



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: Delf Silica Pty Ltd

REFERENCE NUMBER: KZN 30-5-1-1-2-10541PR

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.

LAND USE:

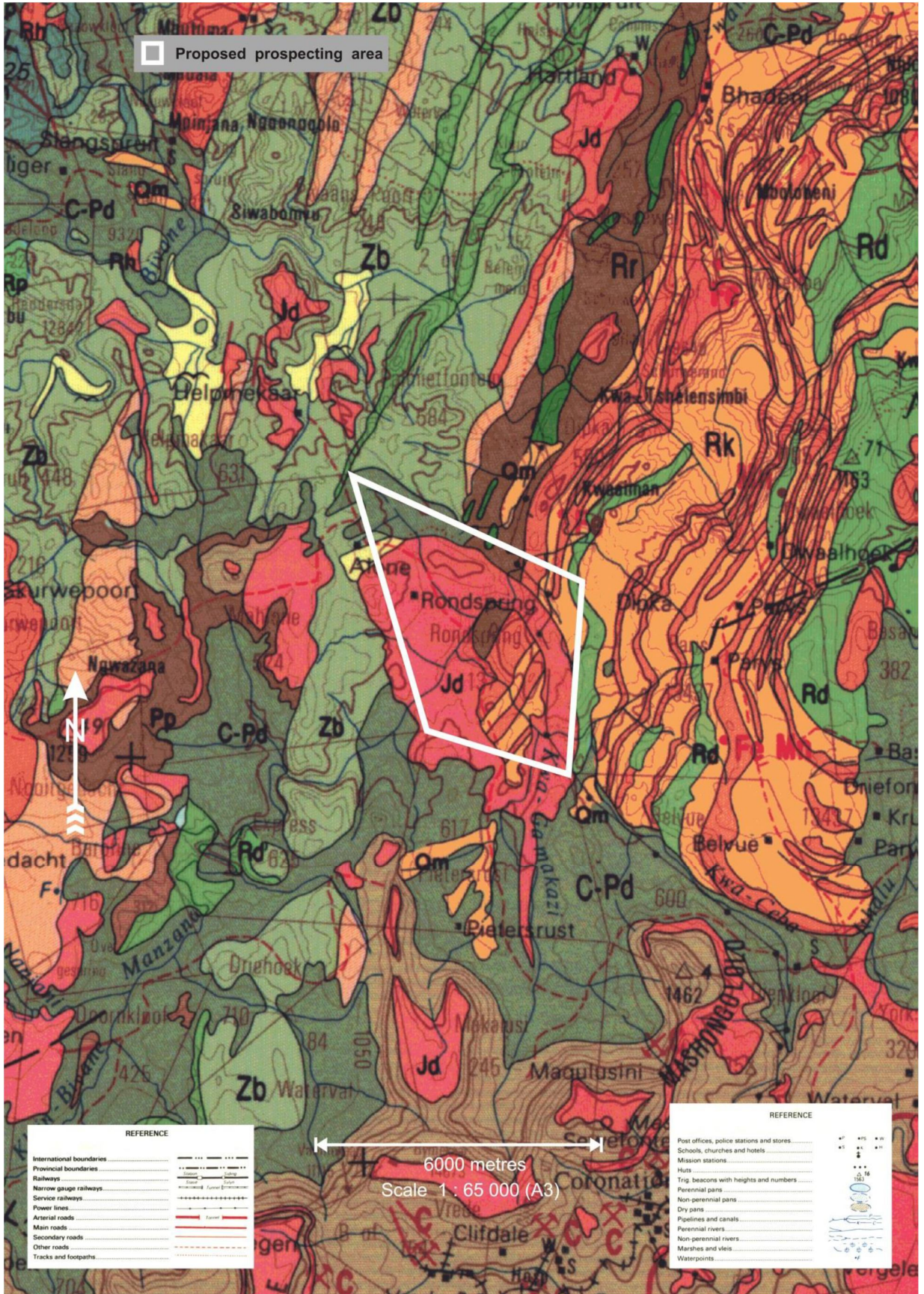
A portion of the farm 1 and the remainder the farm Rondspring 137 Vryheid situated in the magisterial District of Edumbe, Kwa-Zulu Natal Province situated in an agricultural setting approximately 55km North East of Vryheid and 42 km south east of Paulpietersburg. The

R69 runs on the Southern border 20km from the area. The proposed area is surrounded by other farms. The land use on the farm and surrounding areas are mainly used for agricultural and residential purposes.

GEOLOGY & SOILS

According to Mucina & Rutherford Quartzite of the Mozaan Group (pongola Supergroup) of the Randian age supporting shallow soils typical of Fb (prevalent) and Fa (marginal) land types) are dominate in this area.

The geological map (1:250 000 Vryheid map 2730), shows on the farm Rondsring 137HU, that there is a strip of quartzite and shale from the Pongola supergroup. It have also been identified that there is an old mine on the strip that was closed years ago. This is also an indication of the possibility of the minerals located in the area.



VEGETATION:

According to Mucina & Rutherford Low mountain ranges and undulating hills with rocky lowlands. The general pattern is a mosaic of woody shrubs and small trees in rocky areas, interspersed in the grass layer. Vegetation structure varies according to altitude and rockiness, but the basal density of the grass sward is relatively low. This unit occurs in the zone between Grassland and Savanna where the dominant grassland gives way to woodland as elevation decreases. The grasslands are species-rich covering a variety of altitudes but sharing common species unique to the dystrophic quartzite geology.

Due to the subsurface nature of bulbs the possibility of their occurrence cannot be excluded. If during prospecting any possible finds, such plants must be replanted in a demarcated area.

Aloe marlothii species were noted within the boundaries of the prospecting area during the site inspection. This species is protected in terms of kwazulu natal conservation act no 29 of 1992 and the applicant will therefore need to obtain removal permits prior to removing any of these plants. It will however be required that these plants are relocated out of the working area to avoid the destruction of them as they as seen to be indigenouslyness and representative of the vegetation to the area, and care should be taken to protect them.

Although no other sensitive, protected or endangered species could be identified during the site inspection, it is proposed that the applicant remove as little vegetation as possible. This will lessen the area that needs to be managed for erosion and weed invasion purposes as well as reduce the impact that the proposed activity will have on the vegetation. Topsoil management should be implemented to ensure that topsoil is available upon rehabilitation of the area.

FAUNA:

The fauna at the site will not be impacted by the proposed prospecting activity as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. Upon commencement of the proposed prospecting activities.

AIR QUALITY AND NOISE:

Dust will be generated by the proposed operation. Sources of dust are the heavy vehicles that travel on the mine's roads. Speed on the access road will be limited to 40 km/h to

prevent the generation of excess dust. Roads will be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.

Dust suppression measures should be implemented to prevent excessive dust on site. General air quality at the mine is good during normal weather conditions.

The surrounding areas are characterised by an agricultural setting in which vehicles and farm equipment operate.

The noise to be generated at the proposed prospecting operation is expected to increase the noise levels of the area and will contribute to the ambient noise of the area.

Drilling, excavating, crushing and transportation of the material will however generate noise daily. Mitigation measures should be implemented to lessen the noise impact of the proposed activity on the surrounding environment. The trees and bushes surrounding the proposed prospecting area will help to mitigate the noise and dust impacts to be caused by the prospecting activities.

The excavating, mobile crushing and screening plant is the main and most serious source of noise. The vehicles that work and travel in and around the prospecting area generates noise levels that are comparable to the noise levels in the general area during the day. Operations will only take place during normal working hours and if over-time is worked, neighbours will be notified in advance. All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.

ARCHAEOLOGICAL AND CULTURAL INTEREST:

No sites of archaeological or cultural importance were identified during the site inspection.

