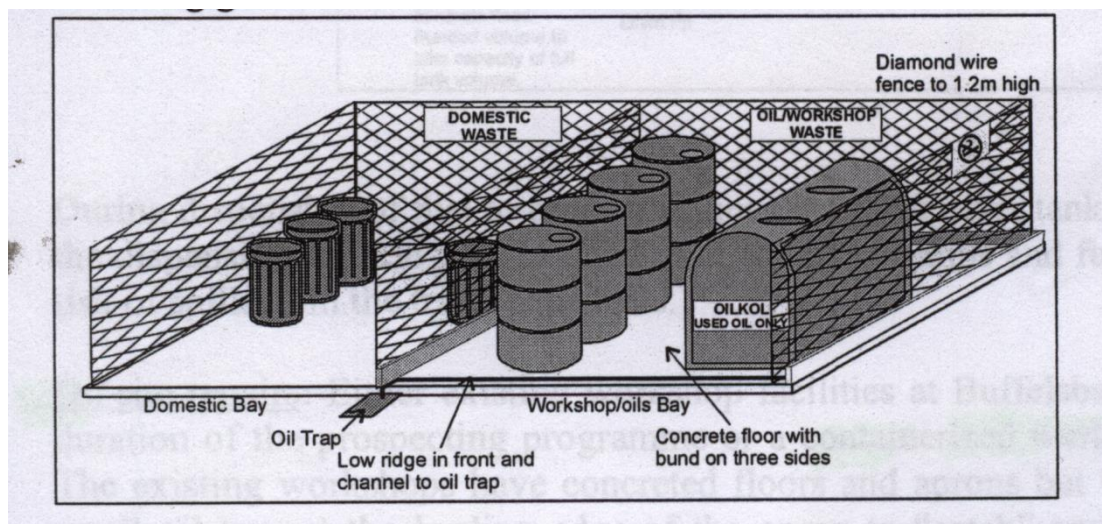
#### • Industrial Waste Management

Identify and demarcate (by fences) the following sites:

- A salvage yard for temporary storage of scrap steel and equipment prior to sale or removal as scrap. Arrange regular sale and collection of scrap from the site.
- A used oil collection and temporary storage area
- Temporary storage area for all used lubrication products and other hazardous chemicals (also refer Figure 1 below)

No engines or other equipment parts are to be stored in the scrap yard without either having had the oil drained or suitable measures have been taken to prevent leaking of oil.

**Figure 1: Proposed layout of temporary waste storage area**



- Diesel and Lubricant Handling Programme:

*Refuelling:*

Refuelling either of equipment or of the mobile trailer bowser must make use of a drip tray or PVC lining.

Generator bays need to be fitted with a steel tray equipped with a drain along its extremities to collect any oil and diesel contaminated run-off and channel it to the oil trap where separated oil will be collected and disposed of in the oil recycling container. Any oil spills is to be treated with Spillsorb or equivalent as per the product instructions.

Staff will require instruction in the identification of oil and diesel leaks, the operation of the oil trap (including the disposal of trapped oil) and use of Spillsorb (or equivalent) products. Training of employees needs to take place as part of the core work skills plan.

*On-site repairs:*

Only minor repairs will be done on site. A drip tray or PVC facility needs to be used when servicing equipment on site to prevent any oil spills. All moving equipment needs to be equipped with permanent drip trays to prevent oil spills. All major repairs will take place at the workshop in Pofadder or at the companies mining operation on the Farm Zwartmodder. Waste oils from servicing of vehicles will be disposed of in the waste oil collection facility.

Contaminated spares, oil filters, gaskets, etc. will be collected in a separate drum at the designated storage facility for disposal at a suitable site off-site. Staff will require instruction in the:

- deleterious effects of oil /fuel on the environment
- identification and reporting of oil leaks
- the operation of the oil trap (including the disposal of trapped oil)
- location and method of the storage of contaminated spares and oil
- use of Spillsorb (or equivalent) products

*Collection of contaminated spares and waste oils:*

Contaminated spares, oil filters, gaskets, etc. will be collected in a separate drum at the designated storage facility for disposal at a suitable site off-site. Waste oils from servicing of vehicles will be disposed of in the waste oil collection facility.

Staff will require instruction in:

- deleterious effects of oil / fuel on the environment
- location and method of the storage of contaminated spares.

*Temporary storage:*

Used oils will be stored in drums provided by the oil recycling companies such as Oilkol. A concrete platform and fence with signposts is to be constructed to store used oil and drums containing used spares, cloths, etc. which are oil contaminated and must be temporarily stored for collection/dispatch to suitable regional disposal site. Staff will require instruction in:

- deleterious effects of oil / fuel on the environment
- location and method of the storage of contaminated spares and used oil.

