



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: Department of Water Affairs Northern Cape

REFERENCE NUMBER:

ENVIRONMENTAL MANAGEMENT PLAN FOR SMALL-SCALE MINING

**APPLICABLE TO MINING PERMITS WHERE
LESS THAN 2000 m³ PER QUARTER WILL BE
EXCAVATED USING MANUAL LABOUR
TECHNIQUES AND
NOT TO BE USED FOR GOLD OR COAL MINING**

**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 mining permits which do not include coal or gold mining, and where the total excavations will not exceed 2000 m³ with a maximum of 16 000 m³ over the life of the mine including any permit renewal periods, 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) insofar it relates to small scale miners using manual labour techniques only, provided that it will only be valid in the hands of the person to whom the permit is issued and not in cases of a change in the scale of the operation or in cases of sub contracting, sub letting or the disposal of the permit to a third party. **It is not intended for general use in the case of mining permits.** 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.

| ITEM | APPLICANT CONTACT DETAILS | ALTERNATIVE CONTACT DETAILS |
|----------------|----------------------------|-----------------------------|
| | Dirk Du Plessis | Dirk Du Plessis |
| Name | DWA Northern Cape | DWA Northern Cape |
| Tel no | 027 721 8569 | 027 721 8569 |
| Fax no: | 027 721 8489 | 027 721 8489 |
| Cellular no | 082 886 3572 | 082 886 3572 |
| E-mail address | dirk@nmcnorth.co.za | dirk@nmcnorth.co.za |
| Postal address | | |

| ITEM | LANDOWNER CONTACT DETAILS |
|----------------|---|
| | |
| Name | Nama Khoi Municipality |
| Tel no | 027 7188100 |
| Fax no: | |
| Cellular no | |
| E-mail address | mbrandt@namakhoi.org.za |
| Postal address | P.O. Box 17 Springbok 8240 |

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

1.1 Identification of interested and affected parties

| IDENTIFICATION CRITERIA | | Mark with an X where applicable | |
|---|----|---------------------------------|----|
| | | YES | NO |
| Has the landowner been identified? | | X | |
| Is there a lawful occupier on the property other than the Landowner? | | | X |
| Is there a tribal authority or host community that may be affected? | | | X |
| Can it be confirmed that there are no land claims in respect of the area? | | X | |
| Have the landowners or lawful occupiers of neighbouring properties been identified? | | X | |
| Has the local municipality been identified? | | X | |
| Are there power lines within 100 metres of the area applied for? | | | X |
| Are there public roads or railway lines within 100 metres of the area applied for? | | X | |
| Is there any other infrastructure within 100 metres of the area applied for? (Specify) | No | | |
| Has the Provincial Department responsible for the environment been identified | | X | |
| Have all of the parties identified above been provided with a description of the proposed mining operation as referred to in paragraph 2 below? | | X | |
| Have all the parties identified above been requested in writing to provide information as to how their interests (whether it be socio-economic, cultural, heritage or environmental) will be affected by the proposed mining project? | | X | |

1.2 List of parties identified in 1.1 above that were in fact consulted.

| LIST THE NAMES OF INTERESTED AND AFFECTED PARTIES CONSULTED | LIST THE INTEREST OF THE INTERESTED AND AFFECTED PARTIES CONSULTED e.g. Landowner, Neighbours, Community representative, Land claims commissioner, Local municipality, Government departments responsible for the environment, Departments or agencies responsible for infrastructure in the area. |
|--|---|
| Ian Hasenjager | Sedibeng Water Board |
| Deidre Williams | Department of Minerals & Energy |
| Lucille Caarsten | Dept. Environment and nature Conservation |
| Jacques Cloete | Nama Khoi Municipality |
| Head of Department | NC Dept of Agriculture and Land reform |
| Jacoline Mans | The Department of Fisheries and Forestry (DAFF) |
| PJ Fourie | O'Okiep Copper Company (Pty) Ltd |
| | |
| | |
| | |
| DESCRIBE BELOW HOW THE CONSULTATION WAS CONDUCTED Mark with an X where applicable | |
| Written communication (Written responses must be attached as an annexure) | X |
| Meetings (Minutes of meetings must be attached as an annexure) | |

| | | |
|-----------------|--|--|
| Other (specify) | | |
|-----------------|--|--|

