

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme

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

I hereby confirm that the requirement for the provision of the details and expertise of the EAP is already included in Part A as required.

- b) Description of the Aspects of the Activity** (Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required)

I hereby confirm that the requirement for the aspects of the activity is already included in Part A as required.

- c) Composite Map**

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

No sensitive areas have been identified on the application area.

In addition, one potentially sensitive site (apart from the already-mentioned water bodies in the area) was also identified near to the Vooruitzigt site. Just to the northeast of the site is a long stand of exotic gum trees *Eucalyptus* sp. These trees that may potentially provide roosting opportunities for protected migrating kestrel species during the summer months. (Faunal specialist study for the proposed Mystic Pearl 157 (Pty) Ltd diamond mine project on Portion 1 of Farm Vooruitzigt 81 & concurrent development of Otto's Kopje diamond mine, Kimberley district, Northern Cape Province, AUGUST 2017, Beryl Wilson, Zoologist & Conservation Biologist, McGregor Museum).



Figure 14: A sensitivity map for the proposed prospecting area. Proximity of the Eucalyptus spp. trees (yellow polygon) to the north-eastern side of the Vooruitzigt project site. (Map taken out of the ecological study by Beryl Wilson).

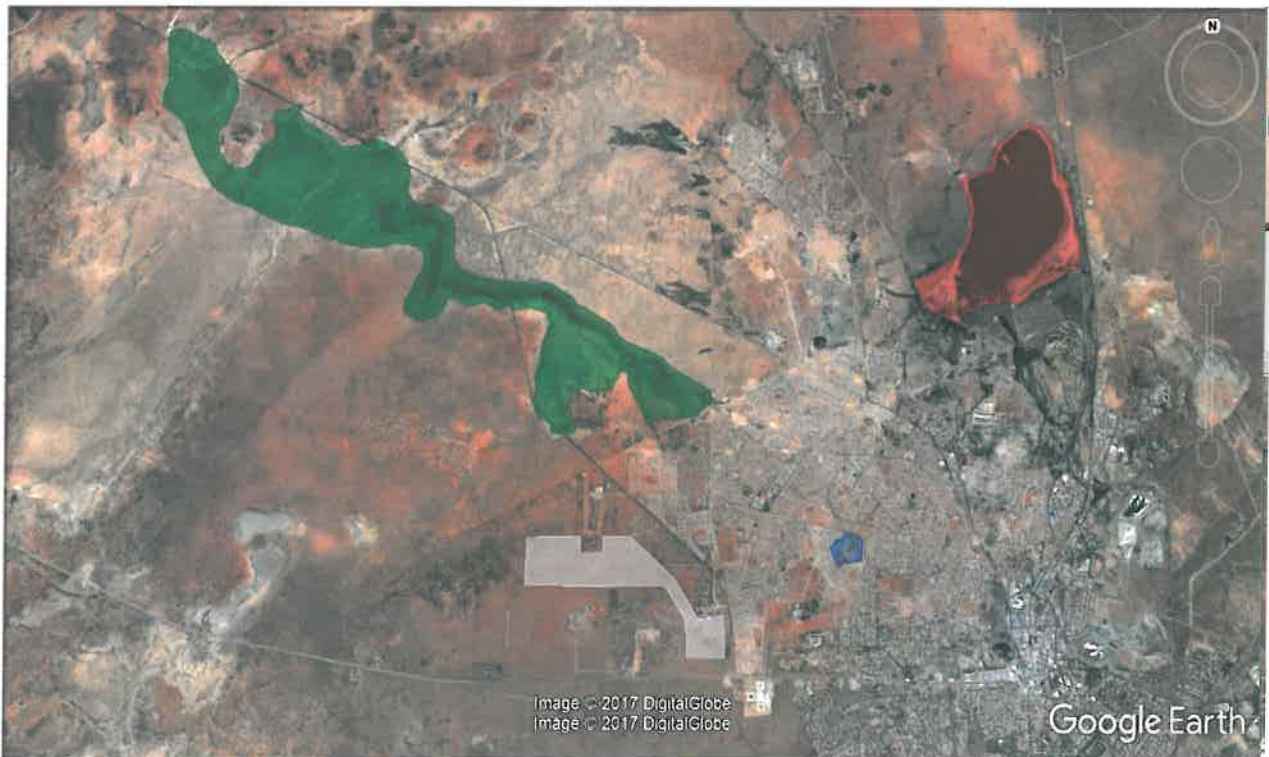


Figure 15. Google Earth satellite image of the Vooruitzigt project area (white polygon), historic Otto's Kopje mining site (blue shaded polygon), Platfontein Pan and wetlands (green shaded polygon) and Kamfers Dam and surrounding wetlands (red shaded polygon). (map taken out of ecological study by Beryl Wilson).

d) **Description of impact management objectives including management statements**

i) **Determination of closure objectives** (ensure that the closure objectives are informed by the type of environment described in 2.4 herein)

The main closure objectives of the planned prospecting operation are:

- To restore the site to its current land capability in a sustainable manner.
- To prevent the sterilization of any diamond reserves.
- To prevent the establishment of any permanent structures or features.
- To manage and limit any impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained when a closure certificate is issued.
- To establish a stable and self-sustainable vegetation cover.
- To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability.
- To limit and manage the visual impact of the prospecting activities.
- To safeguard the safety and health of humans and animals on the site.
- To close the prospecting operation efficiently, cost effectively and in accordance with Government Policy.

The key aim decommissioning and closure is to ensure that all the significant impacts are ameliorated. All rehabilitated areas should be left in a stable, self-sustainable state. Proof of this should be submitted at closure. Specific objectives include:

Rehabilitation of infrastructure areas

The objectives for the removal of infrastructure and the subsequent rehabilitation of the areas they occupied include:

- To ensure that infrastructure identified for removal is successfully demolished and removed.
- To ensure that infrastructure identified to remain after mine closure is maintained until the issue of a closure certificate.
- The removal, decommissioning and disposal of all prospecting infrastructure, will comply with all conditions contained in the MPRDA. To this end, decommissioning and rehabilitation of all infrastructure areas will follow the following principles:
 - The plant and associated disused infrastructure will be dismantled or demolished. Any building foundations will be removed and land exposed to the demolition and dismantling of infrastructure and all other disturbed land will be rehabilitated.
 - Rubble will be disposed of at a suitable site. The site will be selected in consultation with DENC.

- Any surface water management infrastructure will be maintained to ensure they are stable and functional.
- Just before closure, when disturbed land has been rehabilitated and erosion is controlled by vegetation cover, all disused surface water management facilities will be decommissioned.

Mine Residue Dump (Porrel Dam)

The objectives pertaining to the effective management and rehabilitation of the Mine Residue Dump include:

- To ensure that the Mine Residue Dump deposit are stable and that there is an acceptably low risk of failure of these deposits during the decommissioning phase and following mine closure; To establish self-sustainable vegetation cover on the Mine Residue dump so that the visual impact of the Mine Residue dump is improved and in order to prevent erosion.

Management principles pertaining to Mine Residue dump include:

- The Mine Residue dump will continuously be inspected by a suitable qualified professional engineer to ensure their stability. If they are unstable, the appropriate remedial measures will be implemented.
- Inspection and monitoring should continue until a suitable qualified profession engineer has confirmed the long-term stability of the Mine Residue dump.
- Any infrastructure or facilities that serve the Mine Residue dump will be maintained to ensure that they are both stable and functional.

Maintenance

The necessary agreements and arrangement will be made by the Mystic Pearl to ensure that all natural physical, chemical and biological processes for which a closure condition were specified are monitored until they reach a steady state or for three (3) years after closure or as long as deemed necessary at the time.

- Such processes include erosion of the Mine Residue dump, rehabilitated surfaces, surface water drainage, air quality, surface water quality, ground water quality, vegetative re-growth, weed encroachment.
- The closure plan will be reviewed yearly.
- Rehabilitation of the land will be maintained until a closure certificate is granted or until the land use is regarded as sustainable.
- All rehabilitated areas will be monitored and maintained until such time as required to enable the mine to apply for closure of these different areas.

Performance assessments

As per the MPRDA and associated Regulations, as well as NEMA and associated Regulations, this Environmental Management Programme will be continually assessed in terms of its appropriateness and adequacy. In order to achieve this, Mystic Pearl will undertake the following:

- Implement the necessary monitoring programmes, as discussed as part of this EMPR;
- Conduct performance assessments of this EMPR; and
- Compile and submit the afore-mentioned performance assessment reports to the DMR. The frequency of the performance assessments will be annually. An independent and competent person will undertake all performance assessments.

Decommissioning and closure objectives

The key aim decommissioning and closure is to ensure that all the significant impacts are ameliorated. All rehabilitated areas will be left in a stable, self-sustainable state. Proof of this will be submitted at closure. Specific objectives include:

- To identify potential post-closure land uses in consultation with the surrounding land owners and land users. This should be done during the operational phase of the mine;
- Rehabilitate disturbed land to a state suitable for its post-closure uses;
- Rehabilitate disturbed land and mine residue deposits to a state that facilitates compliance with applicable environmental quality objectives;
- Limit the impact on staff whose positions become redundant at the time of mine closure, as addressed in the SLP;
- Keep relevant authorities informed of the progress of the decommissioning phase;
- Submit monitoring data to the relevant authorities;
- Maintain required pollution control facilities and rehabilitated land until closure.

Negative economic impacts

The objective is to alleviate the negative socio-economic impacts that will result from mine closure. Management principles to achieve this include:

- Mystic Pearl will undertake a carefully planned step-wise decommissioning process.
- Closure planning will form an integral part of mine planning.
- Strategies for sustainable development have been and will continue to be developed by the project in collaboration with district and local authorities, local businesses and other interested parties. Early warning of impending closure will be given to IAPs.

- In conjunction with long-term closure planning, the mine will actively participate in regional and local planning to enhance the economic benefits of the project through development of alternative forms of income generation.
- Mystic Pearl will initiate and participate in regional planning exercises that will mitigate the impacts of closure of the mine, the local and regional economies and associated abandonment of community infrastructures surrounding the mine.
- The mine will fulfil the requirements for closure.

ii) The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity

There is won't be a need for this, as based on the specialist reports.

iii) Potential risk of Acid Mine Drainage (Indicate whether or not the mining can result in acid mine drainage)

No potential risk for Acid Mine Drainage exists.

iv) Steps taken to investigate, assess, and evaluate the impact of acid mine drainage

Not applicable, there is no potential risk of acid mine drainage.

v) Engineering or mine design solutions to be implemented to avoid or remedy acid mine drainage

Not applicable, there is no potential risk of acid mine drainage.

vi) Measures that will be put in place to remedy any residual or cumulative impact that may result from acid mine drainage

There is no residual or cumulative impact that may result from acid mine drainage.

vii) Volumes and rate of water use required for the mining, trenching or bulk sampling operation

The only activity relating to the cost of water in the prospecting operations relates to dust suppression in the prospecting area and on the roads when

hauling and transporting material to the processing plant, and doing continuous backfilling as part of the rehabilitation process.

It must however be noted that the water supply for the activities will be sourced from the Municipality. There will be an industrial rate applied for water used and the cost will be the pumping cost.

The processing plant (diamond pan) scrubbers and final recovery will have an impact on the cost of water used. The cost of water will have an upward trend over time as a result of the national capacity and demand situation. Water are however recycled as far as possible and redirected to the processing plants. It must however be noted that the water supply to the activities will be sourced from the Municipality.

viii) Has a water use licence been applied for?

A new WULA application has been prepared and are in the final stages to be submitted. The EIA EMP is a minimum requirement for the application and therefor the application will be submitted shortly after the EIA EMP had been submitted to the competent authority. The Proof of submission will be sent onto the competent authority as soon as it is received.

ix) Impact to be mitigated in their respective phases

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

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc....etc....etc.).	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure.	SIZE AND SCALE of disturbance (volumes, tonnages and hectares or m ²)	MITIGATION MEASURES (describe how each of the recommendations in here will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented when Required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Processing Plant 1 X 16 feet pan	Construction Commissioning Operational Decommissioning Closure	0.5 ha Steel, concrete, electric wires	Access control Maintenance of processing plant Dust control and monitoring Noise control and monitoring Drip trays Storm water run-off control Immediately clean hydrocarbon spills Rip disturbed areas to allow re-growth of vegetation cover		Removal of processing plant upon closure of prospecting right.