*Off-site disposal by a recycling company:*

All waste oils must be collected in the facility for collection by a waste oil recycling company. Instruct the staff in the reasons for good fuel management and the alternative consequences. Identify area for citing of diesel bulk tank to remove fuel from delivery tanker truck - provide tank with bund wall and apron and construct used oil/lubricant collect/temporary storage point. Instruct staff in use of oil decontaminant procedure including:

- removal of contaminated soil in drums/bags to suitably licensed disposal dump,
- treatment of any residual contamination in situ with Spillsorb or similar decontaminant.

#### Occupational Health Awareness Programme:

This will form part of the company's Hazard Identification and Risk assessment and will be provided for in the code of practice (COP's)

#### 3.2.2.2 Construction phase

No permanent infrastructure or roads will be constructed due to the small scale of operations. No processing will take place that need infrastructure to be constructed.

The construction phase relates to the construction of:

- Storage area in the form of mobile containers.
- Temporary storage area for domestic and industrial waste including facilities for oil and fuel waste handling.
- Scrap yard for temporary storage of scrap steel and equipment prior to sale.
- Generator bay - with diesel spill floor or steel tray

The following is the mitigating and/or management measures for all the significant impact identified with regard to the construction phase according to the different environmental aspects.

#### Topography

The mine is responsible for the maintenance and upgrading of all services but it will still be needed by the landowner at final closure.

On completion of mining operations, the vehicle maintenance yard and secured storage's areas shall be cleared of any contaminated soil. The surface shall then be ripped or ploughed to a depth of at least 300 mm and the topsoil previously stored adjacent the site, shall be spread evenly to its original depth over the whole area.

Progressive maintenance and upgrading of all services will take place and in the case of temporary closure, sudden closure during the normal operation of the project or at final planned closure there must be no outstanding rehabilitation.

The access roads are dual use road and the mine is only responsible for the maintenance of the road.

Provision must be made for efficient storm water control to prevent erosion of steep slopes and roadways. Any access road or portions thereof, constructed by the holder and which will no longer be required by the landowner, shall be removed and rehabilitated. Any gate or fence erected by the holder which is not required by the landowner, shall be removed and the situation restored to the pre mining situation.

#### Natural vegetation /Plant life

As far as possible, existing roads would be used to access the mining area. The area to be disturbed by infrastructure is small and it is proposed to remove the 300mm topsoil with vegetation content to a berm. The berm is to be limited to 2m in height in order to retain a viable seed bank. In addition, by locating the berm uphill of the excavation, the berm will act as a storm water control ridge in the unlikely event of surface water sheet flow.

The following general aspects will be implemented to reduce any potential impact:

- Movement and stockpile areas will be clearly demarcated and any movement outside of these areas must not be allowed
- No ad hoc roads, dumping or topsoil borrowing

- The area to be disturbed must be kept to the minimum required and it is proposed to remove the 30cm topsoil with vegetation content to a berm.
- No wood collected in the surrounding area will be allowed and cooking equipment, gas and paraffin must be supplied to the workers on the site.
- Invader species will be handled in terms of CARA and NEMBA as part of the land owners alien invasive control program.

#### Visual aspects

Progressive maintenance and upgrading of all infrastructures will take place and in the case of temporary closure, sudden closure during the normal operation of the project or at final planned closure there must be no outstanding rehabilitation.

At final closure all equipment will be removed and after implementation of the mitigating measures described under the heading topography the visual impact of the mining operation will be minimal.

#### 3.2.2.3 Operational phase

Mining will consist of the removal of the granite blocks that will create an un-natural cut face of maximum 3 high remain together with a waste rock dump. The following is the mitigating and/or management measures for all the significant impact identified with regard to the construction phase according to the different environmental aspects.

#### Topography

Mining will have a significant impact on the visual aspect of the generally flat topography. During the new operation mining will started from the historic works and the new cutting will be done according to benches not higher than 1meters so as to ensure at final closure no high wall will be left that needed to be profiled and the remaining steps will blend in with the natural topography of the area. Ferri-oxide will be used to alter the colour of the cut rock so it blends in with the natural rock.

If waste generated during the new operation will be more than can be backfilled then surplus waste will be dumped on the existing waste dump to minimise the area to be covered by waste dumps. In this case the profiling of the historic waste dump will also be the responsibility of Sizisa Ukhanyo Trading 830 CC with the understanding that no back filling will be done only profiling of the historic waste dump.