SURFACE AND GROUND WATER:

The proposed prospecting area will be further than 100m from any natural water source and the proposed activities are not expected to have a negative impact on the surface or ground water of the area.

The Manzane and Kwagamakazi streams are traversing the farm but will not be affected by the prospecting activities.

Stormwater will need to be channelled around the prospecting area to prevent possible contamination of clean water flowing over dirty areas.

The applicant will get approval from water affairs prior to the use of any water.

VISUAL EXPOSURE:

The extent of the prospecting area is 1657 ha which included the existing quarry pit. The prospecting activity will therefore not have a cumulative negative visual impact on the surrounding environment. The visual impact is localised. The aesthetic quality of this area is not pristine as this area was previously disturbed by mining activities.

The applicant should ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the mine.

Upon closure the site will be rehabilitated and sloped to insure that the visual impact on the aesthetic value of the area is kept to a minimum. If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that all exposed areas should be seeded to enhance vegetation recovery. The site will have a neat appearance and be kept in good condition at all times.

Stockpiling of bulk samples will increase the visual impact in the area but will be localised the height of the heaps should be kept under 5m to insure that the visual impact is kept low.

SOCIO-ECONOMIC:

Additional workers to be appointed on this prospecting site will be sourced from the local community. Workers will daily be transported to the site. The future establishment of a possible mining area on the farm will also assist the property owner in the diversification of their income. The material to be sourced from the future mining area will be used in steel companies, and will therefore contribute to infrastructure development and indirectly to the economy of the area.

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

- Only demarcated areas should be disturbed and must be rehabilitated as soon as possible.

- If topsoil is present it will be removed before commencement of the prospecting activities and will be stored.

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

See Appendix A for the requested map.

- 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,

During the planning phase and public participation process the stakeholders and landowners were contacted to obtain information about the site and the surrounding environment. This information was incorporated into the EMP. The information in the EMP was also confirmed during a site inspection conducted by Greenmined Environmental and the Applicant.

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 prospecting or mining operation.**

2.1.1 The main prospecting activities (e.g. access roads, topsoil storage sites and any other basic prospecting design features)

2.1.2 Plan of the main activities with dimensions

See requested plan attached as Appendix B.

2.1.3 Description of construction, operational, and decommissioning phases.

CONSTRUCTION PHASE:

The construction phase for this project will entail site clearance and establishment of the prospecting infrastructure. This will entail bush clearance, removal and stockpiling of the topsoil, the placement of the containers, establishment of the site camp and introduction of the prospecting equipment. Although the existing farm road to the area will be used to provide the applicant with access, the road needs to be upgraded in order to allow transportation of the prospecting equipment, vehicles and material to and from site. The applicant must ensure that the width of the road is less than 8m. If the road is wider than 8m the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations as amended 2014) will be triggered and Environmental Authorisation needs to be obtained.

OPERATIONAL PHASE:

Prospecting will be done in phases

Phase 1

Drilling will be done by Percussion drill rig, with holes not exceeding 30 meters in depth and samples to be taken at 1 meter intervals. The focus will be on the quartzite strip and surrounds. A grid of 1km x 1km will be used to determine the drill sites. The aim is to keep the impact to a minimum and therefore the focus will be on the quartzite strip. After the initial drilling, the next phase will commence, provided that the results are positive.

Phase 2

This phase will entail infill drilling based on the results of drilling in Phase 1. A smaller grid, ranging from 50 to 500 meter intervals starting around the abandoned quarry, will be selected to delineate the minable ore body. This is to represent our future mining endeavours as well as the bulk sample the applicant propose to take from the area. The key criterion in this phase is the silica purity and size of the ore body.

During the operational phase Delf Silica (Pty) Ltd intends to loosen the silica material by blasting, upon which it will be mechanically recovered with drilling-, excavating- and earth-moving equipment. Only demarcated areas will be disturbed and must be rehabilitated as

soon as possible. A mobile crushing and screening plant will be present at the mining area for the bulk sampling process. The silica that is recovered will be loaded on dumper trucks from where it will be transported to the Afrimat plant in Dundee or Vryheid for crushing during the sampling period. Transportation of the final product will be from the stockpile area at the Afrimat plant to a client at Newcastle for trials to his process by means of trucks.

The customer will slowly increase the content of the content into his process until he is satisfied with the quality. These type of process require high volumes, hence the large number of approximately 10 000 tons per month.

Once quality has been meet, then a mining right will be required, only then the crushing plant will be built on site.

Blasting will occur once a month. The noise caused by blasting will be instantaneous and of short duration. The site manager needs to ensure that all the surrounding residents are timeously notified of the blast. Proof of these notifications needs to be kept at the offices of the applicant. The type, duration and timing of the blasting should be planned with due cognisance of the other land users and structures in the vicinity.

Soil:

- The topsoil present it will be removed before commencement of the prospecting activities and will be stored. The topsoil will be used to cover disturbed areas with a thin layer to enhance the establishment of natural vegetation. The necessary measures will be put in place to limit erosion from the stockpiles and to divert storm water away from the topsoil stockpiles. Rehabilitation would be done in such a way to ensure the least impact on the geology and soil characteristics.
- If any soil is contaminated during the life of the mine or during closure, it will be removed together with the contaminant and placed in acceptable containers to be removed with the industrial waste to a recognized facility and by a recognized company. No contaminated soil will be treated on site.
- Vehicle movement will be confined to established roads (no braiding of roads will be allowed) as to prevent the unnecessary disturbance and compactions of soils.
- Runoff water will be diverted around the site with trenches and contour structures to prevent erosion of the work areas.

- Where the soil is compacted it will be ripped and levelled in order to re-establish a growth medium upon closure of the site.

Vegetation:

- Management will take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods will be used:
 - "The plants will be uprooted, felled or cut off and can be destroyed completely."
 - "The plants will be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide."
- Vegetation on flat surfaces will be established using the dry lands technique requiring no irrigation.
- Prospecting operations will be audited on an annual basis. If any incidents, impacts to the environment or non-compliance are found it will be rectified immediately.
- Collection of wood for fire will not be allowed.
- The making of fires will not be allowed.
- Any sensitive plants identified by the environmental control officer in the proposed prospecting area will be removed prior to disturbance of the area.

Topography:

- The worked out areas will be sloped to blend with the associated topography.

Land Use:

- Access roads to the prospecting area will be established in consultation with the landowner and existing roads will be used as far as practicable.
- All new roads will be selected as far as possible to avoid watercourses and steep gradients. Adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided where necessary.

- The roads to be established to the site will be below the threshold of the EIA regulations of the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended June 2010.

Sites of Archaeological and Cultural interest:

- If any artefacts of archaeological or cultural interest are found, the area will be marked and all activities in that vicinity would cease with immediate effect.

Dust:

- Roads will be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.

Fauna:

- Any form of poaching by workers on the mine will result in the maximum form of punishment as allowed for by common law. Any form of snares or traps will be removed.

Surface water:

- A system consisting of trenches will be put in place that will be able to divert run-off from the peak precipitation event of 1:100 years recurrence interval around the prospecting areas.
- Any vehicle repairs will only take place within the service bay area and all waste products will be disposed of in a 200 litre container/bin found inside the emergency service area.
- All refuelling will only take place in the service bay area. If this is found not to be feasible drip pans will be used whenever refuelling takes place.
- All infrastructures will be properly designed to allow for proper drainage and run-off without resulting in erosion features.
- Water management structures such as trenches and embankments will be inspected and evaluated at monthly intervals and after a storm event.