Ablution facilities Chemical toilets	Construction Commissioning Operational Decommissioning Closure	25m ² or 0.0025ha	Maintenance of container Plants Removal of container plants upon closure	Removal of container plant upon closure of the prospecting right.
Clean & Dirty water systems: Berms	Construction Commissioning Operational Decommissioning Closure	This area also includes the re-fuel and lubrication station, wash bay and office area.	Maintenance of berms and trenches Oil traps used in relevant areas. Drip trays used. Immediately clean hydrocarbon spill.	Upon cessation of the individual activity (continuous rehabilitation)
Fuel Storage facility (Diesel tanks)	Construction Commissioning Operational Decommissioning Closure	250m ² Concrete, bricks, and steel	Maintenance of diesel tanks and bund walls. Oil traps Drip tray at re-fuelling point Immediately clean hydrocarbon spill.	Removal of diesel tanks upon closure of Prospecting Right.
Prospecting Area	Commissioning Operational Decommissioning Closure	Provision is made for a maximum footprint of 40 hectares of alluvial diamond bulk sampling sites and pits.	No dumping of materials prior to approval by exploration geologist; Proper planning of bulk sample sites and pits Access control Dust control and monitoring Noise control and monitoring Continuous rehabilitation Stormwater run-off control Immediately clean hydrocarbon spill	Upon cessation of the individual activity (continuous rehabilitation)

Salvage yard and (Storage laydown area)	Construction Commissioning Operational Decommissioning Closure	1000m ² or 0.1 ha No construction material, area to be levelled with a grader and fenced with a gate and access control	Drip trays Dump control and monitoring Erosion control Access control Maintenance of fence Storm water run-off control Immediately clean hydrocarbon spill	Removal of fence around salvage yard and ripping of salvage yard area upon closure of the prospecting right.
Waste disposal site (domestic and industrial waste):	Construction Commissioning Operational Decommissioning Closure	15m x 30m = 450m ²	Storage of Waste within receptacles Storage of hazardous waste on concrete floor with bund wall Removal of waste on regular intervals	Removal of waste receptacles, breaking and removal of rubble from the concrete floors and bund walls upon closure of prospecting right.
Roads (both access and haulage road on the mine site):	Construction Commissioning Operational Decommissioning Closure	Additional mine haul road = 5 000m ²	Maintenance of roads Dust control and monitoring Noise control and monitoring Speed limits Storm water run-off control Erosion control Immediately clean hydrocarbon spills Rip disturbed areas to allow re-growth of vegetation cover	Upon cessation of the individual activity (continuous rehabilitation) Ripping of roads upon closure of the prospecting right.
Workshop and Wash bay	Construction Commissioning Operational	300m ² Concrete and Steel	Concrete floor with oil/water separator Storm water run-off	Removal of wash bay equipment, breaking and removal of rubble from the

	Decommissioning Closure		control Immediately clean hydrocarbon spills	concrete floors and bund walls upon closure of prospecting right
Water distribution Pipeline	Construction Commissioning Operational Decommissioning Closure	HDPE Pipes	Maintain water pipeline and structures	Removal of pipeline upon closure of the prospecting right.
Water tanks:	Construction Commissioning Operational Decommissioning Closure	3m X 3m = 9m ²	Maintain water tanks and structures	Removal of water tank and steel structure upon closure of the prospecting right.

e) Impact Management Outcomes

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

ACTIVITY Whether listed or not listed.	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater, contamination, air pollution)....	ASPECTS AFFECTED	PHASE In which impact is anticipated (e.g. construction, commissioning, operational, decommissioning, closure, post closure)	MITIGATION TYPE (modify, remedy, control or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Processing Plant 1 X 16 feet pan	Dust Noise Removal and disturbance of vegetation cover and natural habitat of fauna Soil contamination Surface disturbance	Air Quality Fauna Flora Noise Soil Surface water Safety	Construction Commissioning Operational Decommissioning Closure	Access control Maintenance of processing plant Dust control and monitoring Noise and vibration control and monitoring Drip trays Storm water run-off control Immediately clean hydrocarbon spills Rip disturbed areas to allow re-growth of vegetation cover Noise control Well maintained equipment Selecting equipment with lower sound power levels; Installing silencers for fans; Installing suitable mufflers on engine exhausts and compressor components; Re-locate noise sources to areas which are less noise sensitive, to take advantage of	Safety ensured. Dust levels minimized Minimize potential for hydrocarbon spills to infiltrate into groundwater Noise levels minimized Rehabilitation standards and closure objectives to be met. Erosion potential minimized.

				<p>distance and natural shielding; Develop a mechanism to record and respond to complaints.</p> <p>Maintain a buffer zone around the non-perennial streams. Note that these buffer zones are essential to ensure healthy functioning and maintenance of wetland. Minimizing – unavoidable impacts shall be minimized by taking appropriate and practicable measures such as transplanting important plant specimens, confining works in specific area or season, restoration (and possibly enhancement) of disturbed areas, etc. Effluents and waste should be recycling and re-use as far as possible.</p>	
<p>Ablution facilities Chemical Toilets</p>	<p>Soil contamination Possible Groundwater contamination</p>	<p>Soil Groundwater</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	<p>Maintenance of sewage facilities on a regular basis. Removal of container on closure</p>	<p>Minimize the potential for a chemical spill on soil, which could infiltrate to groundwater.</p>
<p>Clean & Dirty water systems:</p>	<p>Surface disturbance Groundwater Contamination Soil contamination</p>	<p>Soil Groundwater Surface Water</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	<p>The re-vegetation of disturbed areas is important to prevent erosion and improve the rate of infiltration. Erosion channels that may develop before</p>	<p>Safety ensured. Minimize potential for hydrocarbon spills to infiltrate into groundwater. Rehabilitation standards and closure objectives to be met.</p>

	<p>Surface water contamination</p>			<p>vegetation has established should be rehabilitated by filling, levelling and re-vegetation where topsoil is washed away.</p> <p>Monitoring and maintenance of oil traps in relevant areas. Drip trays used. Immediately clean hydrocarbon spill.</p> <p>Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion.</p> <p>Maintain a buffer zone around the non-perennial streams. Note that these buffer zones are essential to ensure healthy functioning and maintenance of wetland. Minimizing – unavoidable impacts shall be minimized by taking appropriate and practicable measures such as transplanting important plant specimens, confining works in specific area or season, restoration (and possibly enhancement) of disturbed areas, etc. Effluents and waste should</p>	
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<p>Fuel Storage facility (Diesel tanks)</p>	<p>Groundwater contamination Removal and disturbance of vegetation cover and natural habitat of fauna Soil contamination Surface disturbance</p>	<p>Soil Groundwater Surface water</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	<p>be recycling and re-use as far as possible. Maintenance of Diesel tanks and bund walls. Oil traps Drip tray at re-fuelling point. Refuelling must take place in well demarcated areas and over suitable drip trays to prevent soil pollution. Spill kits to clean up accidental spills from earthmoving machinery must be well-marked and available on site. Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures. All facilities where dangerous materials are stored must be contained in a bund wall. Vehicles and machinery should be regularly serviced and maintained.</p>	<p>Minimize potential for hydrocarbon spills to infiltrate into groundwater. Rehabilitation standards and closure objectives to be met.</p>
<p>Prospecting Area</p>	<p>Dust Noise Removal and disturbance of vegetation cover and natural habitat of fauna</p>	<p>Air quality Fauna Flora Groundwater Noise and vibration Soil Surface Water Topography Safety</p>	<p>Commissioning Operational Decommissioning Closure</p>	<p>Access control Dust control and monitoring Noise and vibration control and monitoring Continuous rehabilitation Storm water run-off control Immediately clean hydrocarbon spill Drip trays Dump stability control and</p>	<p>Safety ensured. Dust levels minimized Minimize potential for hydrocarbon spills to infiltrate into groundwater Noise levels minimized Rehabilitation standards and closure objectives to be met. Erosion potential minimized.</p>

	<p>Soil contamination</p> <p>Surface disturbance</p> <p>Surface water contamination</p>		<p>monitoring</p> <p>Erosion control</p> <p>Noise control</p> <p>Well maintained equipment</p> <p>Selecting equipment with lower sound power levels;</p> <p>Installing silencers for fans;</p> <p>Installing suitable mufflers on engine exhausts and compressor components;</p> <p>Develop a mechanism to record and respond to complaints.</p> <p>Maintain a buffer zone around the non-perennial streams. Note that these buffer zones are essential to ensure healthy functioning and maintenance of wetland.</p> <p>Minimizing – unavoidable impacts shall be minimized by taking appropriate and practicable measures such as transplanting important plant specimens, confining works in specific area or season, restoration (and possibly enhancement) of disturbed areas, etc.</p> <p>Effluents and waste should be recycling and re-use as far as possible.</p> <p>Prospecting activities must be planned, where possible in order to encourage (faunal</p>
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			<p>dispersal) and should minimise dissection or fragmentation of any important faunal habitat type.</p> <p>The extent of the prospecting area should be demarcated on site layout plans (preferably on disturbed areas or those identified with low conservation importance).</p> <p>No construction personnel or vehicles may leave the demarcated area except those authorized to do so.</p> <p>Those areas surrounding the mine site that are not part of the demarcated development area should be considered as a no go zone for employees, machinery or even visitors.</p> <p>Appointment of a full-time ECO must render guidance to the staff and contractors with respect to suitable areas for all related disturbance, and must ensure that all contractors and workers undergo Environmental Induction prior to commencing with work on site.</p> <p>All those working on site must undergo environmental induction with regards to</p>	
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				<p>fauna and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. All those working on site must be educated about the conservation importance of the fauna and flora occurring on site. The environmental induction should occur in the appropriate languages for the workers who may require translation. Reptiles and amphibians that are exposed during the clearing operations should be captured for later release or translocation by a qualified expert. Employ measures that ensure adherence to the speed limit. Careful consideration is required when planning the placement for stockpiling topsoil and the creation of access routes in order to avoid the destruction of habitats and minimise the overall prospecting footprint. The Footprint areas of the prospecting activities must</p>
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<p>Salvage yard and (Storage laydown area)</p>	<p>Groundwater contamination Removal and disturbance of vegetation cover and natural habitat of fauna Soil contamination</p>	<p>Fauna Flora Groundwater Soil Surface Water</p>	<p>Construction Commissioning Operational Decommissioning Closure</p>	<p>Access Control Maintenance of fence Storm water run-off control Immediately clean hydrocarbon spill</p>	<p>Minimize potential for hydrocarbon spills to infiltrate into groundwater Rehabilitation standards and closure objectives to be met. Erosion potential minimized.</p>
<p>be scanned for Red Listed and protected plant species prior to Prospecting; Snares & traps removed and destroyed; and Maintenance of firebreaks. It will be necessary to divert storm water around dump areas by construction of a temporary gravel cut-off berm that will prevent surface run-off into the drainage lines.</p>		<p>The re-vegetation of disturbed areas is important to prevent erosion and improve the rate of infiltration. Erosion channels that may develop before vegetation has established should be rehabilitated by filling, levelling and re-vegetation where topsoil is washed away.</p>		<p></p>	

<p>Product area</p>	<p>Stockpile</p>	<p>Surface disturbance Surface water contamination</p>	<p>Air Quality Fauna Flora Noise Soil Surface Water</p>	<p>Commissioning Operational Decommissioning Closure</p>	<p>Dust control and monitoring Noise control and monitoring Drip trays Storm water run-off control Immediately clean hydrocarbon spills Rip disturbed areas to allow re-growth of vegetation cover Noise control Well maintained equipment Selecting equipment with lower sound power levels; Installing silencers for fans; Installing suitable mufflers on engine exhausts and compressor components; Re-locate noise sources to areas which are less noise sensitive, to take advantage of distance and natural shielding; Taking advantage during the design stage of natural topography as a noise buffer; Develop a mechanism to record and respond to complaints.</p>	<p>Dust levels minimized Minimize potential for hydrocarbon spills to infiltrate into groundwater Noise levels minimized Rehabilitation standards and closure objectives to be met. Erosion potential minimized.</p>
<p>Waste disposal site (domestic and</p>	<p>Waste disposal site and</p>	<p>Groundwater contamination</p>	<p>Groundwater Soil Surface water</p>	<p>Construction Commissioning Operational</p>	<p>Storage of Waste within receptacles Storage of hazardous waste</p>	<p>Minimize potential for hydrocarbon spills to infiltrate into groundwater</p>