1.3 Impact of the proposed mine on interested and affected parties.

| LIST THE NAMES OF INTERESTED AND AFFECTED PARTIES CONSULTED | DESCRIBE THE POTENTIAL IMPACT ON THE INTERESTED AND AFFECTED PARTY CONSULTED AS IDENTIFIED BY THAT PARTY. |
|---|---|
| Ian Hasenjager | None |
| Deidre Williams | None |
| Lucille Caarsten | None |
| Jacques Cloete | None |
| NC Dept of Agriculture and land reform | None |
| Jacoline Mans | None |
| PJ Fourie | Impacts identified by PJ Fourie (see section 1.4 below) is not expected to affect I&APs |
| | |
| | |
| | |
| | |

1.4 Information regarding objections

| | Mark with an X where applicable | |
|---|---------------------------------|----|
| | YES | NO |
| Have any of the interested or affected parties objected to the application? | X | |

| DESCRIBE BELOW WHAT THE NATURE OF THE OBJECTION IS |
|--|
| <p>Objections were made by PJ Fourie as follows:</p> <p>There are already two valid mining permits for sand owned by Daniel Cockrell CC in close proximity to these proposed borrow pits to source sand from.</p> <p>There is already a drop off dumping site for these rock heaps at the old Rietberg mine waste dump to be used.</p> <p>Additional proposed disturbances will cause more degradation to the environment.</p> <p>This project of the Department of Water affairs has no job creation and / or direct financial benefit to the local community and / or local entrepreneurs of Namakwaland. Outsiders are favoured in the award of tenders and / or work. Also the awarding of work if any is not open and done in an under cover way</p> |

2 Description of the proposed mining operation

(Provide a description of the mining project **and a plan** of the permit area showing the main mining activities such as excavations, stockpiles, discard dumps and dams, water supply dams and boreholes, accommodation, and buildings, and processing plant. **Note!** Activities not shown here may not be conducted)

Temporary mining / excavation of bedding/blanket sand at three sites (marked as site/borrow Pit 1,2 & 3 respectively) by using trucks, front end loaders and/or bulldozers. Somewhat 15-20cm topsoil will be removed to help with the post-rehabilitation of the burrow pits. Each borrow pit will be 60X40 square metre and approximately 1.5 metre deep. Excavated soil will be used to help rehabilitate the Namakwa regional water supply pipeline. Thereafter, the pits will be filled with rocks from rock heaps in the area as well as leftover sand.

Plan: Refer to Appendix A for the locality map.

3 Description of the environment likely to be affected by the proposed mining operation

(Describe the specific environmental features on the site applied for which may require protection, remediation, management or avoidance and attach a map showing the locality of all environmental, cultural/heritage and current land use features identified relative to the boundaries of the permit area applied for).

There are little to no environmental features of concern as the sites have very limited vegetation and consists mainly of bedrock and loose sand. Please refer to appendix G, H & I to ensure that the mining operation has as little impact on the environment as possible.

Furthermore, the vegetation areas are located to co-inside with areas already disturbed.

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

DESCRIBE ANY MINIMUM CLOSURE REQUIREMENTS IDENTIFIED BY THE LANDOWNER OR OTHER INTERESTED AND AFFECTED PARTIES (Attach written comments as appendices)

The area is to be re-instated to an acceptable state

OVERALL DESCRIPTION OF THE MANNER IN WHICH THE LAND WILL BE REHABILITATED AND THE CONDITION IT WILL BE LEFT IN AFTER REHABILITATION HAS BEEN COMPLETED

The land will be rehabilitated as set out in 4.1 as the Minimum closure objectives that will be adhered to

4.1 Minimum closure objectives that will be adhered to

4.1.1 Rehabilitation of access roads

- Whenever a mining permit is suspended, cancelled or abandoned or if it lapses and the holder does not wish to renew the permit or right, any access road or portions thereof, constructed by the holder and which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated to the satisfaction of the Regional Manager.
- Any gate or fence erected by the holder which is not required by the landowner/tenant, shall be removed and the situation restored to the pre mining/ prospecting situation.
- Roads shall be ripped or ploughed, and if necessary, appropriately fertilized (based on a soil analysis) to ensure the re-growth of vegetation. Imported road construction materials which may hamper re-growth of vegetation must be removed and disposed of in an approved manner prior to rehabilitation.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the mining operation, be corrected and the area be seeded with a seed mix to the Regional Manager's specification.