The prospecting area:

- The GPS coordinates of the proposed mining is as follows:
 - A27,53427°S; 30,99306°E
 - B27,55384°S; 31,04062°E
 - C27,59121°S; 31,04019°E
 - D27,58299°S; 31,01067°E
 - A27,53427°S; 30,99306°E
- The extent of the prospecting area is 1657 ha.
- Prospecting and resultant operations must be restricted to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Rutting and erosion of the access road caused as a result of the prospecting activities should be repaired by the applicant.
- Permanent beacons will be firmly erected of the applicable prospecting area moved as prospecting progresses to ensure that restrict the unnecessary disturbance of natural areas.

Access roads:

- Although the existing farm road to the area will be used to provide the applicant with access, the road needs to be upgraded in order to allow transportation of the prospecting equipment, vehicles and material to and from site.
- Should a portion of the access road be newly constructed the following will be adhered to:
 - The route will be selected that a minimum number of bushes or trees are felled and existing fence lines will be followed as far as possible.
 - Watercourses and steep gradients will be avoided.

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

Ablution facilities, waste water & refuse disposal:

- A site toilet with septic tank and / or chemical toilets will be put on site for employees and proper hygiene measures will be established.
- Any effluents containing oil, grease or other industrial substances will be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.
- Spills would 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 recognised facility.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., will be stored in a container at a collecting point and collected on a regular basis and disposed of at a recognised landfill site. Specific precautions shall be taken to prevent refuse from being dumped on or in the vicinity of the prospecting area.
- Biodegradable refuse generated will be handled as indicated above.

Vehicle maintenance yard & storage areas:

- The area chosen for these purposes will be the minimum reasonably required and involve the least disturbance to tree and plant life. Topsoil will be handled as described above. After the topsoil has been removed the area is covered with a plastic lining, covered with gravel material and compacted.
- Fuel and oil will be stored in a secured area.
- The maintenance of vehicles and equipment used for any purpose during the prospecting operation will take place only in a maintenance yard area.
- Equipment used in the prospecting 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 prospecting area will not 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.

DECOMMISSIONING PHASE:

The decommissioning phase will entail the rehabilitation of the site. Upon cessation of the prospecting activities, the area will be fully rehabilitated. The prospecting boreholes will be completely sealed and secured to prevent danger to animals from falling in. The sides of the excavation will be sloped with acceptable contours (40°) to prevent soil erosion or stepped by creating benches of not more than 3 meter. All roads used will be repaired or rehabilitated if not needed by the landowner. The applicant will comply with the minimum closure objectives as prescribed by DMR and detailed below.

Rehabilitation of the excavated area:

- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste will be permitted to be deposited in the excavations.
- Once 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. If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that 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 prospecting operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

Rehabilitation of plant, office and service areas:

- The layer of material at the vehicle service area will be removed and if contaminated with hazardous substances such as hydrocarbons will be disposed of as hazardous waste by an appropriately qualified waste handling contractor, the plastic liner will be removed to be used at a later stage. The compacted areas will be ripped and the topsoil returned over the area.

- Coarse natural material used for the construction of ramps will be removed and dumped into the excavations.
- Stockpiles will be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.
- On completion of operations, all structures or objects shall be dealt with in accordance with Section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2008):
 - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
 - The site shall be seeded if necessary with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs of the camp and office sites, before and during the prospecting operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.
- On completion of prospecting operations, the surface of these areas, 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 overburden material that was removed from these areas will be replaced in the same order as it originally occurred.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the area shall then be fertilized to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix if necessary.
- 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 prospecting operation be corrected and the area be seeded with a seed mix to his or her specification.

Final rehabilitation:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and weed / alien clearing.
- All infrastructure, equipment, plant, temporary housing and other items used during the prospecting 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 prospecting area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- Weed / Alien clearing will be done in a sporadic manner during the life of the prospecting activities. Species regarded as Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) need to be eradicated from the site.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

2.1.4 Listed activities (in terms of the NEMA EIA regulations)

The proposed prospecting activities at the site do not trigger listed activities in terms of the NEMA EIA regulations.

2.2 Identification of potential impacts (Refer to the guideline)

2.2.1 Potential impacts per activity and listed activities.

Stripping and stockpiling of topsoil:

- Visual intrusion associated with the establishment of the prospecting area
- Dust nuisance caused by the disturbance of the soil
- Noise nuisance caused by machinery stripping and stockpiling the topsoil
- Infestation of the topsoil heaps by weeds or invader plants
- Loss of topsoil due to incorrect storm water management

- Contamination of area with hydrocarbons or hazardous waste materials

Blasting:

- Health and safety risk posed by blasting activities
- Dust nuisance caused by blasting activities
- Noise nuisance caused by blasting activities
- Visual intrusion associated with the blasting activities

Excavations:

- Visual intrusion associated with the excavation activities
- Dust nuisance due to excavation activities
- Noise nuisance generated by excavation equipment
- Contamination of surface or groundwater due to effluent runoff from excavation area
- Unsafe working conditions for employees
- Negative impact on the fauna and flora of the area
- Potential damage to cultural or heritage aspects
- Contamination of area with hydrocarbons or hazardous waste materials
- Weed and invader plant infestation of the area

Crushing:

- Visual intrusion associated with the crushing activities
- Dust nuisance due to the crushing activities
- Noise nuisance generated by the crushing activities
- Contamination of area with hydrocarbons or hazardous waste materials

Stockpiling and Transporting:

- Visual intrusion associated with the stockpiled material and vehicles transporting the material
- Loss of material due to ineffective stormwater handling
- Weed and invader plant infestation of the area due to the disturbance of the soil
- Dust nuisance from stockpiled material and vehicles transporting the material
- Degradation of access roads
- Noise nuisance caused by vehicles
- Contamination of area with hydrocarbons or hazardous waste materials

Sloping and Landscaping during rehabilitation:

- Soil erosion
- Health and safety risk posed by un-sloped areas
- Dust nuisance caused during sloping and landscaping activities
- Noise nuisance caused by machinery
- Contamination of area with hydrocarbons or hazardous waste materials

Replacing the Topsoil and Re-Vegetating the Disturbed Area:

- Loss of reinstated topsoil due to the absence of vegetation
- Infestation of the area by weed and invader plants

2.2.2 Potential cumulative impacts.

The extent of the prospecting area is 1657 ha which included the existing quarry pit. The prospecting activity will therefore not have a cumulative negative visual impact on the surrounding environment. The visual impact is localised. The aesthetic quality of this area is not pristine as this area was previously disturbed by mining activities. There are no other mining or prospecting activities in the immediate vicinity therefore this site will not have a

cumulative impact on the surrounding environment. The disturbance of the natural areas must be contained within the boundaries of the site.

The cumulative impacts associated with the addition of future mining as land use to the area was identified to be the following:

- Additional traffic on the local roads during construction and operational phases,
- The influx of people into the area during construction and operational phases.

2.2.3 Potential impact on heritage resources

No sites of archaeological or cultural importance were identified during the site inspection. Interested and affected parties will also be consulted to identify any potential area of concern.

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

(If no such impacts are identified this must be specifically stated together with a clear explanation why this is not the case.)

The proposed prospecting will be established over an area not including an abandoned quarry not currently utilised for any specific use. The prospecting will therefore not have to compete with other land uses at the site.

Upon closure of the prospecting area, a portion of the land will revert back to agriculture and the area could be used for the grazing of animals.

The prospecting operation could have the following negative impacts on the community:

- Dust nuisance due to crushing of material
- Noise nuisance due to prospecting operations
- Loss of land to be used for farming purposes if the quarry is to be further developed in future
- Safety hazard to humans and fauna in the area, if the area is not rehabilitated
- Visual impact if the area is not rehabilitated.