<p>industrial waste);</p>	<p>Contamination of soil</p> <p>Surface water contamination</p>		<p>Decommissioning Closure</p>	<p>on concrete floor with bund wall</p> <p>Removal of waste on regular intervals</p>	<p>Noise levels minimized</p> <p>Rehabilitation standards and closure objectives to be met.</p>
<p>Roads (both access and haulage road on the mine site);</p> <p>Dust</p> <p>Noise</p> <p>Removal and disturbance of vegetation cover and natural habitat of fauna</p> <p>Soil contamination</p> <p>Surface disturbance</p>	<p>Air quality</p> <p>Fauna</p> <p>Flora</p> <p>Noise and vibration</p> <p>Soil</p> <p>Surface water</p>		<p>Construction</p> <p>Commissioning</p> <p>Operational</p> <p>Decommissioning</p> <p>Closure</p>	<p>Maintenance of roads</p> <p>Dust control and monitoring</p> <p>Noise control and monitoring</p> <p>Speed limits</p> <p>Storm water run-off control</p> <p>Erosion control</p> <p>Immediately clean hydrocarbon spills</p> <p>Rip disturbed areas to allow re-growth of vegetation cover</p> <p>Noise control</p> <p>Well maintained equipment</p> <p>Selecting equipment with lower sound power levels;</p> <p>Installing silencers for fans;</p> <p>Installing suitable mufflers on engine exhausts and compressor components;</p> <p>Re-locate noise sources to areas which are less noise sensitive, to take advantage of distance and natural shielding;</p> <p>Taking advantage during the design stage of natural topography as a noise buffer;</p> <p>Develop a mechanism to record and respond to complaints.</p>	<p>Dust levels minimized</p> <p>Minimize potential for hydrocarbon spills to infiltrate into groundwater</p> <p>Noise levels minimized</p> <p>Rehabilitation standards and closure objectives met.</p> <p>Erosion potential minimized.</p>

Workshop and Wash bay	Removal and disturbance of vegetation cover and natural habitat of fauna Soil contamination	Groundwater Soil Surface water	Construction Commissioning Operational Decommissioning Closure	Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion. Concrete floor with oil/water separator Storm water run-off control Immediately clean hydrocarbon spills	Minimize potential for hydrocarbon spills to infiltrate into groundwater Noise levels minimized Rehabilitation standards and closure objectives to be met. Erosion potential minimized.
Water Pipeline	Surface disturbance	Fauna Flora Surface Water	Construction Commissioning Operational Decommissioning Closure	Monitor pipeline for water leaks Maintenance of pipeline Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion. Maintain water tanks and structures	Rehabilitation standards and closure objectives to be met. Erosion potential minimized.
Water tanks:	Surface disturbance	Fauna Flora Surface Water	Construction Commissioning Operational Decommissioning Closure		Safety ensured. Rehabilitation standards and closure objectives to be met.

f) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraph (c)

ACTIVITY Whether listed or not listed.	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater, contamination, air pollution)...	MITIGATION TYPE (modify, remedy, control or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:- Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Processing Plant: 1 X 16 feet pan	Dust Noise Removal and disturbance of vegetation cover and natural habitat of fauna Soil contamination Surface disturbance	Access control Maintenance of processing plant Dust control and monitoring Noise and vibration control and monitoring Drip trays Storm water run-off control Immediately clean hydrocarbon spills Rip disturbed areas to allow re-growth of vegetation cover Noise control Well maintained equipment Selecting equipment with lower sound power levels; Installing silencers for fans; Installing suitable mufflers on engine exhausts and compressor components; Re-locate noise sources to areas	Removal of processing plant upon closure of prospecting right.	The following must be placed at the site and is applicable to all activities: <ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's • SOP's Management and staff must be trained to understand the contents of these documents and to adhere thereto. <ul style="list-style-type: none"> • Environmental Awareness training must be provided to employees.

<p>Ablution Facilities Chemical Toilets.</p>	<p>Soil contamination Groundwater contamination</p>	<p>which are less noise sensitive, to take advantage of distance and natural shielding; Taking advantage during the design stage of natural topography as a noise buffer; Develop a mechanism to record and respond to complaints. Maintain a buffer zone around the non-perennial streams. Note that these buffer zones are essential to ensure healthy functioning and maintenance of wetland. Minimizing – unavoidable impacts shall be minimized by taking appropriate and practicable measures such as transplanting important plant specimens, confining works in specific area or season, restoration (and possibly enhancement) of disturbed areas, etc. Effluents and waste should be recycling and re-use as far as possible.</p>	<p>Removal of container plant upon closure of the prospecting right.</p>	<ul style="list-style-type: none"> • The operation must have a rehabilitation and closure plan. • Management and staff must be trained to understand the contents of these documents, and to adhere thereto. <p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p>
		<p>Maintenance of sewage facilities on a regular basis. Removal of container plants on closure</p>		<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's • SOP's

<p>Clean & Dirty water systems: Berms</p>	<p>Surface disturbance Groundwater Contamination Soil contamination Surface water contamination</p>	<p>It will be necessary to divert storm water around dump areas by construction of a temporary gravel cut-off berm that will prevent surface run-off into the prospecting area. Bulk sampling sites and pits, where and when applicable, should be rehabilitated concurrently as prospecting progresses. The re-vegetation of disturbed areas is important to prevent erosion and improve the rate of infiltration. Erosion channels that may develop</p>	<p>Upon cessation of the individual activity (continuous rehabilitation) Levelling of storm water berms upon closure of Prospecting Right</p>	<p>Management and staff must be trained to understand the contents of these documents and to adhere thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness training must be provided to employees. • The operation must have a rehabilitation and closure plan. • Management and staff must be trained to understand the contents of these documents, and to adhere thereto. <p>Annual Performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p> <p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's • SOP's <p>Management and staff must be trained to understand the contents of these documents and to adhere</p>
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		<p>before vegetation has established should be rehabilitated by filling, levelling and re-vegetation where topsoil is washed away.</p> <p>Maintenance of trenches Monitoring and maintenance of oil traps in relevant areas. Drip trays used. Immediately clean hydrocarbon spill.</p> <p>Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion.</p> <p>Maintain a buffer zone around the non-perennial streams. Note that these buffer zones are essential to ensure healthy functioning and maintenance of wetland.</p> <p>Minimizing – unavoidable impacts shall be minimized by taking appropriate and practicable measures such as transplanting important plant specimens, confining works in specific area or season, restoration (and possibly enhancement) of disturbed areas, etc.</p> <p>Effluents and waste should be recycling and re-use as far as possible.</p>		<p>thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness training must be provided to employees. • The operation must have a rehabilitation and closure plan. • Management and staff must be trained to understand the contents of these documents, and to adhere thereto. <p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p>
Fuel Storage facility	Groundwater	Maintenance of Diesel tanks and	Removal of diesel tanks upon	The following must be placed at the

<p>(Diesel tanks)</p>	<p>contamination</p> <p>Removal and disturbance of vegetation cover and natural habitat of fauna</p> <p>Soil contamination</p> <p>Surface disturbance</p>	<p>bund walls.</p> <p>Oil traps</p> <p>Drip tray at re-fuelling point.</p> <p>Refuelling must take place in well demarcated areas and over suitable drip trays to prevent soil pollution.</p> <p>Spill kits to clean up accidental spills from earthmoving machinery must be well-marked and available on site.</p> <p>Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures.</p> <p>All facilities where dangerous materials are stored must be contained in a bund wall.</p> <p>Vehicles and machinery should be regularly serviced and maintained.</p>	<p>closure of Prospecting Right.</p>	<p>site and is applicable to all activities:</p> <ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's • SOP's <p>Management and staff must be trained to understand the contents of these documents and to adhere thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness training must be provided to employees. • The operation must have a rehabilitation and closure plan. • Management and staff must be trained to understand the contents of these documents, and to adhere thereto. <p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p> <p>The following must be placed at the site and is applicable to all activities:</p>
<p>Prospecting Area</p>	<p>Dust</p> <p>Noise</p>	<p>Access control</p> <p>Dust control and monitoring</p> <p>Noise and vibration control and</p>	<p>Upon cessation of the individual activity (continuous rehabilitation)</p>	<p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p> <p>The following must be placed at the site and is applicable to all activities:</p>

	<p>Removal and disturbance of vegetation cover and natural habitat of fauna</p> <p>Soil contamination</p> <p>Surface disturbance</p> <p>Surface water contamination</p>	<p>monitoring</p> <p>Continuous rehabilitation</p> <p>Storm water run-off control</p> <p>Immediately clean hydrocarbon spill</p> <p>Drip trays</p> <p>Dump stability control and monitoring</p> <p>Erosion control</p> <p>Noise control</p> <p>Well maintained equipment</p> <p>Selecting equipment with lower sound power levels;</p> <p>Installing silencers for fans;</p> <p>Installing suitable mufflers on engine exhausts and compressor components;</p> <p>Re-locate noise sources to areas which are less noise sensitive, to take advantage of distance and natural shielding;</p> <p>Taking advantage during the design stage of natural topography as a noise buffer;</p> <p>Develop a mechanism to record and respond to complaints.</p> <p>Maintain a buffer zone around the non-perennial streams. Note that these buffer zones are essential to ensure healthy functioning and maintenance of wetland.</p> <p>Minimizing – unavoidable impacts shall be minimized by taking appropriate and practicable measures such as transplanting important plant specimens, confining works in specific area or</p>	<ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's • SOP's <p>Management and staff must be trained to understand the contents of these documents and to adhere thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness training must be provided to employees. • The operation must have a rehabilitation and closure plan. • Management and staff must be trained to understand the contents of these documents, and to adhere thereto. <p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p>
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		<p>season, restoration (and possibly enhancement) of disturbed areas, etc.</p> <p>Effluents and waste should be recycling and re-use as far as possible.</p> <p>Prospecting activities must be planned, where possible in order to encourage (faunal dispersal) and should minimise dissection or fragmentation of any important faunal habitat type.</p> <p>The extent of the Prospecting area should be demarcated on site layout plans (preferably on disturbed areas or those identified with low conservation importance). No construction personnel or vehicles may leave the demarcated area except those authorized to do so. Those areas surrounding the mine site that are not part of the demarcated development area should be considered as a no go zone for employees, machinery or even visitors.</p> <p>Appointment of a full-time ECO must render guidance to the staff and contractors with respect to suitable areas for all related disturbance, and must ensure that all contractors and workers undergo Environmental Induction prior to commencing with work on site.</p> <p>All those working on site must</p>		
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		<p>undergo environmental induction with regards to fauna and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition.</p> <p>All those working on site must be educated about the conservation importance of the fauna and flora occurring on site.</p> <p>The environmental induction should occur in the appropriate languages for the workers who may require translation.</p> <p>Reptiles and amphibians that are exposed during the clearing operations should be captured for later release or translocation by a qualified expert.</p> <p>Employ measures that ensure adherence to the speed limit.</p> <p>Careful consideration is required when planning the placement for stockpiling topsoil and the creation of access routes in order to avoid the destruction of habitats and minimise the overall prospecting footprint.</p> <p>The Footprint areas of the prospecting activities must be scanned for Red Listed and protected plant species prior to prospecting;</p> <p>Snares & traps removed and destroyed; and</p> <p>Maintenance of firebreaks.</p>		
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<p>Salvage yard and (Storage laydown area)</p>	<p>Surface Water contamination Groundwater contamination Removal and disturbance of vegetation cover and natural habitat of fauna Soil contamination Surface disturbance Surface water contamination</p>	<p>Bulk sampling sites and pits, where and when applicable, should be rehabilitated concurrently as prospecting progresses. The re-vegetation of disturbed areas is important to prevent erosion and improve the rate of infiltration. Erosion channels that may develop before vegetation has established should be rehabilitated by filling, levelling and re-vegetation where topsoil is washed away.</p>	<p>Access Control Maintenance of fence Storm water run-off control Immediately clean hydrocarbon spill</p>	<p>Removal of fence around salvage yard and ripping of salvage yard area upon closure of the prospecting right.</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's • SOP's <p>Management and staff must be trained to understand the contents of these documents and to adhere thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness training must be provided to employees. • The operation must have a rehabilitation and closure plan. • Management and staff must be trained to understand the
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				<p>contents of these documents, and to adhere thereto.</p> <p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p>
<p>Product area</p> <p>Stockpile</p>	<p>Surface Water contamination</p> <p>Removal and disturbance of vegetation cover and natural habitat of fauna</p> <p>Soil contamination</p> <p>Surface disturbance</p> <p>Surface water contamination</p>	<p>Dust control and monitoring</p> <p>Noise control and monitoring</p> <p>Drip trays</p> <p>Storm water run-off control</p> <p>Immediately clean hydrocarbon spills</p> <p>Rip disturbed areas to allow re-growth of vegetation cover</p> <p>Noise control</p> <p>Well maintained equipment</p> <p>Selecting equipment with lower sound power levels;</p> <p>Installing silencers for fans;</p> <p>Installing suitable mufflers on engine exhausts and compressor components;</p> <p>Re-locate noise sources to areas which are less noise sensitive, to take advantage of distance and natural shielding;</p> <p>Taking advantage during the design stage of natural topography as a noise buffer;</p> <p>Develop a mechanism to record and respond to complaints.</p>	<p>Dust levels minimized</p> <p>Minimize potential for hydrocarbon spills to infiltrate into groundwater</p> <p>Noise levels minimized</p> <p>Rehabilitation standards and closure objectives to be met.</p> <p>Erosion potential minimized.</p>	
<p>Waste disposal site (domestic and industrial waste):</p>	<p>Groundwater contamination</p>	<p>Storage of Waste within receptacles</p> <p>Storm water control</p>	<p>Removal of waste receptacles, breaking and removal of rubble from the concrete floors and bund</p>	<p>The following must be placed at the site and is applicable to all activities:</p>