Those aspects that will require attention during the final decommissioning phase are listed below:

- All the existing big square blocks in stockpile areas needs to be removed from site or moved to the existing waste dump before start of new operations
- At final closure of the new operation all remaining blocks will be removed from the demarcated stockpile or stacked within the excavation against the high wall.
- Smaller waste rock and rough used for building roads and working platforms needs to be removed from site or moved to the existing waste dump before start of operations to fill the cavities between the bigger blocks on the waste dump.
- This will also be the case at final closure of the proposed operation.
- Any surplus topsoil and topsoil to be removed as part of the new operation will be spread over the toe of the waste dump so that no cavities are present especially on the western side were visible from the public road.
- No back filling of the historic dumps outside the mining area will take place,only profiling and covering with available topsoil will take place.

- Scarifying of all compacted areas including the stock pile and dressing yard.
- Remove all power supply installations including generators and demolish generator bays and footings.
- Remove all water installations including pumps and pipelines.
- All internal roads need to be ripped except for the ones still needed by the landowner; this also includes repairs to all fences and gates.
- Provision of efficient storm water control to prevent erosion of steep slopes and roadways and elsewhere are required
- All equipment and other items used during the mining operation needs to be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be buried or burned on the site.

#### Visual aspects

Due to the change in topography there is a significant impact on visual aspects. This impact can be increased with the absence of an adequate waste management system. At final closure all equipment will be removed. The management and mitigating measures with regard to topography will also address the visual impact.

#### 3.2.2.4 Decommissioning phase

##### Residual Impacts after Closure

It is envisaged that at the time of project mine closure the total area will be stable so long term stability is not an issue.

The potential for acid mine drainage or poor quality leachates emanating from the mine or residue deposits are minimal as the rocks affected by the mining activities are inert and will not be detrimental to any aquifer present.

Any sediment caught up in rain run-off water will be trapped in settling ponds constructed for this purpose and recycled. The mitigating measures as described will be sufficient to address all impacts and the only residual impact after closure will be on the visual aspect but it will be mitigated to the effect that the impact can be regarded as insignificant.

##### Aftercare

As the final phase in the project cycle, decommissioning may present positive environmental opportunities associated with the return of the land for alternative use and the cessation of impacts associated with operational activities. However, depending on the nature of the operational activity, the need to manage risks and potential residual impacts may remain well after operations have ceased. Examples of potential residual impacts and risks include contamination of soil and groundwater, stock that has been abandoned (e.g. oil drums, scrap equipment, old chemicals) and old (unserviceable) structures. The closure plan submitted as part of this EMPR provides specific guidance with respect to the management of the environmental risks associated with the decommissioning stage of a project.

Unauthorized entry will be taken very seriously during final closure and traffic onto the property will be kept to a minimum. Regular monitoring of the effectiveness of environmental management and mitigating measures implemented during the post mining decommissioning phase will continue until a closure certificate is issued.

### 3.2.3 Review the significance of the identified impacts

The mitigating measures as described will be sufficient to address all impacts and the only residual impact after closure will be on the visual aspect but it will be mitigated to the effect that the impact can be regarded as insignificant.

## **4 REGULATION 52 (2) (d): Financial provision.**

### 4.1 Plans for quantum calculation purposes.

Refer appendix 1 Rehab plan

### 4.2 Quantum calculations.

Section 41(3) requires the holder of a mining permit to annually assess his or her environmental liability and increase his or her financial provision to the satisfaction of the Minister. The financial provision required to be submitted by the holder of a mining permit (in terms of Regulation 53) to achieve the total quantum for rehabilitation and remediation of environmental impacts and associated damage as well as close-out.

Regulation 54 requires that the quantum of financial provision must be based on the requirements of the approved EMP and shall include a detailed itemisation of all actual costs required for;

- Pre-mature closure regarding:
  - the rehabilitation of the surface of the area;
  - the prevention and management of pollution of the atmosphere;
  - the prevention and management of pollution of water and the soil; and
  - the prevention of leakage of water and minerals between subsurface
- Formations and the surface.
- Decommissioning and final closure of the operation; and
- Post closure management of residual and latent environmental impacts.

The methodology for computing the quantum (appendix 1) is based on the assumption that a third party will be employed by the DMR to undertake the necessary rehabilitation and remedial work, should the mining operation close prematurely. This assumption is in line with the adopted international approach.