The possible future operation of the mine will however have a number of positive impacts such as job creation for workers from the local community. The silica to be removed from the quarry will be used in steel companies. The proposed quarry will therefore contribute to the manufacturing of infrastructure in and around Vryheid / Newcastle area.

This is one of the only sources for silica found in Kwazulu Natal therefore vital for the industry and job creation. The no-go alternative will result in a high cost implications to transport silica from other provinces, which will cause delays in current infrastructural projects and increase the financial costs of these projects.

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

The management of the potential impacts such as dust suppression, noise control and waste handling were included in the notification letter sent to the I&AP's and stakeholders informing them of the proposed prospecting activity. The I&AP's and stakeholders were requested to submit any additional comments. The public participation process is still underway and proof of consultation will be submitted as per extension granted on the 19th of March 2015. The applicant will obtain an agreement with the landowners for the duration of the prospecting activities prior to commencement.

2.2.6 Confirmation of specialist report appended. (Refer to guideline)

No specialist report was done to date. No sites of archaeological or cultural importance were identified during the site inspection.

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

Methodology for the assessment of the potential environmental, social and cultural impacts

DEFINITIONS AND CONCEPTS:

Environmental significance:

The concept of significance is at the core of impact identification, evaluation and decision-making. The concept remains largely undefined and there is no international consensus on a single definition. The following common elements are recognised from the various interpretations:

- Environmental significance is a value judgement
- The degree of environmental significance depends on the nature of the impact
- The importance is rated in terms of both biophysical and socio-economic values
- Determining significance involves the amount of change to the environment perceived to be acceptable to affected communities.

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

The concept of risk has two dimensions, namely the consequence of an event or set of circumstances, and the likelihood of particular consequences being realised (Environment Australia (1999) Environmental Risk Management).

Impact

The positive or negative effects on human well-being and / or the environment.

Consequence

The intermediate or final outcome of an event or situation OR it is the result, on the environment, of an event.

Likelihood

A qualitative term covering both probability and frequency.

Frequency

The number of occurrences of a defined event in a given time or rate.

Probability

The likelihood of a specific outcome measured by the ratio of a specific outcome to the total number of possible outcomes.

Environment

Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation (ISO 14004, 1996).

Methodology that will be used

The environmental significance assessment methodology is based on the following determination:

$$\text{Environmental Significance} = \text{Overall Consequence} \times \text{Overall Likelihood}$$

Determination of Overall Consequence

Consequence analysis is a mixture of quantitative and qualitative information and the outcome can be positive or negative. Several factors can be used to determine consequence. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: ***Severity/Intensity, Duration and Extent/Spatial Scale***. Each factor is assigned a rating of 1 to 5, as described in the tables below.

Determination of Severity / Intensity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment.

Table 1 will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Rating of Severity:

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignifiant / Non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place.

Rating of Duration:

Rating	Description
1	Up to ONE MONTH
2	ONE MONTH to THREE MONTHS (QUARTER)
3	THREE MONTHS to ONE YEAR
4	ONE to TEN YEARS
5	Beyond TEN YEARS

Determination of Extent/Spatial Scale

Extent or spatial scale is the area affected by the event, aspect or impact.

Rating of Extent / Spatial Scale:

Rating	Description
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighboring farm area
5	Regional, National, International

Determination of Overall Consequence

Overall consequence is determined by adding the factors determined above and summarized below, and then dividing the sum by 3.

Example of calculating Overall Consequence

Consequence	Rating
Severity	Example 4
Duration	Example 2
Extent	Example 4
SUBTOTAL	10
TOTAL CONSEQUENCE: (Subtotal divided by 3)	3.3

Determination of Likelihood:

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in tables 6 and 7.

Determination of Frequency

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Rating of Frequency:

Rating	Description
1	Once a year or once/more during operation
2	Once/more in 6 Months
3	Once/more a Month
4	Once/more a Week
5	Daily

Determination of Probability

Probability refers to how often the activity or aspect has an impact on the environment.

Rating of Probability

Rating	Description
1	Almost never / almost impossible
2	Very seldom / highly unlikely
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible
5	Daily / highly likely / definitely

Overall Likelihood

Overall likelihood is calculated by adding the factors determined above and summarised below, and then dividing the sum by 2.

Example of calculating Overall Likelihood

Consequence	Rating
Frequency	Example 4
Probability	Example 2
SUBTOTAL	6
TOTAL LIKELIHOOD (Subtotal divided by 2)	3

Determination of Overall Environmental Significance:

The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of **LOW**, **LOW-MEDIUM**, **MEDIUM**, **MEDIUM-HIGH** or **HIGH**, as shown in the table below.

Determination of Overall Environmental Significance

Significance or Risk	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence X Overall Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25

Qualitative description or magnitude of Environmental Significance

This description is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritisations and decision making process associated with this event, aspect or impact.

Description of Environmental Significance and related action required

Significance	Low	Low-Medium	Medium	Medium-High	High
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

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

- High** Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.
- Medium-High** Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would

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

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

As the prospecting is not currently in operation, the impacts dealt with below are anticipated impacts, and have been considered as worst case scenarios. They are also assessed as if no management of mitigation is in place.

The management plan that follows, again addresses the worst-case scenario.

Stripping and stockpiling of topsoil:

Visual intrusion associated with the establishment of the prospecting area

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	5	1	3	3.9

Dust nuisance caused by the disturbance of the soil.

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	3	2	2.5	3.25

Noise nuisance caused by machinery stripping and stockpiling the topsoil.

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	3	2	2.5	3.25

Infestation of the topsoil heaps by weeds or invader plants

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	3	1	2.3	4	2	3	6.9

Loss of topsoil due to incorrect storm water management

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	3	2	2.5	5.75

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	4	4	10.4

Excavations:

Visual intrusion associated with the excavation activities

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	4	4	4	9.2

Dust nuisance due to excavation activities

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	3	3	3	6.9

Noise nuisance generated by excavation equipment

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	3	3	3	6.9

Contamination of surface or groundwater due to effluent runoff from excavation area

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	4	3.3	3	3	3	9.9

Unsafe working conditions for employees

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
4	4	1	3	4	5	4.5	13.5

Negative impact on the fauna and flora of the area

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	2	3	7.8

Potential damage to cultural or heritage aspects

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
4	5	1	3.3	1	1	1	3.3

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	4	4	10.4

Weed and invader plant infestation of the area

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	2	3	7.8

Crushing:

Visual intrusion associated with the crushing activities

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	4	4	4	9.2

Dust nuisance caused by the crushing activities

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	3	3	3	6.9

Noise nuisance generated by crushing activities

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	3	3	3	6.9

Contamination of surface or groundwater due to effluent runoff from crushing activities

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	4	3.3	3	3	3	9.9

Unsafe working conditions for employees

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
4	4	1	3	4	5	4.5	13.5

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	4	4	10.4

Stockpiling and Transporting:

Visual intrusion associated with the stockpiled material and vehicles transporting the material

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	4	4	4	9.2

Loss of material due to ineffective storm water handling

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	3	3.5	9.1

Weed and invader plant infestation of the area due to the disturbance of the soil

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	2	3	7.8

Dust nuisance from stockpiled material and vehicles transporting the material

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	4	4	10.4

Degradation of access roads

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	2	3	4	4	4	12

Noise nuisance caused by vehicles

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	2	2.6	4	4	4	10.4

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	1	2.6	4	4	4	10.4

Sloping and Landscaping:

Soil erosion

Rating: Medium

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

Health and safety risk posed by un-sloped areas

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
4	1	1	2.3	4	1	2.5	5.75

Dust nuisance caused during sloping and landscaping activities

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	4	1	2.5	3.25

Noise nuisance caused by machinery

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	2	4	1	2.5	5

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	1	2.5	4	1	2.5	6.25

Replacing the Topsoil and Re-Vegetating the Disturbed Area:

Loss of reinstated topsoil due to the absence of vegetation

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	1	1.6	4	1	2.5	4

Infestation of the area by weed and invader plants

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	5	1	3	4	2	3	9

3.1.3 Assessment of potential cumulative impacts.

The extent of the prospecting area is 1657 ha which included the existing quarry pit. The prospecting activity will therefore not have a cumulative negative visual impact on the surrounding environment. The visual impact is localised. The aesthetic quality of this area is not pristine as this area was previously disturbed by mining activities. There are no other mining or prospecting activities in the immediate vicinity therefore this site will not have a cumulative impact on the surrounding environment. The disturbance of the natural areas must be contained within the boundaries of the site.