4.1.2 Rehabilitation of the office/ campsite

- On completion of operations, all buildings, structures or objects on the camp/office site shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):
- Where office/camp sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the mining/prospecting operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.
- Photographs of the camp and office sites, before and during the mining/ prospecting operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.

4.1.3 Rehabilitation of vehicle maintenance yard and secured storage areas

- On completion of mining/prospecting operations, the above areas shall be cleared of any contaminated soil, which must be dumped as referred to in section F 2.4.3 above.
- All buildings, structures or objects on the vehicle maintenance yard and secured storage areas shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002.
- The surface shall then be ripped or ploughed to a depth of at least 300mm and the topsoil previously stored adjacent the site, shall be spread evenly to its original depth over the whole area. The area shall then be fertilized if necessary (based on a soil analysis).
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the mining/prospecting

operation be corrected and the area be seeded with a seed mix to his or her specification.

4.1.4 Rehabilitation of access to a river bed

- When rehabilitating the access point, the original profile of the river-bank will be re-established by backfilling the access point with the original material excavated or other suitable material.
- The topsoil shall then be returned over the whole area to its original depth and if necessary fertilized and the vegetation allowed to grow.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the mining/prospecting operation be corrected and the area be seeded with a seed mix to his or her specification.
- In the event of damage from an occurrence where high flood waters scour and erode access points in the process of rehabilitation over the river-bank or an access point currently in use, repair of such damage shall be the sole responsibility of the holder of the mining permit or prospecting right.
- Repair to the river-bank to reinstate its original profile to the satisfaction of the Regional Manager must take place immediately after such event has occurred and the river has subsided to a point where repairs can be undertaken.
- Final acceptance of rehabilitated river access points will be awarded only after the vegetation has re-established to a point where the Regional Manager is satisfied that the river-bank is stable and that the measures installed are of durable nature and able to withstand high river-flow conditions.

4.1.5 Rehabilitation of a mining area in the bed of a river

- The goal of rehabilitation with respect to the area where mining/prospecting has taken place in the river-bed is to leave the area level and even, and in a natural state containing no foreign debris or other materials and to ensure the hydrological integrity of the river by not attenuating or diverting any of the natural flow.
- All scrap and other foreign materials will be removed from the bed of the river and disposed of as in the case of other refuse (see section F 2.3.2 above), whether these accrue directly from the mining/prospecting operation or are washed on to the site from upstream.
- Removal of these materials shall be done on a continuous basis and not only at the start of rehabilitation.
- Where reeds or other riverine vegetation have been removed from areas, these shall be re-established systematically in the approximate areas where they occurred before mining/prospecting.
- An effective control programme for the eradication of invader species and other exotic plants, shall be instituted on a regular basis over the entire mining/prospecting area under the control of the holder of the mining permit/prospecting right, both during mining/prospecting and at the stage of final rehabilitation.

4.1.6 Rehabilitation of excavated areas

- The excavated area must serve as a final depositing area for the placement of tailings during processing.
- Rocks and coarse material removed from the excavation must be dumped into the excavation simultaneously with the tailings.
- Waste, as described in paragraph F 2.3.2 above, will not be permitted to be deposited in the excavations.

- Once excavations have been refilled with overburden, rocks and coarse natural materials and profiled with acceptable contours and erosion control measures, the topsoil previously stored, shall be returned to its original depth over the area.
- The area shall be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the mining/ prospecting operation, be corrected and the area be seeded with a vegetation seed mix to his or her specification.

4.1.7 Rehabilitation of processing areas

- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- On completion of mining/prospecting operations, the surface of the processing areas especially if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 300mm and graded to an even surface condition and the previously stored topsoil will be returned to its original depth over the area.
- Prior to replacing the topsoil the material that was removed from the processing area will be replaced in the same order as it originally occurred.
- The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analyzed and any deleterious effects on the soil arising from the mining/prospecting operation be corrected and the area be seeded with a seed mix to his or her specification.