### 4.3 Undertaking to provide financial provision

Financial provision required under Regulation 54 of R50 000.00 according to the calculation in appendix 1 will be furnished to DME. The quantum will be updated again within a year or at a shorter interval if there is any deviation from the implementation of this environmental management program.

## **5 REGULATION 52 (2) (e): Planned monitoring and performance assessment of the environmental management plan.**

### 5.1 List of identified impacts requiring monitoring programmes.

None of the impacts identified required specific monitoring programs but a second closure objective is to ensure that the rehabilitation and mitigating measures applied during operation prove successful. The only way to accomplish this is by regular monitoring. Monitoring on all the environmental issues as discussed in the EMPR will be carried out on a regular basis. This includes monitoring of waste handling, the re-vegetation process, erosion and the effect of windblown sand and/or dust. Any unforeseen impact or ineffective management measures that are identified during monitoring will be addressed as an addendum to the EMPR.

## 5.2 Functional requirements for monitoring programmes

Every aspect of the operation must be checked against the prescriptions given in this document and if find that certain aspects are not addressed or impacts on the environment are not mitigated properly, the identified inadequacies will be rectified immediately.

Regular monitoring of all the environmental management measures and components shall be carried out to ensure that the provisions of this program are adhered to.

Layout plans will be updated on a regular basis and updated copies will be submitted on an annual basis to the Regional Manager.

Reports confirming compliance with various points identified in this program will be submitted to the Regional Manager on an annual basis together with an update of the rehabilitation cost. Any emergency or unforeseen impact will be reported as soon as possible. An assessment of environmental impacts that were not properly addressed or were unknown when the program was compiled shall be carried out and added as a corrective action.

## 5.3 Roles and responsibilities for the execution of monitoring programmes

The project manager will be responsible for monitoring and Reports confirming compliance with various points identified in the environmental management program.

## 5.4 Committed time frames for monitoring and reporting

The project manager must on a bi-monthly basis, check every aspect of the operation against the prescriptions given in this document and, if find that certain aspects are not addressed or impacts on the environment are not mitigated properly, the project manager must rectify the identified inadequacies immediately.

# 6 REGULATION 52 (2) (f): Closure and environmental objectives.

## 6.1 Rehabilitation plan

Refer appendix 1

## 6.2 Closure objectives and their extent of alignment to the pre-mining environment

Internationally, there seem to be three schools of thought:

- “What the affected community wants, the affected community gets” – that is, the key focus is on providing the end product requested by the affected communities, rather than focusing on the previous status quo of the receiving environment
- “Restoration of previous land use capability” – the original thought process in the South African context, because mining often occurs on land with high agricultural potential
- “No net loss of biodiversity” – the focal point in the ICMM/IUCN dialogue sponsored guidelines for mining and biodiversity, and of many mining corporate policies.

The thought process for the closure of this operation is based on the last two. The main closure objective therefore is to leave the site in as safe and self-sustaining a condition as possible and in a situation where no post-closure intervention is required.

The aim is to ensure that the affected environment is maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that



will not pollute the environment or lead to the degradation thereof. The aesthetic value of the area will also be reinstated.

Successful implementation of the Environmental Management Program during the life of the operation will cover most of the significant aspects affecting the environment. The sample areas will be the only outstanding rehabilitated at final closure

### 6.3 Confirmation of consultation

A copy of the scoping report that includes environmental objectives in relation to closure was made available to the landowner and all other interested parties for comment. All comments received were addressed in this EMPR.

## **7 REGULATION 52 (2) (g): Record of the public participation and the results thereof.**

7.1 Name the community or communities identified, or explain why no such community was identified.

No community involved as the area is privately owned farmland.

7.2 Specifically state whether or not the Community is also the landowner.

No community involved as the area is privately owned farmland.

7.3 State whether or not the Department of Land Affairs been identified as an interested and affected party.

No community involved as the area is privately owned farmland.

7.4 State specifically whether or not a land claim is involved.

No land claim is registered against the property.

7.5 Name the Traditional Authority identified

No Traditional Authority only local municipality

7.6 List the landowners identified by the applicant. (Traditional and Title Deed owners)

Pieta & Fanie CC is the beneficial owner of the farm known as Schuitklip Nr. 92, Portion 1, Division Kenhardt, and Province Northern Cape

7.7 List the lawful occupiers of the land concerned.

According to a meeting with the Landowners no lawful occupiers are present on the property except for the landowners.

7.8 Explain whether or not other persons' (including on adjacent and non-adjacent properties) socio-economic conditions will be directly affected by the proposed prospecting or mining operation and if not, explain why not.

The only other land use in the area is small stock grazing and due to the small extends of the operation there will be no impact on productivity.