The cumulative impacts associated with the addition of future mining as land use to the area was identified to be the following:

- Additional traffic on the local roads during construction and operational phases,
- The influx of people into the area during construction and operational phases.

Additional traffic on the local roads during operational phases

Rating: Medium - High

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	4	2	3	5	5	5	15

The influx of people in the area during construction and operational phases

Rating: Medium

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

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.

Stripping and stockpiling of topsoil:

- Visual intrusion associated with the establishment of the prospecting area
- Dust nuisance caused by the disturbance of the soil
- Noise nuisance caused by machinery stripping and stockpiling the topsoil
- Infestation of the topsoil heaps by weed or invader plants
- Loss of topsoil due to incorrect storm water management
- Contamination of area with hydrocarbons or hazardous waste materials

Excavations:

- Visual intrusion associated with the excavation activities
- Dust nuisance due to excavation activities
- Noise nuisance generated by excavation equipment
- Contamination of the area with hydrocarbons or hazardous waste materials
- Unsafe working conditions for employees
- Negative impact on the fauna and flora of the area
- Weed and invader plant infestation of the area

Crushing:

- Visual intrusion associated with the crushing activities
- Dust nuisance due to the crushing activities
- Noise nuisance generated by the crushing activities
- Contamination of the area with hydrocarbons or hazardous waste materials

Stockpiling and transporting:

- ▣ Visual intrusion associated with the stockpiled material and vehicles transporting the material
- ▣ Loss of material due to ineffective storm water handling
- ▣ Weed and invader plant infestation of the area due to the disturbance of the soil
- ▣ Dust nuisance from the stockpiled material and vehicles transporting the material
- ▣ Degradation of access roads
- ▣ Noise nuisance caused by vehicles
- ▣ Contamination of area with hydrocarbons or hazardous waste materials

Sloping and landscaping:

- ▣ Soil erosion
- ▣ Health and safety risk posed by un-sloped areas
- ▣ Dust nuisance caused during sloping and landscaping activities
- ▣ Noise nuisance caused by machinery
- ▣ Contamination of area with hydrocarbons or hazardous waste materials

Replacing the Topsoil and Re-Vegetating the Disturbed Area:

- ▣ Loss of reinstated topsoil due to the absence of vegetation
- ▣ Infestation of the area by weed and invader plants

3.2.2 Concomitant list of appropriate technical or management options

(Chosen to modify, remedy, control or stop any action, activity, or process which will cause significant impacts on the environment, socio-economic conditions and historical and cultural aspects as identified. Attach detail of each technical or management option as appendices)

Visual Mitigation:

- The site needs to have a neat appearance and be kept in good condition at all times.
- Upon closure the site needs to be rehabilitated, sloped and the prospecting boreholes should be completely sealed and secured, to insure that the visual impact on the aesthetic value of the area is kept to a minimum.

Dust Handling:

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

Noise Handling:

- The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.
- All prospecting vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act.

Management of weed or invader plants:

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

Stormwater Handling:

- Storm water should be diverted around the topsoil heaps, stockpile areas and access roads to prevent erosion and loss of material.
- Runoff water should also be diverted around the stockpile areas with trenches and contour structures to prevent erosion of the work areas.
- Prospecting should be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water Affairs (DWA), and any other conditions which that Department may impose:
 - Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.
 - Dirty water must be collected and contained in a system separate from the clean water system.
 - Dirty water must be prevented from spilling or seeping into clean water systems.
 - The storm water management plan must apply for the entire life cycle of the mine and over different hydrological cycles (rainfall patterns).

- The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management plan.

Management of Health and Safety Risks:

- The type, duration and timing of the blasting procedures should be planned with due cognisance of other land users and structures in the vicinity,
- The surrounding landowners and communities should be informed in writing ahead of any blasting event,
- Noise mufflers and/or soft explosives could be used during blasting to mitigate the noise impact on the surroundings,
- Measures to limit flyrock should be taken,
- Audible warning of a pending blast should be given at least 3 minutes in advance of the blast,
- All flyrock (of diameter 150mm and larger) which falls beyond the working area, together with the rock spill should be collected and removed,
- Workers should have access to the correct personal protection equipment (PPE) as required by law.
- All operations should comply with the Occupational Health and Safety Act.

Waste Management:

- No processing area or waste pile may be established within 100m of the edge of any river channel or other water bodies.
- Any vehicle repairs may only take place within the service bay area and all waste products must be disposed of in a 200 litre closed container/bin found inside the emergency service area.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.

- Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility.
- Suitable covered receptacles should be available at all times and conveniently placed for the disposal of waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., should be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognised landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the mine area.
- Biodegradable refuse generated should be handled as indicated above.

Management of Access Roads:

- Newly constructed access roads (if applicable) must be adequately maintained so as to minimise dust, erosion or undue surface damage.
- Storm water should be diverted around the access roads to prevent erosion.
- Erosion of access road: Vehicular movement must be restricted to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Rutting and erosion of the access road caused as a result of the prospecting activities should be repaired by the applicant.

Topsoil Handling:

- Where applicable the first 300mm of topsoil should be removed in strips and stored at a demarcated and signposted stockpile area. Stockpiling of topsoil must be done to protect it from erosion, mixing with overburden or other material. The topsoil must be used to cover the rehabilitated area and improve the establishment of natural vegetation.
- The temporary topsoil stockpiles of each removed strip should be kept free of weeds.

- Topsoil stockpiles should be placed on a levelled area and measures should be implemented to safeguard the piles from being washed away in the event of heavy rains/storm water.
- Topsoil heaps should not exceed 2m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- Storm- and runoff water should be diverted around the stockpile area and access roads to prevent erosion.

Protection of fauna and flora:

- The site manager should ensure that no fauna is caught, killed, harmed, sold or played with.
- Workers should be instructed to report any animals that may be trapped in the working area.
- No snares may be set or nests raided for eggs or young.
- No plants or trees may be removed without the approval of the ECO.

3.2.3 Review the significance of the identified impacts

(After bringing the proposed mitigation measures into consideration).

Stripping and stockpiling of topsoil:

Visual intrusion associated with the establishment of the prospecting area

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	1	1	1	5	1	3	3

Dust nuisance caused by the disturbance of the soil.

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	1	1	1	2	1	1.5	1.5

Noise nuisance caused by machinery stripping and stockpiling the topsoil.