4.1.8 Final rehabilitation

- All infrastructure, equipment, plant, temporary housing and other items used during the mining period will be removed from the site (section 44 of the MPRDA)
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

5 REGULATION 52 (2) (b) and (c): Assessment and summary (Rating) of the potential impacts of the proposed operation on the environment,

5.1 Criteria used for the significance rating.

- 5.1.1 All surface disturbances are rated high
- 5.1.2 Dust is rated low if only minimal dust is expected to accumulate over the permit period, 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 permit area.
- 5.1.3 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.
- 5.1.4 All drainage is rated high
- 5.1.5 All blasting is rated high
- 5.1.6 All dust and noise from loading, hauling and transport is rated high
- 5.1.7 Drainage from ablution facilities are rated high.

5.2 Significance rating

| ACTIVITY Mark with X which activities are applicable | | POTENTIAL IMPACT | SIGNIFICANCE RATING | | |
|--|------|---------------------|---------------------|--------|------|
| | | | LOW | MEDIUM | HIGH |
| Excavations | | Surface disturbance | | | X |
| | | Dust | | | X |
| | | Noise | | X | |
| | | Drainage | X | | |
| Blasting | | Fly Rock | X | | |
| Stockpiles | | Surface disturbance | | | X |
| | | Dust | X | | |
| | | Drainage | X | | |
| Discard dumps or dams | | Surface Disturbance | X | | |
| | | Dust | X | | |
| | | Drainage | X | | |
| Loading, hauling and transport | | Noise | | X | |
| | | Dust | | X | |
| Water supply dams and boreholes. | | Surface disturbance | X | | |
| Accommodation, offices, ablution, stores, workshops etc. | | Surface disturbance | X | | |
| | | Drainage | X | | |
| Processing Plant | | Noise | X | | |
| | | Dust | X | | |
| | | Drainage | X | | |
| | | Surface disturbance | X | | |
| OTHER (Specify) | None | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

5.3 REGULATION 52 (2) (c) Proposed mitigation measures to minimise adverse impacts. Technical or management options chosen.

| ACTIVITY Mark with X which measures are applicable | | MITIGATION MEASURE | DESCRIPTION OF THE MEASURE TO BE PUT IN PLACE (e.g.: Stockpiles will be thoroughly soaked once per day. e.g . Excessive dust on roads will be collected monthly and mixed into fill of excavations. e.g. Storm water trenches will be constructed with the necessary settling dams to separate clean and dirty water) |
|---|--------------------------|-------------------------|--|
| Excavations | <input type="checkbox"/> | Rehabilitation | Refer to Appendixes B-G |
| | <input type="checkbox"/> | Dust control measures | |
| | <input type="checkbox"/> | Noise control measures | |
| | <input type="checkbox"/> | Storm water system | |
| Blasting | <input type="checkbox"/> | Access control measures | |
| Stockpiles | <input type="checkbox"/> | Rehabilitation | |
| | <input type="checkbox"/> | Dust Control Measures | |
| | <input type="checkbox"/> | Storm water system | |
| Discard dumps or dams | <input type="checkbox"/> | Rehabilitation | |
| | <input type="checkbox"/> | Dust control Measures | |
| | <input type="checkbox"/> | Storm water system | |
| Loading, hauling and transport | <input type="checkbox"/> | Noise control measures | |
| | <input type="checkbox"/> | Dust control Measures | |
| Water supply dams and boreholes. | <input type="checkbox"/> | Rehabilitation | |

| | | | |
|--|--------------------------------|---------------------------|--|
| | | | |
| Accommodation, offices, ablution, stores, workshops etc. | | Rehabilitation | |
| Processing Plant | | Noise control measures | |
| | | Dust control Measures | |
| | | Storm water system | |
| | | Rehabilitation | |
| OTHER (Specify) | Refer to Appendix es B-G | | |
| | | | |
| | | | |
| | | | |

5.4 Regulation 52 (2) (c): Measures to address impacts identified by Interested and affected parties.

| LIST THE POTENTIAL IMPACTS IDENTIFIED BY INTERESTED AND AFFECTED PARTIES AS RECORDED IN PARAGRAPH 1.3 ABOVE. | DESCRIBE THE MANNER IN WHICH THE IMPACTS IDENTIFIED BY INTERESTED AND AFFECTED PARTIES WILL BE ADDRESSED |
|--|--|
| Sand sourced from Daniel Cockwell CC | We are unable to source sand from Mr. Cockwell CC as he is unable to produce a NEMA as well as a Water Use Licence for his operations. |
| Rietberg Mine dumping site alternative | Noted. The Rietberg Mine waste dumping site is considered an alternative. |
| Environmental degradation | Refer to Appendix B-H for the minimization of environmental impacts. Furthermore, the land will be rehabilitated as set out in 4.1 as the Minimum closure objectives that will be adhered to. |
| Department of Water affairs job creation | Noted. |
| | |
| | |
| | |
| | |
| | |
| In cases where a need for monitoring has been identified provide detail below. (Explain what will be monitored, how it will be monitored, by whom it will be monitored, and how frequently it will be monitored). | |
| Refer to point number two (the monitoring program) of the Management procedures (Appendix G). | |
| | |
| | |
| | |
| | |