7.9 Name the Local Municipality identified by the applicant

Khai-Ma Municipality

Municipal Manager

PO Box 108, POFADDER, 8890, New Street, POFADDER

Tel: (054) 933 1000, Fax: (054) 933 0252

7.10 Name the relevant Government Departments, agencies and institutions responsible for the various aspects of the environment and for infrastructure which may be affected by the proposed project.

Department Environment and Conservation responsible for scrutinizing all EMP's for new developments.

No listed activity in terms of Nema will take place.

No infrastructure present on the proposed prospecting area.

7.11 Submit evidence that the landowner or lawful occupier of the land in question, and any other interested and affected parties including all those listed above, were notified.

7.11.1 Description of the information provided to the community, landowners, and interested and affected parties.

A copy of the scoping report (consultation template) was supplied and explained to the landowner.

7.11.2 List of which parties identified that were in fact consulted, and which were not consulted.

The landowners are deemed the only affected party and consultation has taken place by means of registered letters and/or personal communication.

All other interested parties were invited to comment on the proposed project by means of an advertisement in the local newspaper.

7.11.3 List of views raised by consulted parties regarding the existing cultural, socio-economic or biophysical environment.

No views or comment received

7.11.4 List of views raised by consulted parties on how their existing cultural, socio-economic or biophysical environment potentially will be impacted on by the proposed prospecting or mining operation

No views or comment received

7.11.5 Other concerns raised by the aforesaid parties

No views or comment received

7.11.6 Confirmation that minutes and records of the consultations are appended.

The landowners are deemed the only affected party and consultation has taken place by means of registered letters and/or personal communication

All other interested parties were invited to comment on the proposed project by means of an advertisement in the local newspaper

All comments were supposed to be directed to the regional director DMR with copies to the applicant. No comments were received.

7.11.7 Information regarding objections received.

No objections against the proposed prospecting operation that need to be dealt with by the REMDEC committee were received. All comments received on the content of the draft version of this report were included and addressed in this final report. Concerns will be addressed as part of the EMP.

7.12 The manner in which the issues raised were addressed.  
No views or comment received

## **8 SECTION 39 (3) (c ) of the Act: Environmental awareness plan.**

### **8.1 Employee communication process**

General environmental awareness will be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This will ensure that environmental accidents are minimized and environmental compliance maximized.

Environmental awareness will be fostered in the following manner:

- a) Induction course for all workers on site, before commencing work on site.
- b) Refresher courses as and when required
- c) Daily toolbox talks at the start of each day with all workers coming on site, where workers can be alerted to particular environmental concerns associated with their tasks for that day or the area/habitat in which they are working.
- d) Taking part in national and international environmental campaigns like National Marine Week, National Labour Day, National Wetlands Day etc.
- e) Displaying of information posters and other environmental awareness material in the general assembly points.

### **8.2 Description of solutions to risks**

Specific environmental awareness performance criteria will form part of the job descriptions of employees, to ensure diligence and full responsibility at all levels of the organisational workforce.

General environmental awareness will be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This will ensure that environmental accidents are minimized and environmental compliance maximized.

### **8.3 Environmental awareness training.**

The goal of training is to enable a shared understanding and common vision of the environment, the impact of a mining operation on the environment (and why this is important) and the role of mining personnel in terms of environmental management and compliance.

The induction course will compose of the following steps:

- The first step will include background discussion of the environment concept: of what it comprises and how we interact with it.
- The second step will be a description of the components and phases of the specific mining operation.
- The third step will be a general account of how the mining operation and its associated activities can affect the environment, giving rise to what we call Environmental Impacts.
- The fourth and most important step will be a discussion of what staff can do in order to help prevent the negative environmental impacts from degrading our environment. This is known as Environmental Impact Management.

**9 SECTION 39 (4) (a) (iii) of the Act: Capacity to rehabilitate and manage negative impacts on the environment.**

9.1 The annual amount required to manage and rehabilitate the environment.  
Refer appendix 7

**10 REGULATION 52 (2) (h): Undertaking to execute the environmental management plan.**

Herewith I, the person whose name and identity number is stated below, confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application, and confirm that the above report comprises EIA and EMP compiled in accordance with the guideline on the Departments official website and the directive in terms of sections 29 and 39 (5) in that regard, and the applicant undertakes to execute the Environmental management plan as proposed.

<b>Full Names and Surname</b>	<b>Jianqiang Su</b>
<b>Identity Number</b>	<b>G22775024 (6905140000000)</b>

**-END-**