	<p>Surface Water contamination</p> <p>Contamination of soil</p> <p>Surface water contamination</p>	<p>Ground water monitoring</p> <p>Storage of hazardous waste on concrete floor with bund wall</p> <p>Removal of waste on regular intervals</p>	<p>walls upon closure of prospecting right.</p>	<ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's • SOP's <p>Management and staff must be trained to understand the contents of these documents and to adhere thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness training must be provided to employees. • The operation must have a rehabilitation and closure plan. • Management and staff must be trained to understand the contents of these documents, and to adhere thereto. <p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p>
<p>Roads (both access and haulage road on the mine site):</p>	<p>Dust</p> <p>Surface Water contamination</p> <p>Groundwater contamination</p>	<p>Maintenance of roads</p> <p>Dust control and monitoring</p> <p>Noise control and monitoring</p> <p>Speed limits</p> <p>Storm water run-off control</p> <p>Erosion control</p> <p>Immediately clean hydrocarbon spills</p>	<p>Upon cessation of the individual activity (continuous rehabilitation)</p> <p>Ripping of roads upon closure of the Prospecting Right.</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's

<p>Workshop and Wash bay</p>	<p>Surface Water contamination Removal and disturbance of vegetation cover and natural habitat of fauna Soil contamination</p>	<p>Rip disturbed areas to allow re-growth of vegetation cover Noise control Well maintained equipment Selecting equipment with lower sound power levels; Installing silencers for fans; Installing suitable mufflers on engine exhausts and compressor components; Re-locate noise sources to areas which are less noise sensitive, to take advantage of distance and natural shielding; Taking advantage during the design stage of natural topography as a noise buffer; Develop a mechanism to record and respond to complaints. Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion.</p>	<p>Removal of wash bay equipment, breaking and removal of rubble from the concrete floors and bund walls upon closure of prospecting right</p>	<ul style="list-style-type: none"> • SOP's <p>Management and staff must be trained to understand the contents of these documents and to adhere thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness training must be provided to employees. • The operation must have a rehabilitation and closure plan. • Management and staff must be trained to understand the contents of these documents, and to adhere thereto. <p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p>
<p>Workshop and Wash bay</p>	<p>Surface Water contamination Removal and disturbance of vegetation cover and natural habitat of fauna Soil contamination</p>	<p>Concrete floor with oil/water separator Storm water run-off control Immediately clean hydrocarbon spills</p>	<p>Removal of wash bay equipment, breaking and removal of rubble from the concrete floors and bund walls upon closure of prospecting right</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's • SOP's

			<p>Management and staff must be trained to understand the contents of these documents and to adhere thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness training must be provided to employees. • The operation must have a rehabilitation and closure plan. • Management and staff must be trained to understand the contents of these documents, and to adhere thereto. <p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p>
<p>Water distribution Pipeline</p>	<p>Surface disturbance</p>	<p>Monitor pipeline for water leaks Maintenance of pipeline Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion.</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's • SOP's <p>Management and staff must be trained to understand the contents of these documents and to adhere</p>
			<p>Removal of pipeline upon closure of the Prospecting Right.</p>

				<p>thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness training must be provided to employees. • The operation must have a rehabilitation and closure plan. • Management and staff must be trained to understand the contents of these documents, and to adhere thereto. <p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p>
<p>Water tanks:</p>	<p>Surface disturbance</p>	<p>Maintain water tanks and structures</p>	<p>Removal of water tank and steel structure upon closure of the prospecting right.</p>	<p>The following must be placed at the site and is applicable to all activities:</p> <ul style="list-style-type: none"> • Relevant Legislation; • Acts; • Regulations • COP's • SOP's <p>Management and staff must be trained to understand the contents of these documents and to adhere thereto.</p> <ul style="list-style-type: none"> • Environmental Awareness training must be provided to

					<p>employees.</p> <ul style="list-style-type: none">• The operation must have a rehabilitation and closure plan.• Management and staff must be trained to understand the contents of these documents, and to adhere thereto. <p>Annual performance Assessment Reports and quantum Calculations must be done to ensure that the operation adheres to the contents of the EIA and EMP documents.</p>
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i) Financial Provision**(1) Determination of the amount of Financial Provision**

- (a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under Regulation 22(2)(d) as described in 2.4 herein.**

Closure:

The main closure objective of this mine is to rehabilitate the prospected areas in such a way to ensure that the rehabilitated topographical landscape would blend in with the surrounding landscape, would not pose a safety hazard for human and animal, but at the same time allow a certain alternative land use. Establish a self-sustaining and stable vegetation cover in order to mitigate the visual impact, to control erosion and to create some habitat for animals. The rehabilitated environment also needs to be aesthetically acceptable according to the principle of BPEO.

Mystic Pearl will ensure that the mine site is:

- Neither a danger to public health and safety nor to animal health and safety.
- Not a source of any pollution.
- Stable (ecological and geophysical).
- Rehabilitated to the state that is suitable for the predetermined and agreed land use.
- Compatible with the surrounding biophysical environment.
- A sustainable environment.
- Aesthetically acceptable.
- Not an economic, social or environmental liability to the local community or the state now or in the future.

Mystic Pearl will ensure that the physical and chemical stability of the rehabilitated prospecting site will be such that risk to the environment is not increased by naturally occurring forces to the extent that such increased risk cannot be contended with by the installed measures.

Mystic Pearl will subscribe to the optimal exploitation and utilization of South Africa's mineral resources (diamonds).

Mystic Pearl will ensure that the prospecting site is closed efficiently and cost effectively.

Mystic Pearl will ensure that the operation is not abandoned but closed in accordance with the relevant requirements.

Mystic Pearl will ensure that the interest of all interested and affected parties will be considered.

Mystic Pearl will ensure that the all-relevant legislation regarding mine closure will be adhered to, and all relevant application procedures followed.

The management of environmental impacts:

With regard to the extension, the mitigation of all environmental impacts on all applicable aspects uses BPEO (Best practical environmental option) principles.

- Optimal utilization and maintenance of existing mine facilities in a well-planned manner.
- To take care that no new land surface, habitats of vegetation and animals are destroyed, disturbed or alienated unnecessarily.
- To contain and prevent any pollution (physical and chemical) from the prospecting operation within structures, facilities provided therefore.
- To ensure an effective surface run-off control system in order to deal with the separation of clean and dirty water environment.
- The sustainable and responsible utilization (re-use) of all water resources and the prevention of pollution thereof.
- The sustainable rehabilitation of the prospecting site (bulk sampling sites and pits, topsoil- & overburden stockpiles, rest of terrain) in order to address all environmental impacts as far as practical.

Historical and Cultural aspects:

Findings of the HIA survey

A western portion of the property bears scars of excavations of varying depths which are ongoing in some areas. From an archaeological standpoint, the area is considered as disturbed and no archaeological provenances pre-dating the city can be expected to have survived the impact of these activities. Furthermore there are no elements of heritage value relating to the development of the city.

With respect to the eastern portion of the property close to the intersection of the N8 and R31, and located opposite to a section of Galeshewe Township, no archaeological relics were found. The only sign of human activity is degraded vegetation and pedestrian pathways

to the farms and dumping site located to the west and northwest of the property.

Two mounds (Sites P9 & P10) which form the eastern ends of parallel ridges appear to be a mixture of household refuse and/or industrial discard perhaps dating back more than 60 years. Although the rating for heritage value is low, material / artefacts found therein might be of relevance in the fields of historical archaeology / industrial archaeology. However these two disciplines have not yet been formally introduced in universities or heritage museums in the country. The mounds therefore do not warrant protection in terms of this impact evaluation, suffice it to mention an opportunity that can be pursued in the future.

PHASE I HERITAGE IMPACT ASSESSMENT (INCLUDING PALAEOLOGICAL ASSESSMENT) REQUESTED IN TERMS OF SECTION 38 OF THE NATIONAL HERITAGE RESOURCES ACT NO 25/1999 FOR A PROSPECTING RIGHT ON A PORTION OF PORTION 1 OF THE FARM VOORUITZIGT 81, KIMBERLEY DISTRICT, NORTHERN CAPE PROVINCE, May 2017 by Edward Matenga (MPhil, Archaeology; PhD Archaeology & Heritage, Uppsala/Sweden))

In the event that the prospecting operation does not proceed, the heritage resources will remain as is. The protection and preservation of these resources are therefore not guaranteed. However, if the prospecting operation is approved, the heritage resources will be protected through the demarcation of no-go zones and fencing off if any of these resources are encountered.

Findings of the Palaeontology study

The proposed activity entails excavating 50 test trenches. It is estimated that an average 3m depth of overburden (calcrete and soil) will be removed before accessing the gravel layer (average width 2 – 4m) which is host to the diamonds. The trenches will be 25m x 15m x 0.5 – 7m deep. A palaeontological assessment is necessary as these superficial levels might contain fossils in view of the known palaeontological sensitivity of the area.

The rock units underlying the area of the proposed development have been identified from the 1: 250 000 geology map 2824 Kimberley (Council for Geosciences, Pretoria), scientific literature and previous palaeontological impact assessments that have been conducted in the broader area. The following is a summary of the findings:

The Allanridge Formation andesite lavas belong to the Ventersdorp Supergroup (VSG) which date back to the Precambrian 2600 MYA. The Ventersdorp Supergroup represents a major episode of igneous

extrusion, what is termed a Large Igneous Province (LIP) from below the Kaapvaal Craton some 2.7 Ga (billion years) ago. The Allanridge Formation of igneous lavas are considered to be unfossiliferous.

The Dwyka Group forms the lowermost and oldest deposit in the Karoo Supergroup basin. Northwest of Kimberley the rocks in this group exhibit glacial pavements - glacially-striated and eroded bedrocks - of Permo-Carboniferous age, (c. 300 Ma) that tend to overlie the Allanridge Formation outcrop area in the same region. The Dwyka tillite is mostly a very fine-grained, blue-grey rock comprised of clay / mud matrix with inclusions (or clasts) of many other fragments picked up by glaciers during their travels. The paleontological rating of the glacial tillites of the Dwyka Group are considered to be medium to low.

The Ecca group is a subcomponent of the Karoo Supergroup, a sedimentary complex post-dating Dwyka in which principally shales and sandstones were laid down in the sandy shorelines of swamplands during the Permian Period. The Ecca fossil marine deposition may contain marine invertebrates (esp. molluscs, brachiopods), coprolites, palaeoniscoid fish & sharks. There are also traces fossils, various microfossils, petrified wood. The palaeontological rating according to Almond (2012) is high.

The Karoo dolerite of the Drakensberg Group sill underlies most of the area in the Kimberley municipal area. It represents an intrusion of igneous lavas between 183.0 to 182.3 MYA. Dwyka shales lying immediately below the dolerite sheet have usually been metamorphosed to lydianite and homstone as a result of exposure to intense heat during the intrusion event, with a possibility of destroying fossil materials in the upper layers of these sediments. The Karoo dolerite (igneous lavas) are considered to be unfossiliferous.

Large areas of unconsolidated, reddish-brown to grey aeolian (i.e. wind-blown) sands of the Quaternary Gordonia Formation (Kalahari Group) have been observed on the western outskirts of Kimberley and at the Farm Vooruitzicht 81 and Fieldsview north of the city. Immediately below the sands may be a calcretic layer or pedogenic limestones generally considered of the same geological period. They are considered of low sensitivity with the possibility of finding calcretised rhizoliths & termitaria, ostrich egg shells, land snail shells, rare mammalian and reptile (e.g. tortoise) bones, teeth freshwater units associated with diatoms, molluscs, stromatolites etc.