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	1	1	1	2	2	2	2.6

Infestation of the topsoil heaps by weeds or invader plants

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	1	1.6	2	2	2	3.2

Loss of topsoil due to incorrect storm water management

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	1	2	1.5	3.45

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	2	2	2	2.6

Blasting:

Health and safety risk posed by blasting activities

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	1	2	1.5	3.45

Dust nuisance caused by blasting activities

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	3	3	3	6.9

Noise nuisance caused by blasting activities

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	3	3	3	6.9

Visual intrusion associated with the blasting activities

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	3	2.5	5.75

Excavations:

Visual intrusion associated with the excavation activities

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	3	2.5	5.75

Dust nuisance due to excavation activities

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	4	1	2	2	3	2.5	5

Noise nuisance generated by excavation equipment

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	4	1	2.3	2	3	2.5	5

Contamination of surface or groundwater due to effluent runoff from excavation area

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	2	2	4.6

Unsafe working conditions for employees

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	2	2	4.6

Negative impact on the fauna and flora of the area

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	2	2	4.6

Potential damage to cultural or heritage aspects

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	5	1	2.3	1	1	1	2.3

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2	2	3	2.5	5

Weed and invader plant infestation of the area

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	2	2	4.6

Crushing:

Visual intrusion associated with the crushing activities

Rating: Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	3	2.5	5.75

Dust nuisance due to crushing activities

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	4	1	2	2	3	2.5	5

Noise nuisance generated by crushing equipment

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	4	1	2.3	2	3	2.5	5

Contamination of surface or groundwater due to effluent runoff from crushing area

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	2	2	4.6

Unsafe working conditions for employees

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	2	2	4.6

Negative impact on the fauna and flora of the area

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	2	2	4.6

Potential damage to cultural or heritage aspects

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	5	1	2.3	1	1	1	2.3

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2	2	3	2.5	5

Stockpiling and Transporting:

Visual intrusion associated with the stockpiled material and vehicles transporting the material

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	4	4	4	9.2

Loss of material due to ineffective storm water handling

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	1	2	1.5	3.45

Weed and invader plant infestation of the area due to the disturbance of the soil

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	1	2	1.5	3.45

Dust nuisance from stockpiled material and vehicles transporting the material

Rating: Low – Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	4	2	2.3	2	4	3	6.9

Degradation of access roads

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	4	2	2.3	2	2	2	4.6

Noise nuisance caused by vehicles

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	4	1	2	2	3	2.5	5

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low - Medium

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	4	1	2.3	2	3	2.5	5.75

Sloping and Landscaping:

Soil erosion

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
1	2	1	2	2	2	2	4

Health and safety risk posed by un-sloped areas

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
3	1	1	2	3	1	2	4

Dust nuisance caused during sloping and landscaping activities

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	2	1	1.5	1.95

Noise nuisance caused by machinery

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	2	1	1.5	1.95

Contamination of area with hydrocarbons or hazardous waste materials

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	1	2.5	2	1	1.5	3.75

Replacing the Topsoil and Re-Vegetating the Disturbed Area:

Loss of reinstated topsoil due to the absence of vegetation

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	2	1	1.6	3	1	2	3.2

Infestation of the area by weed and invader plants

Rating: Low

			Consequence			Likelihood	Significance
Severity	Duration	Extend		Probability	Frequency		
2	1	1	1.3	3	2	2.5	3.25

4 REGULATION 52 (2) (d): Financial provision. The applicant is required to-

4.1 Plans for quantum calculation purposes.

(Show the location and aerial extent of the aforesaid main mining actions, activities, or processes, for each of the construction operational and closure phases of the operation).

See requested plan attached as Appendix B.

4.2 Alignment of rehabilitation with the closure objectives

(Describe and ensure that the rehabilitation plan is compatible with the closure objectives determined in accordance with the baseline study as prescribed).

MINIMUM CLOSURE OBJECTIVES THAT WILL BE ADHERED TO

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 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.

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 needs to be scarified or ripped.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the site should 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 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 operation and after rehabilitation, should be taken at selected fixed points and kept on record for the information of the Regional Manager.

Rehabilitation of vehicle maintenance yard and secured storage areas:

- On completion of prospecting operations, the above areas should be cleared of any contaminated soil.
- All buildings, structures or objects on the vehicle maintenance yard and secured storage areas should be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002.
- The surface should be ripped or ploughed to a depth of at least 300mm and the topsoil previously stored adjacent the site, should be spread evenly to its original

depth over the whole area. The area should be fertilized if necessary (based on a soil analysis).

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

Rehabilitation of excavated areas

- The excavated area must serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- No waste will be permitted to be deposited in the excavations.
- Once 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 necessary.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

Rehabilitation of processing areas

- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- On completion of 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.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that 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 operation be corrected and the area be seeded with a seed mix to his or her specification.

Final rehabilitation

- All infrastructure, equipment and other items used during the prospecting period shall be removed from the site (section 44 of the MPRDA).
- Waste material of any description, including receptacles, scrap, rubble and tyres, shall be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- Weed / Alien clearing shall be done in a sporadic manner during the life of the prospecting activities. Species regarded as Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) need to be eradicated from the site on final closure.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

4.3 Quantum calculations.

(Provide a calculation of the quantum of the financial provision required to manage and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulation 54 (1) in respect of each of the phases referred to).

4.4 Undertaking to provide financial provision

(Indicate that the required amount will be provided should the right be granted).

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 company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines, which final amount is unlikely to be less than R10/m² of the area to be rehabilitated.

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

5.1 List of identified impacts requiring monitoring programmes.

■ Dust Monitoring

- The dust generated by the prospecting activities should be continuously monitored, and addressed by the implementation of dust suppression methods.

■ Noise Monitoring

- The noise generated by the mining activities should be continuously monitored, and any excessive noise should be addressed.

■ Management of weed or invader plants

- The presence of weed and/or invader plants should be continuously monitored, and any unwanted plants should be removed.

■ Surface and Storm Water Monitoring

- The effectiveness of the storm water infrastructure needs to be continuously monitored.

- Management of Health and Safety Risks
 - All health and safety aspects need to be monitored on a daily basis.

- Waste Management
 - Management of waste should be a daily monitoring activity.
 - Hydrocarbon spills need to be cleaned immediately and the site manager should check compliance daily.

- Management of Access Roads
 - The condition of the access road should be continuously monitored.

- Topsoil Handling
 - When topsoil has been removed from any area the topsoil heaps need to be continuously protected against loss of soil due to wind and water erosion

5.2 Functional requirements for monitoring programmes.

- Dust Handling and Monitoring:
 - Dust suppression equipment such as a water car and water dispenser. The applicant already has this equipment available.

- Noise Handling and Monitoring:
 - Site manager to ensure that the vehicles are equipped with silencers and maintained in a road worthy condition.
 - Compliance with the appropriate legislation with respect to noise will be mandatory.

- Management of weed or invader plants:
 - Removal of weeds should be manually or by the use of an approved herbicide.

- Surface and Storm Water Handling:
 - Trenches and contours to be made to direct storm- and runoff water around the stockpile areas.

- Management of Health and Safety Risks:
 - Site manager to ensure that workers are equipped with required PPE while operating on site.
 - The necessary warning signs should be present at the site to inform the public and workers of the prospecting activities.

- Waste Management:
 - Closed containers for the storage of general of hazardous waste until waste is removed to the appropriate landfill site.
 - Hydrocarbon spill kits to enable sufficient clean-up of contaminated areas.
 - Drip trays should be available to place underneath haul vehicles while the vehicles are parked at night.
 - Should a vehicle have a break down, it should be serviced immediately.

- Management of Access Roads:
 - Dust suppression equipment such as a water car and dispenser.
 - Trenches and contours to be made to direct storm- and runoff water around the access roads.

- Topsoil Handling:
 - Excavating equipment to remove the first 300mm of topsoil from the proposed work areas. The applicant already has this equipment available.
 - Trenches and contours to be made to direct storm- and runoff water around the stockpiled topsoil area.