5.5 Minimum operational standards that will be adhered to for environmental management

5.5.1 The relevant legislative provisions of the following will be adhered to

- National Monuments Act 1969 (Act 28 of 1969).
- National Parks Act, 1976 (Act 57 of 1976)
- Environmental Conservation Act, 1989 (Act 73 of 1989)
- National Environmental Management Act, 1998 (Act No. 107 of 1998)
- Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965)
- The National Water Act, 1998 (Act 36 of 1998)
- Mine Safety and Health Act, 1996 (Act 29 of 1996)
- The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).

5.5.2 Demarcation of the mining area and restrictions

- 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.
- The mining of and prospecting for any mineral shall only take place within this demarcated mining area.
- If riverine vegetation is present in the form of reeds or wetland vegetation, the presence of these areas must be entered in Part C 1.45 of the EMPlan and indicated on the layout plan.
- On assessment of the application, the Regional Manager may prohibit the conducting of mining or prospecting operations in vegetated areas or over portions of these areas

5.5.3 Topsoil

- Topsoil shall be removed from all areas where physical disturbance of the surface will occur.
- The topsoil removed, shall be stored in a bund wall on the high ground side of the mining area outside the 1:50 flood level within the boundaries of the mining area/ prospecting.
- Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of access roads.
- The topsoil stored in the bund wall shall be adequately protected from being blown away or being eroded.

5.5.4 Access roads on the site

- The access road to the mining area and the camp-site/site office must be established in consultation with the landowner/tenant and existing roads shall be used as far as practicable.
- The design, construction and location of access to provincial roads will be in accordance with the requirements laid down by the provincial or controlling authority
- Should a portion of the access road be newly constructed the following must be adhered to:
 - The route shall be selected that a minimum number of bushes or trees are felled and existing fence lines shall be followed as far as possible.
 - Water courses and steep gradients shall be avoided as far as is practicable.

- Adequate drainage and erosion protection in the form of cut-off berms or trenches shall be provided where necessary.

- The erection of gates in fence lines and the open or closed status of gates in new and existing positions shall be clarified in consultation with the landowner/tenant and maintained throughout the operational period.
- No other routes will be used by vehicles or personnel for the purpose of gaining access to the site.

5.5.5 Maintenance of access roads

- In the case of dual or multiple use of access roads by other users, arrangements for multiple responsibility must be made with the other users. If not, the maintenance of access roads will be the responsibility of the holder of the mining permit.
- Newly constructed access roads shall be adequately maintained so as to minimize dust, erosion or undue surface damage.

5.5.4 Dust control on the access and haul roads

- The liberation of dust into the surrounding environment shall be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used.

5.5.5 Office sites

- Office sites shall be established, as far as is practicable, outside the flood plain, above the 1 in 50 flood level mark within the boundaries of the mining/prospecting area.
- The area chosen for these purposes shall be the minimum reasonably required and which will involve the least disturbance to vegetation
- No camp or office site shall be located closer than 100 metres from a stream, river, spring, dam or pan.
- No trees or shrubs will be felled or damaged for the purpose of obtaining firewood, unless agreed to by the landowner/tenant.
- Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a fire-break shall be cleared around the perimeter of the camp and office sites.
- Lighting and noise disturbance or any other form of disturbance that may have an effect on the landowner/tenant/persons lawfully living in the vicinity shall be kept to a minimum.

5.5.6 Toilet facilities, waste water and refuse disposal

- As a minimum requirement, the holder of a mining permit shall, at least, provide pit latrines for employees and proper hygiene measures shall be established.
- Chemical toilet facilities or other approved toilet facilities such as a septic drain shall preferably be used and sited on the camp site in such a way that they do not cause water or other pollution.
- The use of existing facilities must take place in consultation with the landowner/tenant.
- In cases where facilities are linked to existing sewerage structures, all necessary regulatory requirements concerning construction and maintenance should be adhered to.
- All effluent water from the camp washing facility shall be disposed of in a properly constructed French drain, situated as far as possible, but not less than 200 metres, from any stream, river, pan, dam or borehole.