Although the impact of the proposed development on fossil resources is expected to be minimal, it is still recommended that the

Environmental Control Officer (Eco) put in place a contingency plan to rescue chance finds and where possible preserve them in situ. A standard Fossil Finds Procedure (FFP) is appended to this report to provide field guidance to the ECO. The recommendations made here should also be incorporated into the Environmental Management Plan for the proposed mining operations. (PALAEOLOGICAL SPECIALIST ASSESSMENT (DESKTOP) REQUESTED IN TERMS OF SECTION 38 OF THE NATIONAL HERITAGE RESOURCES ACT NO 25/1999 FOR A PROSPECTING RIGHT ON A PORTION OF PORTION 1 OF THE FARM VOORUITZIGT 81, KIMBERLEY DISTRICT, NORTHERN CAPE PROVINCE May 2017 Prepared by Joseph Chikumbirike (PhD Palaeontology, University of the Witwatersrand)).

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

The Mystic Pearl and the Municipality the surface owner have been in consultation which is still ongoing. A public meeting was conducted on the closure objectives.

- (c) Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.**

Please refer to Figure 2.

Infrastructure Areas:

On completion of the prospecting operation, the various surfaces, including the access road, the office area, storage areas and the screening plant site, will finally be rehabilitated as follows:-

- ❖ The MRD will be rehabilitated in situ. All remaining material on the surface will be removed to the original topsoil level. This material will then be backfilled into the depressions. Any compacted area will then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.
- ❖ All infrastructures, equipment, screening plant, and other items used during the operational period will be removed from the site.
- ❖ On completion of operations, all buildings, structures or objects on the office site will be dealt with in accordance with Regulation 44 of the Minerals and Petroleum Resources Development Act, 2002, which states:-

1. *Regulation 44: When a prospecting right, mining right, retention permit or mining permit lapses, is cancelled or is abandoned or when any prospecting or mining operation comes to an end, the holder of such right or permit may not demolish or remove any building, structure or object –*
 - (a) *which may not be demolished or removed in terms of any other law;*
 - (b) *which has been identified in writing by the Minister for purposes of this section; or*
 - (c) *which is to be retained in terms of an agreement between the holder and the owner or occupier of the land, which agreement has been approved by the Minister in writing.*
2. *The provision of subsection (1) does not apply to bona fide mining equipment, which may be removed.*

Topsoil and Stockpile Deposits:

- ❖ **Disposal Facilities:-**
Waste material of all description inclusive of 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.
- ❖ **Ongoing Seepage, Control of Rain Water:-**
Monitoring will be undertaken during the 3 year post rehabilitation aftercare and maintenance period.
- ❖ **Long Term Stability and Safety:-**
It will be the objective of mine management to ensure the long term stability of all rehabilitated areas including the backfilled depressions. This will be done by the monitoring of all areas until a closure certificate has been issued.
- ❖ **Final rehabilitation in respect of erosion and dust control:-**
Self-sustaining vegetation will result in the control of erosion and dust and no further rehabilitation is planned.

Final Rehabilitation Roads:-

- ❖ After rehabilitation has been completed, all roads will be ripped or ploughed, fertilized and seeded, providing the landowner does not want them to remain that way and with written approval from the Director: Mineral Development of the Department of Mineral Resources.

Maintenance (Aftercare):-

- ❖ Maintenance after closure will mainly concern the regular inspection and monitoring and/or completion of the re-vegetation programme.
- ❖ The aim of the Environmental Management Programme is for rehabilitation to be stable and self-sufficient, so that the least possible aftercare is required.
- ❖ The aim with the closure of the mine will be to create an acceptable post-mine environment and land-use. Therefore all agreed commitments will be implemented by Mine Management.

After-effects Following Closure:-

- ❖ **Acid Mine Drainage:-**
No potential for bad quality leachate or acid mine drainage development exists after mine closure.
- ❖ **Long Term Impact on Ground Water:-**
No after effect on the groundwater yield or quality is expected as no groundwater will be used or abstracted.
- ❖ **Long-term Stability of Rehabilitated Land:-**
One of the main aims of any rehabilitated ground will be to obtain a self-sustaining and stable end result. Cleaning of all tailings material concurrently and replacing of topsoil where available.

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

The ultimate rehabilitation of the prospecting site that involves the sloping, levelling, replacement of topsoil and the seeding of a grass seed mix in areas that does not recover acceptably as agreed to by the land owner will ensure that the site could be regarded as safe for humans and animals and will also ensure that the site is stable from an erosion point of view and also ensuring that the site could be used for grazing again.

The removal of waste material of any description from the prospecting area and the disposal thereof at a recognised landfill facility.

- ❖ The removal of infrastructure, equipment, plant and other items from the site.
- ❖ The ripping of compacted areas to a level of 300mm and the levelling of such areas in order to re-establish a growth medium for plants (such areas will furthermore be seeded

with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the prospecting operation, if the re-establishment of vegetation is unacceptably slow.

- ❖ The prospecting of alluvial diamonds and the backfilling and covering thereof with previously stored topsoil (where-after this area will also be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the proposed operation, and seedlings protected for a period of one year) if the re-establishment of vegetation is unacceptably slow.

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

The total cost to rehabilitate and mitigate the Mystic Pearl Mine site as it stands currently (risking premature rehabilitation) is estimated to be R1,128,488 according to the DMR calculations. The detailed calculation DMR quantum is presented in Table 20. The total rehabilitation costing is based on the assumption that the prospecting operation will do continuous concurrent rehabilitation throughout the project.

Table 20: Financial Quantum

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0.45	12.21	1	1	5.4945
2 (A)	Demolition of steel buildings and structures	m2		170.13	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	150	250.72	1	1	37608
3	Rehabilitation of access roads	m2	15000	30.44	1	1	456600
4 (A)	Demolition and rehabilitation of electrified railway lines	m		295.49	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m		161.18	1	1	0
5	Demolition of housing and/or administration facilities	m2	0.075	340.26	1	1	25.5195
6	Opencast rehabilitation including final voids and ramps	ha	0.5	173174.97	0.52	1	45025.4922
7	Sealing of shafts adits and inclines	m3		91.33	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0.04	118812.29	1	1	4756.4916
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	1	148103.1	1	1	148103.1
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha		430161.62	1	1	0
9	Rehabilitation of subsided areas	ha		99571.13	1	1	0
10	General surface rehabilitation	ha	1	94198.59	1	1	94198.59
11	River diversions	ha		94198.59	1	1	0
12	Fencing	m		107.45	1	1	0
13	Water management	ha		35816.95	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	2	12535.93	1	1	25071.86
15 (A)	Specialist study	Sum				1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							811394.5478
1	Preliminary and General		97367.34574	weighting factor 2 1			97367.34574
2	Contingencies			81139.45478			81139.45478
Subtotal 2							989901.35
VAT (14%)							138586.19
Grand Total							1128488

- (f) Confirm that the financial provision will be provided as determined.**

It is hereby confirmed that the financial provision will be provided as determined.

- Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including**
- g) Monitoring of Impact Management Actions**
 - h) Monitoring and Reporting Frequency**
 - i) Responsible persons**
 - j) Time Period for Implementing Impact Management Actions**
 - k) Mechanisms for Monitoring Compliance**

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Topography	To minimise the reduction of land capability.	To ensure that rehabilitation post-prospecting slopes are stable, free draining and no slopes have an angle in excess of 20°.	Site Manager/ Environmentalists	Monitoring will be done on an annual basis to ensure that the levels and the slopes are in order.
Soil	To prevent soil pollution; To limit soil compaction; To curb soil erosion; and To reinstate a growth medium able to sustain plant life.	Soil depth and chemical composition will be tested and possible erosion damage will be assisted and rectified.	Site Manager/ Environmentalists	Monitoring will be done on an annual basis or after a heavy rain event.
Air Quality	To control the incidence of dust unacceptable levels of dust pollution on site.	To ensure that the mine minimizes dust omissions, so that dust does not become a nuisance for affected parties and a health hazard.	Site Manager/Foreman appointed SHE Consultant	Visual inspections will be done and managed by dust suppression by a water tanker. Quarterly tests will also be conducted by a Safety Health and Environmental Consultant and submitted to Mine Health and Safety for monitoring purposes.
Fauna	To minimise vegetation destruction in prospecting areas, and therefore a habitat for wildlife; and To eliminate poaching and the extermination of animal species within the boundaries of the study area as well as the surrounding areas.	To ensure that the species diversity and abundance is not significantly reduces.	Site Manager/ Environmentalists	Monitoring will be done at rehabilitated area on an annually basis to investigate species diversity and abundance.
Flora	To minimise the destruction of vegetation units; and To control invasion of exotic and	To ensure that the rehabilitated areas become self-maintaining.	Site Manager/ Environmentalists	Monitoring will be done at the rehabilitated areas on a twice a year basis (mid-summer and mid-winter), where species diversity and vegetation

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	cover will be investigated.
Noise and Vibration	<p>To ensure that the legislated noise and ground vibration levels will be adhered to at all times.</p> <p>To control the incidence of unacceptable noise levels on site.</p>	<p>The management objective will be to reduce any level of noise, shock and lighting that may have an effect on persons or animals, both inside the plant and that which may migrate outside the plant area.</p>	<p>The manager during the construction phase and the responsible person (Manager / Environmental Department) during the operational phase of the project.</p>	<p>Quarterly reports on fall-out noise monitoring will be conducted as required by legislation.</p> <p>if any complaints are received from the public or state department regarding noise levels the levels will be monitored at prescribed monitoring points.</p>
Surface Water	<p>To conserve water; and</p> <p>To eliminate the contamination of run-off.</p>	<p>The immediately adjacent areas 9 km to the north (Platfontein Pan) and 7 km northeast (Kamfers Dam) have significant water features that are fed by water runoff from this area as well as Kimberley waste water respectively. This are the nearest source in the vicinity of the mine. This will be monitored by collecting surface water samples quarterly.</p>	<p>Site Manager/Water Supply</p>	<p>The immediately adjacent areas 9 km to the north (Platfontein Pan) and 7 km northeast (Kamfers Dam) have significant water features that are fed by water runoff from this area as well as Kimberley waste water respectively which may be impacted by the activity. Monitoring takes place by collecting surface water samples every quarter.</p>

l) Indicate the frequency of the submission of the performance assessment report

This section of the report relates to Section 33 of the GNR543 published in Government Gazette No.33306 of 18 June 2010, under Section 24(5) of the NEMA. Regulation 33(e), proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon. Furthermore, Regulation 55 (1) (2) of the MPRDA Regulations, R527 requires that the holder of a prospecting right conduct monitoring on a continuous basis.

Monitoring provides qualitative and quantitative information pertaining to the possible impacts of the development on the environment, and enables the measurement of the effectiveness of environmental management measures. The implementation of a monitoring plan is necessary to ensure compliance with the NEMA, MPRDA and NWA environmental authorisations which must be obtained before any of the proposed activities may commence. The key to the success of environmental management lies in the effective implementation of the proposed mitigation and management measures.

The monitoring programme will incorporate the following impacts and environmental components:

- Hydrological (surface water and bio-monitoring);
- Terrestrial ecology (fauna and flora); and
- Air quality (dust);

Mine environmental audits are also required to ensure that all proposed management and mitigation measures together with monitoring programmes are being implemented. These audits must be undertaken annually unless specified otherwise by the relevant authorities. This section of the report is compiled in accordance to the National Environmental Management Act, 1998 (Act No. 107 of 1998) Environmental Impact Assessment Regulation 543 of 2010, Section 31 (2) (b), and Section 33 (e), (g), (h) and (i).

Ongoing monitoring of the bio-physical and socio-economic environments will continue throughout the life of the project as per the approved EMP and the accepted monitoring programmes. Mystic Pearl will monitor and assess the performance of the EMP on an ongoing basis. Monitoring of different environmental aspects/impacts takes place by means of quantitative and qualitative evaluation techniques in order to determine whether the requirements of the environmental management programme are being complied with. Monitoring is a continuous data-gathering and control procedure. It may range from routine visual inspections to in-depth investigative monitoring. All monitoring will be undertaken in terms of the approved EMP for the mine.

m) Environmental Awareness Plan

The objective of the environmental awareness plan is to ensure that:

- Training needs are identified and all personnel whose work may create a significant impact upon the environment have received appropriate training;
- All employees are aware of the impact of their activities
- Procedures are established and maintained to make appropriate employees aware of:
 - The significant environmental impacts (actual or potential) of their work activities and environmental benefits of improved personal performance,
 - Their roles and responsibilities in achieving conformance with environmental policies, procedures, and any implementation measures,
 - The potential consequences of departure from specified operating procedures.
- Personnel performing tasks, which can cause significant environmental impacts, are competent in terms of appropriate education, training and / or experience.