5.3 Roles and responsibilities for the execution of monitoring programmes.

Monitoring Aspect	Role	Responsibility
Dust Handling	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ■ Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. ■ Limit speed on the access roads to 40km/h to prevent the generation of excess dust. ■ Spray roads with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits. ■ Assess effectiveness of dust suppression equipment. ■ Re-vegetate all disturbed or exposed areas as soon as possible to prevent any dust source from being created. ■ Thoroughly soak all stockpiles to ensure dust suppression on the site.
Noise Handling	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ■ Ensure that employees and staff conduct themselves in an acceptable manner while on site. ■ Ensure that all prospecting vehicles are equipped with silencers and maintained in a road worthy condition in terms of the Road Transport Act. ■ Plan the type, duration and timing of the blasting procedures with due cognisance of other land users and structures in the vicinity. ■ Notify surrounding land owners in writing prior blasting occasions. ■ Use noise mufflers and/or soft explosives during blasting.
Management of weed/invaser plants	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ■ Implement a weed and invader plant control management plan. ■ Control declared invader or exotic species on the rehabilitated areas. ■ Keep the temporary topsoil stockpiles free of weeds.
Surface and Stormwater Handling	<p>Site Manager to ensure compliance with the guidelines</p>	<ul style="list-style-type: none"> ■ Divert stormwater around the topsoil heaps, stockpile areas and

Monitoring Aspect	Role	Responsibility
	<p>as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<p>access roads to prevent erosion and loss of material.</p> <ul style="list-style-type: none"> ■ Divert runoff water around the stockpile areas with trenches and contour structures to prevent erosion of the work areas. ■ Conduct prospecting 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 (DWA), and any other conditions which that Department may impose.
<p>Management of health and safety risks</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p> <p>Blasting contractor to comply with national blasting requirements.</p>	<ul style="list-style-type: none"> ■ Plan the type, duration and timing of the blasting procedures with due cognisance of other land users and structures in the vicinity, ■ Inform the surrounding landowners and communities of any blasting event, ■ Use noise mufflers and/or soft explosives will be used during blasting, ■ Limit flyrock, ■ Give audible warning of a pending blast at least 3 minutes in advance of the blast, ■ Remove all flyrock (of diameter 150mm and larger) which falls beyond the working area, together with the rock spill. ■ Ensure that workers have access to the correct PPE as required by law.
<p>Waste management</p>	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ■ Ensure that vehicle repairs only take place within the service bay area and all waste products are disposed of in a 200 litre closed container/bin inside the emergency service area. ■ Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.

Monitoring Aspect	Role	Responsibility
		<ul style="list-style-type: none"> ■ Clean spills immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. ■ Ensure the availability of suitable covered receptacles at all times and conveniently placed for the disposal of waste. ■ Place all used oils, grease or hydraulic fluids therein and remove these receptacles from the site on a regular basis for disposal at a registered or licensed hazardous disposal facility. ■ Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point. Collection should take place on a regular basis and disposed of at the recognised landfill site at Vryheid. Prevent refuse from being dumped on or in the vicinity of the mine area. ■ Biodegradable refuse to be handled as indicated above.
Management of access roads	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ■ Maintain newly constructed access roads (if applicable) so as to minimise dust, erosion or undue surface damage. ■ Divert storm water around the access roads to prevent erosion. ■ Erosion of access road: Restrict vehicular movement to existing access routes to prevent crisscrossing of tracks through undisturbed areas.
Topsoil handling	<p>Site Manager to ensure compliance with the guidelines as stipulated in the EMP.</p> <p>Compliance to be monitored by the Environmental Control Officer.</p>	<ul style="list-style-type: none"> ■ Remove the first 300mm of topsoil in strips and store at the stockpile area. ■ Keep the temporary topsoil stockpiles free of weeds. ■ Place topsoil stockpiles on a levelled area and implement measures to safeguard the piles from being washed away in the event of heavy rains/storm water. ■ Topsoil heaps should not exceed

Monitoring Aspect	Role	Responsibility
		<p>2m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.</p> <ul style="list-style-type: none"> ■ Divert storm- and runoff water around the stockpile area and access roads to prevent erosion.

5.4 Committed time frames for monitoring and reporting.

Monitoring Aspect	Time Frames	Reporting
Dust Handling	Throughout Construction, Operational and Decommissioning Phase	<ul style="list-style-type: none"> ■ Daily compliance monitoring by site management. ■ Monthly compliance monitoring of site by site management. ■ Annually compliance monitoring of site by an Environmental Control Officer. ■ Biennially compliance monitoring of site by an Environmental Control Officer.
Noise Handling	Throughout Construction, Operational and Decommissioning Phase	<ul style="list-style-type: none"> ■ Daily compliance monitoring by site management. ■ Monthly compliance monitoring of site by site management. ■ Annually compliance monitoring of site by an Environmental Control Officer. ■ Biennially compliance monitoring of site by an Environmental Control Officer.
Management of weed/invaser plants	Throughout Operational and Decommissioning Phase	<ul style="list-style-type: none"> ■ Daily compliance monitoring by site management. ■ Monthly compliance monitoring of site by site management. ■ Annually compliance monitoring of site by an Environmental Control Officer. ■ Biennially compliance monitoring of site by an Environmental Control Officer.
Surface and Stormwater Handling	Throughout Operational and Decommissioning Phase	<ul style="list-style-type: none"> ■ Daily compliance monitoring by site management. ■ Monthly compliance monitoring of site by site management. ■ Annually compliance monitoring of site by an Environmental Control Officer.

Monitoring Aspect	Time Frames	Reporting
		<ul style="list-style-type: none"> ■ Biennially compliance monitoring of site by an Environmental Control Officer.
Management of health and safety risks	Throughout Construction, Operational and Decommissioning Phase	<ul style="list-style-type: none"> ■ Daily compliance monitoring by site management. ■ Monthly compliance monitoring of site by site management. ■ Annually compliance monitoring of site by an Environmental Control Officer. ■ Biennially compliance monitoring of site by an Environmental Control Officer.
Waste management	Throughout Construction, Operational and Decommissioning Phase	<ul style="list-style-type: none"> ■ Daily compliance monitoring by site management. ■ Monthly compliance monitoring of site by site management. ■ Annually compliance monitoring of site by an Environmental Control Officer. ■ Biennially compliance monitoring of site by an Environmental Control Officer.
Management of access roads	Throughout Construction, Operational and Decommissioning Phase	<ul style="list-style-type: none"> ■ Daily compliance monitoring by site management. ■ Monthly compliance monitoring of site by site management. ■ Annually compliance monitoring of site by an Environmental Control Officer. ■ Biennially compliance monitoring of site by an Environmental Control Officer.
Topsoil handling	Throughout Construction, Operational and Decommissioning Phase	<ul style="list-style-type: none"> ■ Daily compliance monitoring by site management. ■ Monthly compliance monitoring of site by site management. ■ Annually compliance monitoring of site by an Environmental Control Officer. ■ Biennially compliance monitoring of site by an Environmental Control Officer.

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

6.1 Rehabilitation plan

(Show the areas and aerial extent of the main prospecting activities, including the anticipated prospected area at the time of closure).

The requested rehabilitation plan is attached as Appendix C.

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

Upon cessation of the mining activities the area will be fully rehabilitated.

The sides of the excavation will be sloped with acceptable contours (40°) to prevent soil erosion or stepped by creating benches of not more than 3 meter. All roads used will be repaired or rehabilitated if not needed by the landowner. The applicant will comply with the minimum closure objectives as prescribed by DMR.

Compacted soil will be ripped and levelled in order to re-establish a growth medium. Stockpiles will be removed during the decommissioning phase, the area ripped and available topsoil that was removed will be spread over worked areas to enhance the establishment of vegetation. All waste materials will be removed from the site and dumped at recognised landfill sites. The prospecting area will be fenced to ensure controlled access to the area, and all infrastructures will be removed from the site.