- Only domestic type wash water shall be allowed to enter this drain and any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.
- Spills will be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., shall be stored in a container at a collecting point and collected on a regular basis and disposed of at a recognized disposal facility. Specific precautions shall be taken to prevent refuse from being dumped on or in the vicinity of the camp site.
- Biodegradable refuse generated from the office/camp site, processing areas vehicle yard, storage area or any other area shall either be handled as indicated above or be buried in a pit excavated for that purpose and covered with layers of soil, incorporating a final 0,5 metre thick layer of topsoil (where practicable). Provision should be made for future subsidence of the covering.

5.5.7 Vehicle maintenance yards, storage areas and equipment.

- Any vehicle maintenance yard and secured storage area will be established as far as is practicable, outside the flood plain, above the 1 in 50 flood level mark within the boundaries of the mining/prospecting area.
- The area chosen for these purposes will be the minimum reasonably required and involve the least disturbance to tree and plant life
- The storage area shall be securely fenced and all hazardous substances and stocks such as diesel, oils, detergents, etc., shall be stored therein. Drip pans, a thin concrete slab or a facility with PVC lining, shall be installed in such storage areas with a view to prevent soil and water pollution.
- The location of both the vehicle maintenance yard and the storage areas are to be indicated on the layout plan.
- No vehicle may be extensively repaired in any place other than in the maintenance yard.
- The maintenance of vehicles and equipment used for any purpose during the mining operation will take place only in the maintenance yard area.
- Equipment used in the mining process will be adequately maintained so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid.
- Machinery or equipment used on the mining area will not be allowed to constitute a pollution hazard in respect of the above substances.
- The Regional Manager may order such equipment to be repaired or withdrawn from use if he or she considers the equipment or machinery to be polluting and irreparable.

5.5.8 Waste disposal

- Suitable covered receptacles shall be available at all times and conveniently placed for the disposal of waste.
- All used oils, grease or hydraulic fluids shall be placed therein and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.
- All spills should be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility.

5.5.9 Limitations on mining

- The mining of minerals or precious stones shall take place only within the approved demarcated mining or prospecting area.

- Mining will be limited to the areas indicated as excavations on the plan provided in terms of paragraph 2 herein.
- Operations will not be conducted closer than one and a half times the height of the bank from the edge of the river channel and in such manner that the stability of the bank of the river is effected.
- Precautions shall also be taken to ensure that the bank of the river is adequately protected from scouring or erosion.
- Damage to the bank of the river caused by the operations, will be rehabilitated to a condition acceptable to the Regional Manager at the expense of the holder.
- Restrictions on the disturbance of riverine vegetation in the form of reeds or wetland vegetation must be adhered to. The presence of these areas must be shown on the plan required in terms of paragraph 3 herein.

5.5.10 Mining operations within a riverine environment

- The mining of minerals and/or precious stones in the river or the banks of the river will be undertaken only if paragraphs 1.2 and 1.3 above show that the Department of Water Affairs and Forestry has been consulted, only if the best practice guideline for small scale mining developed by DWAF (BPG 2.1) is attached hereto, and only in accordance with such guideline, and any additional conditions that that Department may impose.
- The canalisation of a river will not be undertaken unless the necessary permission has been obtained from the Department of Water Affairs and Forestry. Over and above the conditions imposed by the said Department, which conditions shall form part of this EMPlan, the following will also apply:
 - ❖ The canalisation of the flow of the river over different parts of the river bed shall be constructed in such a manner that the following are adhered to at all times:
 - ◆ The flow of the river may not be impeded in any way and damming upstream may not occur.
 - ◆ The canalisation of the flow may not result in scouring or erosion of the river-bank.
 - ◆ Well points or extraction pumps in use by other riparian users may not be interfered with and canalisation may not impede the extraction of water at these points.
- Access to the riverbed for the purpose of conducting excavations in the river-bed, shall be through the use of only one access at a time. The location of the access to the river channel across the river-bank shall be at a point of the river-bank where the least excavation and damage to vegetation will occur and shall not be wider than is reasonably required. The position of the river access together with all planned future access points, must be indicated on the layout plan.
- Mining will be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to stormwater management, erosion and sediment control and waste management, developed by the Department of Water Affairs and Forestry (DWAF), and any other conditions which that Department may impose.