Environmental awareness will be part of the existing training and development plan. Key personnel with environmental responsibilities will be identified and the following principles will apply:

- Procedures will be developed to facilitate training of employees, on-site service providers and contractors;
- Environmental awareness will focus on means to enhance the ability of personnel and ensure compliance with the environmental requirements;

Top management will build awareness and motivate and reward employees for achieve environmental objectives;

- Environmental policies will be availed to mine employees and contractors;
- Environmental inductions will be conducted for employees, contractors and visitors;
- There will be an ongoing system of identifying training needs.

General environmental awareness training as part of the induction at the Mystic Pearl should focus on the following:

- General environmental awareness
- The mine policies and vision concerning environmental management
- Legal requirements
- Mine activities and their potential impacts
- Different management measures to manage identified impacts
- Mine personnel's role in implementing environmental management objectives and targets

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

- An environmental, health and safety induction programme will be provided to all employees prior to commencing work, and they will sign acknowledgement of the induction.
- A daily “toolbox talk” will be held prior to commencing work, which will include discussions on health, safety and environmental considerations. The toolbox talks should be led by the Site Manager.

ENVIRONMENTAL AWARENES TRAINING PROGRAMME PROCEDURE

Natural resources are limited and not always renewable and it is the responsibility of management to ensure that all employees are trained to understand the impacts of their tasks on the environment and to reduce them wherever possible.

Environmental awareness training must be given to new employees on site and any contractors who may come onto site for a short period of time. Refresher training must be given to permanent employees on an annual basis.

The objective of this procedure is to ensure that all employees on the mine, including contractors, are competent to perform their duties, thereby eliminating negative impacts on their safety, health and the environment.

The Environmental topics to be covered in awareness training should include the following:

- **RESOURCE MANAGEMENT**
 - The importance of saving water
 1. South Africa is a water scarce country and rivers are polluted;
 2. Do not throw litter into river or water drains;
 3. Do not dispose of oils in sewers.
 - Air pollution - Climate change
 1. The use of fossil fuels is increasing the amount of greenhouse gases that are discharged to the atmosphere. Share transport or use public transport;
 2. Don't burn any rubbish, the smoke pollutes the air;
 3. Plant trees, they clean the air, provide us with oxygen and remove the greenhouse gas carbon dioxide from the air.
 - Soil conservation
 1. Keep vegetation on the surface of the land to prevent soil erosion
 2. Plant trees.
- **HAZARDOUS SUBSTANCE USE AND STORAGE**
 - Solvents, petrol, diesel, insecticides, chlorine, detergents, chemical fertilisers are harmful to the environment and to your health. Use them sparingly and do not let them get into the water systems. Containers must be disposed of to a licensed hazardous waste disposal facility;

- Hazardous substances must be stored and used correctly;
- Ensure that 16 point Material Substances Safety Data Sheets (MSDS) are available at point of store;
- Compressed gas storage requirements;
- Flammable substances store requirement.

- **INCIDENT & EMERGENCY REPORTING**
 - The Applicant must have an emergency / incident reporting system whereby environmental incidents can be reported and actioned to mitigate and follow up on.

- **OIL / DIESEL/ PETROL SPILL CLEAN UP**
 - All employees who work with machines and vehicles must be instructed how to prevent and clean up an oil or diesel spill appropriately. Spill kits must be available on site, drip trays must be used when servicing vehicles.

- **CONSERVATION OF WATER**
 - Campaign to save water on site;
 - Clean water is expensive and potable water must be used carefully;
 - Prevent pollution of water by preventing spills and dispose of wastes properly.

- **CONSERVATION OF VEGETATION**

Plants, grasses and trees are very important to our existence on the earth. They provide food, fuel, shelter, raw materials and they clean the air. Indigenous plants are especially important for traditional medicine as well as the whole ecology of life. Human activities are destroying the natural forests of the earth. The natural forests are the “lungs” of the planet and unfortunately they are being cleared faster than they can regenerated.

 - EIA’s are to be done before virgin bush can be cleared;
 - Vegetation cover reduces water and topsoil loss from the ground, do not clear vegetation unnecessarily;
 - Indigenous trees provide shade, attract wild birds;
 - Do not chop down indigenous trees without good reason;
 - Implement a tree planting programme;
 - Remove alien invasive trees in your area such as Prosopis, Syringa and Pepper trees, cactus plants.

- **WASTE MANAGEMENT**
 - Employees must be instructed on how to determine the difference between hazardous waste and general waste;
 - They must know how to separate hazardous and general waste and where to dispose of these wastes in the correct manner;
 - Examples of hazardous waste which must be recycled or sent to Waste Tech for disposal:
 - Oil, diesel, batteries, acids, paint, thinners, electronic waste
 - Pesticides, jik, Handy Andy;

- Old oil, old oil filters, old paint is hazardous and must not be disposed of to a general land fill. Oilkol of the Rose Foundation will collect old oil;
 - Mercury in fluorescent light bulbs is hazardous, fluorescent lights must be handled with great care so as not to break the glass and release the mercury vapour into the air which you breathe.
 - Examples of general wastes which can go to the municipal landfill:
 - Wood, paper, plastic, glass, old PPE.
 - Recycle, Reuse, Reduce, and Recover where ever possible.
- **CONCLUSION**

The management of the Mystic Pearl mine will utilize the Environmental Awareness Plan to assure that all employees and contractors are aware of the environment and know how to manage it correctly.

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

Air quality:

To control the incidence of unacceptable levels of dust pollution on site via dust dispersion control.

Surface water:

Mitigation measures (or safety precautions) that are taken in order to eliminate any risk the project area could have on the natural, cultural and social environment of the concerned area and that must be implemented during the different phases i.e. construction, operational and post closure to minimize the impacts are as follows:

- Only environmental friendly materials must be used during the construction phase to minimize pollution of surface water runoff and/or underground water resources.
- Pipe leakages should be minimized.
- Proper clean and dirty water separation techniques must be used to ensure uncontaminated water returning to the environment.
- Non prospecting waste i.e. grease, lubricants, paints, flammable liquids, garbage, historical machinery and other combustible materials generated during activities should be placed and stored in a controlled manner in a proper designed area.
- The topography of rehabilitation disturbed areas must be rehabilitated in such a manner that the rehabilitated area blends in naturally with the surrounding natural area. This will reduce soil erosion and improve natural re-vegetation.

Ground water:**Groundwater Management Plan**

The mine must develop a monitoring response protocol. This protocol will describe procedures in the event that groundwater monitoring information indicates that action is required.

Groundwater Monitoring Programme

- To monitor the potential impact of the proposed processing plant on the groundwater resources, the following monitoring is recommended:
- With permission of the owners, boreholes VT4 and VT1 can be used as upstream and downstream water quality monitoring boreholes, respectively. Should the owners deny permission for this purpose, Mystic-Pearl has to construct an upstream monitoring borehole between the slimes dam and the southern boundary fence and a downstream monitoring borehole approximately 50 m north of the Boerevestnik plant;
- Groundwater levels must be recorded at the above-mentioned quality monitoring boreholes and G00158NC on a monthly basis. A water level dipmeter with 1 cm calibration and 30 m cable will have to be obtained for this;
- Water samples must be collected at the quality monitoring boreholes mentioned above (either production boreholes VT1 and VT4 or two newly constructed boreholes) on a six-monthly basis and submitted to SANAS accredited laboratories for analysis of the macro-chemistry and inductively coupled plasma mass spectrometry (ICP-MS) metal scan;
- The monitoring data must be evaluated on an annual basis by a geohydrologist and a monitoring report compiled and presented to Mystic Pearl; and
- Monitoring must continue post closure of the facility, for at least two years on a six-monthly basis, to establish trends, if any. The data must be evaluated on an annual basis by a geohydrologist and after two years assessed to determine if monitoring needs to continue.

Natural flora:**Loss of and disturbance to indigenous vegetation**

- Minimise the footprint of transformation.
- Encourage proper rehabilitation of prospected areas.
- Encourage the growth of natural plant species.
- Ensure measures for the adherence to the speed limit.

Loss of flora with conservation concern

- Footprint areas of the prospecting activities must be scanned for Red Listed and protected plant species prior to prospecting.
- It is recommended that these plants are identified and marked prior to prospecting.
- These plants should, where possible, be incorporated into the design layout and left in situ.
- However, if threatened of destruction by prospecting, these plants should be removed (with the relevant permits from DAFF and DENC) and relocated if possible.
- All those working on site must be educated about the conservation importance of the fauna and flora occurring on site.

Proliferation of alien vegetation

- Minimise the footprint of transformation.
- Encourage proper rehabilitation of prospected areas.
- Encourage the growth of natural plant species.
- Mechanical methods (hand-pulling) of control to be implemented extensively.
- Annual follow-up operations to be implemented.

Encouragement of bush encroachment

- Minimise the footprint of transformation.
- Encourage proper rehabilitation of prospected areas.
- Encourage the growth of a diverse selection of natural plant species.
- Mechanical methods (hand-pulling) of control to be implemented selectively.
- Annual follow-up monitoring to be implemented.

Fauna:**Loss, damage and fragmentation of natural habitats**

- Prospecting activities must be planned, where possible in order to encourage faunal dispersal and should minimise dissection or fragmentation of any important faunal habitat type.
- The extent of the prospecting area should be demarcated on site layout plans (preferably on disturbed areas or those identified with low conservation importance). No construction personnel or vehicles may leave the demarcated area except those authorised to do so.

Disturbance, displacement and killing of fauna

- Careful consideration is required when planning the placement for stockpiling topsoil and the creation of access routes in order to avoid

the destruction of habitats and minimise the overall prospecting footprint.

- The extent of the proposed prospecting should be demarcated on site layout plans, and no construction personnel or vehicles may leave the demarcated area except those authorised to do so. Those areas surrounding the Prospecting site that are not part of the demarcated development area should be considered as a no go zone for employees, machinery or even visitors.
- The appointment of a full-time ECO must render guidance to the staff and contractors with respect to suitable areas for all related disturbance, and must ensure that all contractors and workers undergo Environmental Induction prior to commencing with work on site.
- All those working on site must undergo environmental induction with regards to fauna and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition.
- All those working on site must be educated about the conservation importance of the fauna and flora occurring on site.
- The environmental induction should occur in the appropriate languages for the workers who may require translation.
- Reptiles and amphibians that are exposed during the clearing operations should be captured for later release or translocation by a qualified expert.
- Employ measures that ensure adherence to the speed limit.

Broad-scale ecological processes

- Minimise the footprint of transformation.
- Encourage proper rehabilitation of prospected areas.
- Encourage the growth of natural plant species.
- Prospecting activities must be planned, where possible in order to encourage faunal dispersal and should minimise dissection or fragmentation of any important faunal habitat type.
- The extent of the prospecting area should be demarcated on site layout plans (preferably on disturbed areas or those identified with low conservation importance).

Noise and vibration:

- To control the incidence of unacceptable noise and vibration levels on site.
- There will be a shift in the immediate noise levels of the proposed activities on a temporary basis during the construction phase and a permanent basis during the operational phase and the communities will have to be briefed and informed of this during the public participation process. Regular feed-back to the community during the

operational phase of the project of the baseline noise and ground vibration monitoring must take place. A system whereby complaints are recorded and investigated must be made available.

Visual (Aesthetics):

- Mitigation measures may be considered in two categories:
 - Primary measures that intrinsically comprise part of the development design through an iterative process. Mitigation measures are more effective if they are implemented from project inception when alternatives are being considered; and
 - Secondary measures designed to specifically address the remaining negative effects of the final development proposals.

- Primary measures that will be implemented should mainly be measures that minimise the visual impact by softening the visibility of the prospecting activities, by “blending” with the surrounding areas. Such measures will include rehabilitation of the disturbed area, such as the WRD, by re-vegetation of the area and using an aesthetically pleasing design for the proposed development.

- During the construction phase the following mitigation measures should be implemented to minimise the visual impact.
 - Ensure that the design fits into the surrounding environment and it is aesthetically pleasing;
 - Reduce the construction period through careful planning and productive implementation of resources;
 - Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads;
 - Ensure that rubble, litter and disused construction materials are managed and removed regularly;
 - Ensure that all infrastructure and the site and general surrounds are maintained in a neat and appealing way;
 - Reduce and control construction dust emitting activities through the use of approved dust suppression techniques; and
 - Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting or restrict lighting to certain areas.

- During operational phase, the following mitigation measures should be implemented to minimise the visual impact.

- Ensure that the design fits into the surrounding environment and it is aesthetically pleasing.