6.3 Confirmation of consultation

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

The management of the potential impacts such as dust suppression, noise control and waste handling will be included in the notification letter send to the I&AP's and stakeholders informing them of the proposed mining activity. The I&AP's and stakeholders will be required to submit any additional comments. The applicant will obtain an agreement with the landowners for the duration of the prospecting activities prior to commencement. The public participation process is still underway and proof as well as description of consultation will be submitted as per extension granted on the 19th of March 2015.

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

7.1 Identification of interested and affected parties.

(Provide the information referred to in the guideline)

Please refer to letter attached, public participation is still in process and will only be submitted by the 19th of March 2015 as per extension granted.

7.2 The details of the engagement process.

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

The public participation process is still underway and proof as well as description of consultation will be submitted as per extension granted on the 19th of March 2015.

7.2.2 List of which parties identified in 7.1 above that were in fact consulted, and which were not consulted.

The public participation process is still underway and proof as well as the list of parties identified during consultation will be submitted as per extension granted on the 19th of March 2015.

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

The public participation process is still underway and proof as well as the views of parties regarding the existing cultural, socio-economic or biophysical environment will be submitted as per extension granted on the 19th of March 2015.

7.2.4 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.

The public participation process is still underway and proof as well as the views of on how their existing cultural, socio-economic or biophysical environment potentially will be

impacted on by the proposed prospecting will be submitted as per extension granted on the 19th of March 2015.

7.2.5 Other concerns raised by the aforesaid parties.

The public participation process is still underway and proof any other concerns raised during consultation will be submitted as per extension granted on the 19th of March 2015.

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

7.2.7 Information regarding objections received.

The public participation process is still underway and information regarding objections received during consultation will be submitted as per extension granted on the 19th of March 2015.

7.3 The manner in which the issues raised were addressed.

The public participation process is still underway and information regarding the manner in which the issues were addressed during consultation will be submitted as per extension granted on the 19th of March 2015.

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

8.1 Employee communication process

(Describe how the applicant intends to inform his or her employees of any environmental risk which may result from their work).

Once prospecting of the proposed area starts a copy of the Environmental Management Plan will be handed to the site manager during the site establishment meeting. Issues such as topsoil handling, site clearance, fire principals and hazardous waste handling will be discussed.

An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct with regard to the environment.





8.2 Description of solutions to risks

(Describe the manner in which the risk must be dealt with in order to avoid pollution or degradation of the environment).





The operations manager must ensure that he/she understands the EMP document and its requirement and commitments before any prospecting takes place. An Environmental Control Officer needs to check compliance of the prospecting activities to the management programmes described in the EMP.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.






Site Management:

-  Stay within boundaries of site – do not enter adjacent properties
-  Keep tools and material properly stored
-  Smoke only in designated areas
-  Use toilets provided – report full or leaking toilets






Water Management and Erosion:

-  Check that rainwater flows around work areas and are not contaminated
-  Report any erosion
-  Check that dirty water is kept from clean water
-  Do not swim in or drink from streams

Waste Management:

-  Take care of your own waste
-  Keep waste separate into labelled containers – report full bins
-  Place waste in containers and always close lid
-  Don't burn waste
-  Pick-up any litter laying around

Hazardous Waste Management (Petrol, Oil, Diesel, Grease)

-  Never mix general waste with hazardous waste
-  Use only sealed, non-leaking containers
-  Keep all containers closed and store only in approved areas
-  Always put drip trays under vehicles and machinery
-  Empty drip trays after rain

- Stop leaks and spills, if safe
 - Keep spilled liquids moving away
 - Immediately report the spill to the site manager/supervision
 - Locate spill kit/supplies and use to clean-up, if safe
 - Place spill clean-up wastes in proper containers
 - Label containers and move to approved storage area

■ **Discoveries:**

- Stop work immediately
- Notify site manager/supervisor
- Includes – Archaeological finds, Cultural artefacts, Contaminated water, Pipes, Containers, Tanks and drums, Any buried structures

■ **Air Quality:**

- Wear protection when working in very dusty areas
- Implement dust control measures:
 - Sweep paved roads
 - Water all roads and work areas
 - Minimize handling of material
 - Obey speed limit and cover trucks

■ **Driving and Noise:**

- Use only approved access roads
- Respect speed limits
- Only use turn-around areas – no crisscrossing through undisturbed areas
- Avoid unnecessary load noises
- Report or repair noisy vehicles

■ **Vegetation and Animal life:**

- Do not remove any plants or trees without approval of the site manager
- Do not collect fire wood
- Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site
- Report any animal trapped in the work area
- Do not set snares or raid nests for eggs or young

📌 **Fire Management:**

- 📌 Do not light any fires on site, unless contained in a drum at demarcated area
- 📌 Put cigarette butts in a rubbish bin
- 📌 Do not smoke near gas, paints or petrol
- 📌 Know the position of fire fighting equipment
- 📌 Report all fires
- 📌 Don't burn waste or vegetation

8.3 Environmental awareness training.

(Describe the general environmental awareness training and training on dealing with emergency situations and remediation measures for such emergencies).

The operations manager must ensure that he/she understands the EMP document and its requirement and commitment before any prospecting takes place.

In addition to the induction meeting to be held with the site employees to inform them of the basic steps towards environmental awareness, the operators of earth moving equipment should be informed of the following requirements:

- 📌 Prospecting within demarcated areas;
- 📌 No-go areas;
- 📌 Establishment of access roads;
- 📌 Handling of hazardous waste and their storage facilities;
- 📌 Handling of biodegradable and non-degradable waste;
- 📌 Temporary vehicle maintenance;
- 📌 Prospecting methods to be followed;
- 📌 Handling and storing of topsoil;
- 📌 Sloping of excavations;
- 📌 Speed control in order to reduce dust;
- 📌 Emergency procedure awareness.
- 📌 Labourers should be informed of the following during monthly "toolbox talks":

- Reporting of unusual observations to management (e.g. fossils, graves, etc.);
- Reporting of spills to management;
- Felling or damaging trees for firewood not allowed;
- Making fires not allowed;
- Hunting and killing of animals not allowed;
- Demarcated areas for prospecting;
- Establishing of access roads and erection of gates in fence lines;
- Status of gates of farm owner;
- Toilet facilities and hygiene measures;
- Handling of waste;
- Vehicle maintenance and vehicle maintenance yard;
- Emergency procedures awareness.

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.

(Provide a detailed explanation as to how the amount was derived)

The annual amount required to manage and rehabilitate the environment was estimated to be R 462772.33. Please see the explanation as to how this amount was derived at attached as Appendix E.

9.2 Confirmation that the stated amount correctly reflected in the Prospecting Work Programme as required.

The prospecting operation will be self-funded through bridging finance, that will be supplied by Delf Silica (Pty) Ltd

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

<p>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.</p>	
<p>Full Names and Surname</p>	<p>Collin Ramukhubathi</p>
<p>Identity Number</p>	<p>73062885363085</p>

-END-

APPENDIX A

MAP INDICATING SPATIAL LOCALITY OF ENVIRONMENTAL, CULTURAL/HERITAGE AND CURRENT LAND USE FEATURES



APPENDIX B

PLAN OF MAIN ACTIVITIES



APPENDIX C

REHABILITATION PLAN



APPENDIX D

PUBLIC PARTICIPATION PROCESS



APPENDIX E

FINANCIAL AND TECHNICAL COMPETENCE



APPENDIX F

PHOTOGRAPHS OF THE PROPOSED PROSPECTING AREA