5.5.11 Establishing the excavation areas

- Whenever any excavation is undertaken for the purpose of locating and/or extracting ore bodies of all types of minerals, including precious stone-bearing gravels, the following operating procedures shall be adhered to:
 - ❖ Excavations shall take place only within the area indicated on the plan provided in terms of paragraph 2 herein..

- ❖ Overburden rocks and coarse material shall be placed concurrently in the excavations or stored adjacent to the excavation, if practicable, to be used as backfill material once the ore or gravel has been excavated.
- ❖ Trenches shall be backfilled immediately if no ore or precious stone-bearing gravel can be located.

5.5.12 Establishing processing areas. waste piles, tailings dams or slimes dams.

- Processing areas waste piles, tailings dams or slimes dams, will not be established within 100 metres of the edge of any river channel or other water bodies.
- Processing areas will be established, as far as practicable, near the edge of excavations to allow the waste, gravel and coarse material to be processed therein.
- The areas chosen for this purpose will be the minimum reasonably required and involve the least disturbance to vegetation.
- Prior to development of these areas, the topsoil will be removed and stored as described in paragraph F 2.1 above.
- Processing area, waste piles tailings dams or slimes dams will not be established unless the location and dimensions of the areas are clearly indicated on the plan referred to in paragraph 2 herein, and once established, the processing of minerals or ore containing precious stones shall be confined to these areas and no stockpiling or processing will be permitted on areas not correctly prepared.
- Tailings from the extraction process must be so treated and/or deposited that it will in no way prevent or delay the rehabilitation process.

6 REGULATION 52 (2) (e): Planned monitoring of the environmental management plan.

| IDENTIFICATION | Mark with an X where applicable | |
|---|---------------------------------|----|
| | YES | NO |
| Have the interested and affected parties identified that noise must be monitored? | | X |
| Have the interested and affected parties identified that dust must be monitored? | | X |
| Have the interested and affected parties identified that water quality must be monitored? | | X |

7 Environmental awareness plan.

(Describe the general environmental awareness training of employees that will take place, and what the training will consist of.)

Refer to Appendix H and I

8 REGULATION 52 (2) (d): Financial provision.

8.1 Information for Quantum calculation.

| LIST OF ACTIVITY AREAS ON SITE | Mark with X where applicable | | State the area of the activity in m ² | State the volume of the activity in m ³ |
|--|------------------------------|----|--|--|
| | YES | NO | | |
| | | | | |
| Excavations | X | | | |
| Stockpiles | X | | | |
| Discard dumps | X | | | |
| Discard dams | | | | |
| Loading areas | X | | | |
| Water supply dams | | | | |
| Accommodation areas | | | | |
| Offices or buildings | | | | |
| Workshops | | | | |
| Access roads | X | | | |
| Other (Specify) | | | | |
| | | | | |
| TOTAL AREA and /or volume to be rehabilitated | | | + - 7200 | + - 10800 |

8.2 Undertaking to provide financial provision

(Provide an undertaking that the required amount will be provided before the permit applied for is issued. The amount will be determined by the Regional Manager in accordance with the prescribed guidelines, which final amount is unlikely to be less than R10 per m² of area to be rehabilitated. It is important, therefore that the description of the mining project and the plan required in paragraph 2 above is accurate regarding the actual area to be disturbed).

Total costs are expected to average R210 per every square meter. Therefore, total operations are expected to be an average of R1.512 million (for the entire project).

9 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, I herewith confirm that the above report comprises the EMP compiled in accordance with directive, in terms of sections 29 of the Act contained herein, and that the Environmental management plan will be executed as proposed should the permit be issued. I acknowledge that since this Environmental Management Plan is specific to the scale of the mining operation in the hands of the applicant/holder, the operation of the mine specifically by the holder in the manner and scale proposed in the applicable financial and technical ability report and in this Environmental management plan constitute material terms and conditions of the permit, and any change in the scope of the work or the party operating the mine, albeit on a subcontracting or subletting basis, will constitute a contravention contemplated in section 47(1) of the Act.

| | |
|------------------------|---------------|
| Full Names and Surname | Peet Botes |
| Identity Number | 6703295028081 |

-END-