- Ensure that all infrastructure and the site and general surroundings are maintained in a neat and appealing way;

- Rehabilitation of disturbed areas and re-establishment of vegetation;

- Mitigation of lighting impacts includes the pro-active design, planning and specification lighting for the development. The correct specification and placement of lighting and light fixtures for the proposed development will go far to contain rather than spread the light. Additional measures include the following:

- Limiting mounting heights of lighting fixtures by specifying foot-lights or bollard level lights;
- Making use of minimum lumen or wattage in fixtures;
- Making use of down-lighters, or shielded fixtures; and
- Making use of energy efficient lighting or other types of low impact lighting.
- Secondary impacts anticipated as a result of the proposed development (i.e. visual character, sense of place and tourism potential) are not possible to mitigate.

Soils:

Topography, soil erosion and associated degradation of ecosystems

- Backfill all bulk sampling sites and pits continuously.
- Employ effective rehabilitation strategies to restore surface topography of bulk sampling sites and pits and plant site.
- Stabilise the mine residue deposits.
 - All temporary infrastructures should be demolished during closure.

Soil erosion

- At no point may plant cover be removed within the no-development zones.
- All attempts must be made to avoid exposure of dispersive soils.
- Re-establishment of plant cover on disturbed areas must take place as soon as possible, once activities in the area have ceased.
- Ground exposure should be minimised in terms of the surface area and duration, wherever possible.
- The prospecting operation must co-ordinate different activities in order to optimise the utilisation of the alluvial gravels and thereby prevent repeated and unnecessary dumping.
- The soil that is stripped during construction should be stock-piled in layers and protected by berms to prevent erosion.
- All stockpiles must be kept as small as possible, with gentle slopes (18 degrees) in order to avoid excessive erosional induced losses.
- Stockpiled soil material are to be stored and bermed on the higher lying areas of the footprint area and not in any storm water run-off channels or any other areas where it is likely to cause erosion, or where water would naturally accumulate.
- Stockpiles susceptible to wind erosion are to be covered during windy periods.
- Audits must be carried out at regular intervals to identify areas where erosion is occurring.
- Appropriate remedial action, including the rehabilitation of the eroded areas, must occur.

- Rehabilitation of the erosion channels and gullies.
- The prospecting operation should avoid land with steep slopes.
- Dust suppression must take place.
- Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion.

Loss of soil fertility

- Topsoil stockpiles must be kept as small as possible in order to prevent compaction and the formation of anaerobic conditions.
- Topsoil must be stockpiled for the shortest possible timeframes in order to ensure that the quality of the topsoil is not impaired.
- Topsoil stockpiles must be kept separate from sub-soils.
- The topsoil should be replaced as soon as possible on to the backfilled areas, thereby allowing for the re-growth of the seed bank contained within the topsoil.

Soil pollution

- Refuelling must take place in well demarcated areas and over suitable drip trays to prevent soil pollution.
- Spill kits to clean up accidental spills from earthmoving machinery must be well-marked and available on site.
- Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures.
- All facilities where dangerous materials are stored must be contained in a bund wall.
Vehicles and machinery should be regularly serviced and maintained.
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- Spill kits to clean up accidental spills from earthmoving machinery must be well-marked and available on site.
- Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures.
- All facilities where dangerous materials are stored must be contained in a bund wall.
- Vehicles and machinery should be regularly serviced and maintained.
 - *To prevent soil pollution;*
 - *To limit soil compaction;*
 - *To curb soil erosion; and*
 - *To reinstate a growth medium able to sustain plant life.*

Land capability:

- To minimise the reduction of land capability.

Sensitive landscapes:

- To protect sensitive landscapes from potential negative impacts.
- Maintain buffer areas.

Surface environment - waste management:

- To ensure that the discarding of any waste material produced as a result of the proposed prospecting operation, including rubble, litter, garbage, rubbish or discards of any description, whether solid or liquid, takes place only at a site or sites demarcated for such purposes.

- To prevent waste material from being dumped within the borders or the vicinity of the prospecting area.

Emergency Response Plan

Defining an Environmental Emergency Response Plan

An effective, comprehensive, well-considered and tested environmental emergency preparedness and response plan has the potential to save lives, prevent unnecessary damage to the Prospector and other property and to manage environmental risk in the event of a large chemical spill, oil spill, fuel spill, explosives spill or sewerage spill. Environmental emergencies occur over the short term and require an immediate response. A mine, as part of its management tools, should have an Environmental Emergency Response Plan. If one does not exist then one should be compiled and disseminated to all employees and contractors and in the event of an emergency, the emergency response plan should be consulted. This plan should be placed around the mine where it can be viewed easily. The plan should contain a list of procedures, evacuation routes and a list of emergency contact numbers. It is advisable that the mine tests the emergency response plan in order to identify any areas for improvement. If the emergency has the potential to affect surrounding communities, they should be alerted via alarm signals or contacted in person. The surrounding community must be informed, on a continuous basis, of the potential dangers and emergencies that exist, and the actions to be taken in such emergencies. Communication is vital in an emergency and thus communication devices, such as mobile phones, two-way radios, pagers or telephones, must be placed around the mine. A checklist of emergency response units must be consulted and the relevant units notified. The checklist includes:

- Fire department;
- Police;
- Emergency health services such as ambulances, paramedic teams, poisons centres;
- Hospitals, both local and further afield, for specialist care;
- Public health authorities;
- Environmental agencies, especially those responsible for air, water and waste issues;
- Other industrial facilities in the vicinity with emergency response facilities;
- Public works and highways departments, port and airport authorities; and
- Public information authorities and media organisations.

Emergency Procedures

Below are the possible environmental related emergencies, procedures and responses to be followed and incorporated into the Emergency Preparedness and Response Plan.

POSSIBLE ENVIRONMENTAL RELATED EMERGENCY	ACTION PLANS/REMEDIATION	TIME/PERIOD	RESPONSIBLE PERSON/PARTY
Spillage of oil, diesel by vehicles, tankers, storage tanks etc.	<p>The spillage should be contained (bund earth walls) by all means. Depending on the amount of spillage it could be remediated in situ or in the case of large amount of spillage that is contained, could be removed, etc.</p> <ul style="list-style-type: none"> • Leakage from the vehicle, tanker etc, that caused the emergency, should be stopped and the vehicle removed to the workshop area for repairs. • In all cases of spillage, irrespective of the chemical, remove or extinguish any fire (naked flame) to within at least 10 metres from the spill. • Cover the spills with absorbent material. <p>The person who reported the spill must fill out an incident report, if applicable and forward it to the Department of Environmental Affairs and/or Department of Water and Sanitation after a thorough investigation.</p>	Immediately	Mystic Pearl Mine Manager
Sewerage Spills	<p>The spillage should be contained (bund earth walls) by all means. Depending on the amount of spillage it could be remediated in situ or in the case of large amount of spillage that is contained, could be removed, etc.</p> <ul style="list-style-type: none"> • The leakage must be stopped and reason for spill must be rectified. • The person who reported the spill must fill out an incident report and forward it to the Environmental Department and/or Department of Water and Sanitation after a thorough investigation. 	Immediately	Mystic Pearl Mine Manager
Fires	<p>All fires in the veld, buildings, diesel tanks, chemical fires, etc. should be extinguish and prevented to spread to any other piece of land, building, etc.</p> <p>The necessary equipment should be</p>	Immediately	Mystic Pearl Mine Manager

	<p>in place and ready to be used if an accidental fire is started.</p> <ul style="list-style-type: none"> • There shall be an emergency preparedness plan in place in order to fight accidental fires and veld fires, should they occur. The adjacent land owners/users/managers should also be informed and/or involved. Immediately Environmental manager, Safety officer, Local Fire Brigade. • The use of branches of trees and shrubs for fire making purposes must be strictly prohibited. • All businesses shall ensure that the basic fire-fighting equipment is to the satisfaction of the Local Emergency Services. • All businesses must take precautions when working with welding or grinding equipment near potential sources of combustion. Such precautions include having a suitable, tested and approved fire extinguisher immediately at hand and the use of welding curtains. • The Atmospheric Pollution Prevention Act (No. 45 of 1965) states that burning is not permitted as a means of disposal. 		
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n) Specific information required by the Competent Authority

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

The following applies to the submission of information:

All procedures (emergency, environmental awareness, rehabilitation strategies, etc.) must be included into the mine’s Environmental Management System (EMS). The mine’s EMS will monitor and assess the performance of the EMP on an ongoing basis. Formal audits of the performance assessment of the EMP will take place every year as stipulated by law, or at any other period if required by government;

The financial provision for closure (quantum and method) will be updated annually as part of the Environmental Programme Performance Assessment;

All information as required by the various government departments should be captured and be readily available for submission when required;

Surface water monitoring will be undertaken quarterly if water is available to take samples and annual reports will be submitted to the DWS (Department of Water and Sanitation); and

The closure plan must be reviewed every five (5) years, and must always keep pace with the current best practices.

2) UNDERTAKING

The EAP herewith confirms

- a) the correctness of the information provided in the reports;
- b) the inclusion of comments and inputs from stakeholders and I&APs;
- c) the inclusion of inputs and recommendations from the specialist reports where relevant; and
- d) the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed.



Signature of the Environmental Assessment Practitioner:

Wadala Mining and Consulting (Pty) Ltd

Name of Company:

Date: 27 October 2017

- END -

APPENDIX 1**CURRICULUM VITAE – RH OOSTHUIZEN****PERSONAL DETAILS**

FULL NAMES AND SURNAME : **Roelina Henriëtte Oosthuizen**

DATE OF BIRTH : **18 April 1970**

I.D. NO : **700418 0037 08 2**

MARITAL STATUS : **Married**

CITIZENSHIP : **Republic of South Africa**

RESIDENTIAL ADDRESS : **Farm Oberon
Kimberley**

POSTAL ADDRESS : **P.O. Box 110823
Hadisonpark
Kimberley
8306**

E-MAIL ADDRESS : **roosthuizen950@gmail .com**

CEL NO : **084 208 9088**

DRIVER'S LICENCE : **EB**

LANGUAGES : **Afrikaans (home language)
English**

QUALIFICATIONS

2000 **UNIVERSITY OF THE ORANGE FREE STATE**
Qualification: Master in Environmental Management.

1991 **NORTH WEST UNIVERSITY**
Qualification: B – Comm: Industrial psychology.

1988 **BRITSHIGH SCHOOL (BRITS)**
Qualification: Matric

COURSES and Conferences ATTENDED

I have attended various mining and environmental conferences and seminars to stay abreast with the latest changes in legislation, legal compliance and policy positions in the sector.

August 1994	Junior Managers (Public Service Training Institute)
November 1994	Mineral Laws Administration (Public Service Training Institute)
October 1997	Mineral Laws Administration & Environmental Management (University of Pretoria)
July 2002	Project Management for Environmental Systems (University of the Orange Free State)
August 2004	Environmental and Sustainability in Mining and Training Institute (MEETI) Minerals and Energy Education
September 2005	Converting Old Order Rights to New Order Rights in Mining (International Quality & Productivity Centre Johannesburg)
November 2006	Mine waste disposal and Achievement of Mine Closure
February 2007	Introduction to ArcGis 1
April 2010	Mining Law Update Conference (IIR BV South Africa)
November 2010	Social Labour Plans for Mining Workshop (Melrose Training)
August 2011	Mineral Resources Compliance and Reporting (ITC)
May 2012	Enviro Mining Conference 2012 (Sustainability and Rehabilitation) (Spectacular Training Conferences)
August 2012	Mineral Resources Compliance and Reporting 4 th Annual (ITC)
March 2013	1st Enviro Mining-Ensuring Environmental Compliance and reporting
March 2014	4 th Annual Enviro Mining Conference
March 2015	5 th Annual Enviro Mining Conference

CAREER HISTORY***Wadala Mining and Consulting (Pty) Ltd:***

ADDRESS : Farm Oberon
Kimberley
8301

PERIOD OF EMPLOYMENT : 01 August 2013 - Part time

POSITION HELD : Mineral Law Administration and Environmental
Manager

Diacor Closed Corporation:

ADDRESS : 6 Mullin Street
Hadisonpark
Kimberley
8306

PERIOD OF EMPLOYMENT : 01 October 2013 – Present and part time
consultancy work

POSITION HELD : Mineral Law Administration and Environmental
Manager

Mentor Trading and Investments 52 (Pty) Ltd:

ADDRESS : 2 Kekewich Drive
Monridge Office Park no 6
Monument Heights
Kimberley
8301

PERIOD OF EMPLOYMENT : 01 October 2012 – 01 October 2013

POSITION HELD : Mineral Law Administration and Environmental
Manager

Rockwell Diamonds Inc:

ADDRESS : PO Box 251
BARKLY-WES
8375

- PERIOD OF EMPLOYMENT** : 01 March 2005 – 30 September 2012
- POSITION HELD** : **Mineral Law Administration and Environmental Manager**
- MAIN JOB FUNCTIONS**
- Collect analyse and interpret information regarding the measurement of impacts of mining operations on the environment, the rehabilitation of land surfaces.
 - The prevention, control and combating of pollution.
 - Co-ordinate, investigate, audit and resolve environmental problems in conjunction with the Department of Water and Sanitation, Department of Agriculture and the provincial Department of Tourism, Environment and Conservation.
 - Address complaints and inquiries received from the public and mining industry.
 - Consult with relevant authorities and interested and affected people regarding the approval of Environmental Management Programmes.
 - Ensuring that rehabilitation standards are applied.
 - Ensuring that the requirements stated in Environmental Management Programme Reports are adhered to.
 - Evaluate Mining Rights and Prospecting Right applications and recommend site-specific conditions according to legislative requirements.
 - Constant liaison with the public, the mining industry and other government authorities on Environmental matters, legislation and agreements.
 - Calculate and verify financial provision for outstanding rehabilitation.

DEPT OF MINERALS & ENERGY:

- ADDRESS** : 43 Chapel Street
Standard Bank Building
KIMBERLEY
- PERIOD OF EMPLOYMENT** : 01 April 1997 to 01 March 2005
- POSITION HELD** : **Senior Environmentalist - Assistant Director Environment**
- MAIN JOB FUNCTIONS** :
- Collect analyse and interpret information regarding the measurement of impacts of mining operations on the environment, the rehabilitation of land surfaces.
 - The prevention, control and combating of pollution.

- Co-ordinate and prioritise the rehabilitation of derelict and ownerless mines.
- Co-ordinate, investigate, audit and resolve environmental problems in conjunction with the Department of Water Affairs and Forestry, Department of Agriculture and the provincial Department of Tourism, Environment and Conservation.
- Address complaints and inquiries received from the public and mining industry.
- Consult with relevant authorities and interested and affected people regarding the approval of Environmental Management Programmes.
- Ensuring that rehabilitation standards are applied.
- Ensuring that the requirements stated in Environmental Management Programme Reports are adhered to.
- Conduct inspections and recommendations on mines that apply for closure.
- Evaluate mining licences and prospecting applications and recommend site-specific conditions according to legislative requirements.
- Constant liaison with the public, the mining industry and other government authorities on environmental matters, legislation and agreements.
- Influence new development processes through participation in the EMPR and EIA processes and give guidance through education and awareness programmes.
- Calculate and verify financial provision for outstanding rehabilitation.

DEPT. OF MINERALS AND ENERGY:

POSITION HELD : Assistant Mineral Laws Officer – Senior Mineral Laws Officer

PERIOD OF EMPLOYMENT : 01 November 1993 – March 1997

ADVISORY COMMISSION ON LAND ALLOCATION

POSITION HELD : Assistant Administrative Officer

PERIOD OF EMPLOYMENT : 10 February 1992 – October 1993

Experience Projects Completed

I am a dedicated professional Mineral Law Administration and Environmental Manager with 23 years extensive experience in the managing and mitigating of specifically mining related impacts. I started my career in 1993 in the Department of Minerals and Energy where I have done Environmental inspections with site visits on all mines in the Northern Cape. I have done Environmental Audits on operational and closed mining sites in collaboration with other Departments. I have also specifically looked at pollution control measures on mining sites and the effectiveness of these measures. I have evaluated submitted EIA /EMP documents and have worked closely with all other Departments and stakeholders to make sure that all environmental aspects have been dealt with adequately in submitted documents. I left the Department for the Private Sector in 2005. I have since worked for a Canadian Group of Companies in the Private Sector, started a consultancy where I provide various mining companies with professional advice and guidance on Mineral Law and Environmental Issues. I have also represented the South African Diamond Producers Organisation (SADPO) on the Environmental Policy Committee (EPC) at the Chamber of Mines between 2005 and 2011.

2005

Environmental Management Plan with an application for a Prospecting Right for diamonds on Portion 9 and 14 of the farm Lanyon Vale 376, Hay in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in August 2007 with the Prospecting Right

Client: HC van Wyk Diamonds Ltd

Environmental Management Plan with an application for a Prospecting Right for diamonds on Remainder of Portion 18 (a portion of Portion 10) of the farm Lanyon Vale 376, Hay in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in August 2007 with the Prospecting Right

Client: HC van Wyk Diamonds Ltd

Environmental Management Plan with an application for a Prospecting Right for diamonds on Remainder of Portion 1, Portion 2 (a Portion of Portion 1), Portion 3 and Portion 5 of the farm Zweet Fontein nr 76 and Remainder of Portion 1 and portion 3 of the farm Blaaubosch Drift nr 78, Herbert in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in August 2007 with the Prospecting Right

Client: HC van Wyk Diamonds Ltd

2006

Environmental Management Plan with an application for a Prospecting Right for Tin in Kakamas South Settlement, Kakamas in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in June 2011 with the Prospecting Right

Client: Douglas Mining and Exploration (Pty) Ltd

2007

Environmental Management Plan with an application for a Prospecting Right for diamonds on the Remaining Extent, Portion 1 and Portion 2 of Diamond Valley 29, Hopetown in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

**EMPlan was approved in April 2008 with the Prospecting Right
Client: HC van Wyk Diamonds Ltd**

2008

Environmental Management Plan with an application for a Prospecting Right for diamonds on Portion 12, 13, 16, 24 & 25 Saxendrift 20 in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

**EMPlan was approved in June 2008 with the Prospecting Right
Client : HC van Wyk Diamonds Ltd**

Environmental Management Plan with an application for a Prospecting Right for diamonds on Erf 1 Windsorton, Barkly-Wes in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

**EMPlan was approved in February 2009 with the Prospecting Right
Client: HC van Wyk Diamonds Ltd**

2009

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT CONVERSION IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) for Wouterspan Mine (The Farm Lanyon Vale 376, Hay)

**EIA/EMP approved on 25/01/2010
Client: HC van Wyk Diamonds Ltd**

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT CONVERSION IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) for GW Ziegler on Remainder, Remainder of portion 1 (Amantia) and portion 2 (a portion of portion 1) of the farm Rietputs no. 15 and portion 1 (Spenceskop) of the farm Waterval no.14 in the district of Kimberley

**EIA/EMP approved with conversion of the Mining Right
Client: GW Ziegler
2010**

Basic Assessment Application

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2006

PROPOSED EXTENTION OF A ROOF OVER AN EXCISTING DECK WITH TWO WOOD PILLARS BY MEANS OF THE EXCAVATING OF 0.5m X 0.5m X 1m X 2 (½m²) OF SOIL WITHIN 100M OF THE HIGH WATER MARK OF THE SEA

Falls within general notes under activities that requires basic assessment
Positive Record of Decision (ROD) Granted.
Client: Dr. Petrus van der Walt Vermeulen

REVISION OF ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT CONVERSIONS IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) for HC VAN WYK DIAMONDS LTD (204 MRC) ON REMAINING EXTENT OF HOLPAN 161, BARKLY-WES

AND KLIPDAM DIAMOND MINING CO (003MRC) ON REMAINING EXTENT OF KLIPDAM 157, BARKLY-WES

Client: HC van Wyk Diamonds Ltd and Klipdam Diamond Mining Company Ltd

2011

APPLICATION FOR A LICENCE REGARDING PROTECTED TREES [SECTION 15(1) OF THE NATIONAL FORESTS ACT, 1998, AS AMENDED] on PORTION 1 (PAARDE PAN) OF THE FARM ANNEX SAXES DRIFT 21, HOPETOWN, NORTHERN CAPE for 14 Shephards tree (Boscia albitunca)

Licence issued on 24 September 2011

Client : Saxendrift Mine Pty Ltd

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT CONVERSION IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) on Portion 2 of the farm Good Hope 286, Barkly-Wes

EIA/EMP approved February 2013 by the Regional Manager

Client: Diacor CC

APPLICATION FOR CLOSURE CERTIFICATE [in terms of sections 43(3) of the Minerals and Petroleum Resources Development Act, 2002 (Act No 28 of 2002)] AND A CLOSURE PLAN FOR MINING ACTIVITIES PERFORMED BY HC VAN WYK DIAMONDS LTD ON THE REMAINING EXTENT OF PORTION 1 (WILLOWBANK), PORTION 2 (A PORTION OF PORTION 1) (WILLOWBANK), PORTION 3 (A PORTION OF PORTION 1) (WILLOWBANK) OF KHOSOPSKRAAL 227 AND PORTION 5 (ROSCOMMON) AND PORTION 2 (BORDON) OF HARRISDALE 226 AND FARM 362, BARKLY-WES

CLOSURE WAS GRANTED IN JULY 2010

Client: HC VAN WYK DIAMONDS LTD

2012

APPLICATION FOR A LICENCE REGARDING PROTECTED TREES [SECTION 15(1) OF THE NATIONAL FORESTS ACT, 1998, AS AMENDED] on PORTION 1 OF THE FARM BRAKFORTEIN 276, HOPETOWN NORTHERN CAPE for 4Shephards tree (Boscia albitunca)

Licence NCU 2831112 issued in November 2012

Client: Jasper Mining Pty Ltd

2013

APPLICATION FOR A LICENCE REGARDING PROTECTED TREES [SECTION 15(1) OF THE NATIONAL FORESTS ACT, 1998, AS AMENDED] ON REMAINDER OF THE FARM NIEWEJAARSKRAAL NO 40, PRIESKA, NORTHERN CAPE. 30 SHEPPHARD'S TREES

Licence NCU 4290214 issued in February 2014

Client: Saxendrift Mine (Pty) Ltd (Niewejaarskraal Mine)

AMENDMENT OF ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR A SECTION 11 APPLICATION OF A MINING RIGHT CONVERSION IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) on The Farm Riets Drift no. 18, district

Client: Bo-Karoo Diamond Mining (Pty) Ltd to be ceded to Bondeo 140 CC.

2014

Application for a Water Users Licence Application in terms of Section 27 of the National Water Act no 36 of 1998 on the Farm Engelde Wilgeboomfontein 22, Prieska

Application still under review

Client: Thunderflex 78 (Pty) Ltd

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT CONVERSION IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) on Portion 1 of the farm Brakfontein 276 district of Hopetown

EIA/EMP approved April 2015 by the Regional Manager

Client: Jasper Mining (Pty) Ltd

Environmental Management Plan with an application for a Prospecting Right for diamonds on REMAINING EXTENT OF THE FARM MARKSDRIFT 3, HOPETOWN in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in April 2015 with the Prospecting Right

Client: BONDEO 140 CC

2015

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A PROSPECTING RIGHT IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) on Portion 1 of the farm Speculatie 217 district of Boshof

EIA/EMP has been accepted by the Regional Manager Free State Region

Client: Thaba Thafita Diamond Prospecting CC

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A PROSPECTING RIGHT IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) on a Portion of Erf 1318, Galeshewe, and a Portion of the Remainder Erf 5336, Kimberley

**EIA/EMP still under review by the Regional Manager Northern Cape Region
Client: Mystic Pearl 157 (Pty) Ltd**

2016

**ANNUAL REHABILITATION PLAN for Associated Manganese Mines of South Africa Ltd
Glosam Prospecting Area
February 2016**

REFERENCES

Dr Elizabeth (Betsie) Milne
Tel No.: 082 992 1261
Fax No.: N/A (No fax)
E-mail address: betsiemilne@gmail.com

Hennie van Wyk
Member : Diacor CC
Mobile: +27(0)828201879
Email : hennie@goodhopereserve.co.za

DIE UNIVERSITEIT
VAN DIE ORANJE-
VRYSTAAT



THE UNIVERSITY
OF THE ORANGE
FREE STATE

HIERMEE WORD VERKLAAR DAT DIE GRAAD THIS IS TO CERTIFY THAT THE DEGREE

Magister in Omgewingsbestuur
Master in Environmental Management

TOEGEKEN IS AAN
HAS BEEN CONFERRED UPON

ROELINA HENRIËTTE OOSTHUIZEN

NADAT AAN DIE STATUTE EN REGULASIES VAN IN ACCORDANCE WITH THE STATUTES AND
DIE UNIVERSITEIT VOLDOEN IS. AS BEWYS REGULATIONS OF THE UNIVERSITY. AS
DAARVAN PLAAS ONS ONS ONDERSKEIE WITNESS OUR RESPECTIVE SIGNA-
HANDTEKENINGE EN DIE SEËL VAN DIE TURES AND THE SEAL OF THE
UNIVERSITEIT HIERONDER. UNIVERSITY BELOW.



A-J Postze

.....
VISEKANSELIER/VICE-CHANCELLOR

G. van Wyk

.....
DEKAN/DEAN

[Signature]

.....
REGISTRATEUR/REGISTRAR

BI. OERHONTEIN
2000-09-16