

APPENDIX B

Environmental Management Actions

The mitigation measures which will apply during the Site Establishment, Operation and Rehabilitation phases to be undertaken at the prospecting sites listed within this report are provided in the following sections. The management procedures are to be applied to activities at both sites unless otherwise stated. An “aspects based” approach has been adopted to the mitigation measures as the impacts may be more effectively controlled through the management of the aspects, eg the impact on surface water quality may be effectively mitigated through the management of surface water runoff, discharge of water from a point source and from effective hazardous waste management.

Overall objectives and specific targets for the management of the various aspects at the prospecting sites are provided. Activities which are responsible for the aspect are listed and the likely impact summarised. The responsibility for the implementation of the mitigation measures is indicated and any institutional and training requirements outlined. Finally, requirements for monitoring of prospecting activities on site are provided.

The Mitigation Measures are grouped under the following aspects:

- Energy consumption
- Water consumption
- Releases to Water (point)
- Releases to Water: Diffuse (Stormwater Management)
- Emissions to Air
- Noise Disturbance
- Surface Disturbance (Soil Compaction and Loss)
- Surface Disturbance (Vegetation Degradation and Loss)
- Surface Disturbance (Cultural Heritage, Archaeology, Palaeontology)
- Surface Disturbance (Land use and Productivity)
- Surface Disturbance and Changes in Landform and Topography (Aesthetics)
- Changes in landform and Topography (Public Health and Safety)
- Solid Waste Generation and Disposal
- Access Creation and Disruption
- Procurement of Goods and Services
- Employment and Training
- Additional Measures, which include
 - Community Relations
 - Staff Safety and Education
 - Work Stoppages
 - Existing Services and Infrastructure

1.1 Energy Consumption

Objectives:	<p>To utilise renewable resources SUSTAINABLY, and non-renewable resources WISELY.</p> <p>To ensure that the project does not impact negatively on the availability of power for other users.</p>
Targets:	<p>To use “clean” sources of power where possible, eg solar power.</p> <p>To minimise the amount of power utilised on site and to guard against the unnecessary wastage of power.</p>
Activities:	<p>All mining activities using diesel.</p>
Impact:	<p>Greenhouses gasses produced from the production of power from fossil fuels.</p> <p>The depletion of non-renewable materials in the generation of power and the processing of diesel.</p>
Mitigation Measures:	<p>Alternative energy sources (such as solar power) to be used where practical.</p> <p>Energy saving measures (eg the use of energy saving globes) to be implemented on site.</p> <p>All vehicles are to be kept in good working order to minimise fuel consumption.</p>
Responsibility:	<p>Site Agent</p> <p>Operators</p>
Permit Requirements:	<p>None</p>
Institutional and Training requirements:	<p>Appointment of a designated on site staff member who will be responsible for the contractor’s conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p> <p>Conservation of energy (electricity and diesel) to form part of the environmental awareness training programme.</p>
Monitoring:	<p>Energy conservation will be monitored during the environmental performance assessments.</p>

1.2 Water Consumption

Objectives:	<p>To utilise renewable resources SUSTAINABLY, and non-renewable resources WISELY.</p> <p>To ensure that the project does not impact negatively on the availability of water for other users, including the environment.</p> <p>To ensure that the project does not impact on the conservation status of the ecosystems and the health and welfare of surrounding water users.</p>
Targets:	<p>Recycle as much of the process water as possible and prevent wastage and / or loss through the proper maintenance of machinery.</p> <p>Ensure that all water which is discharged off site as stormwater meets the DWA standards for water quality.</p>
Activities:	<ul style="list-style-type: none">• Dust suppression• Seeding
Impact:	<p>The depletion of potable and process water sources to the detriment of other users and the environment.</p>
Mitigation Measure:	<p>Recycling of water must take place where possible.</p> <p>Minimise the use of water on site.</p> <p>Water abstraction from dams, streams, rivers etc is not permitted without obtaining the necessary authorisation from DWA.</p>
Responsibility:	<p>Site Agent</p>
Permit Requirements:	<p>A water abstraction permit will be required from DWA if the contractor wishes to abstract water from any surface source. Obtaining this permit is the contractor's responsibility and should be applied for as soon as the contract is awarded.</p>
Institutional and Training requirements:	<p>Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p> <p>Water conservation and recycling will form part of the environmental awareness training programme.</p>

Monitoring:	Water consumption is to be monitored by staff on an ongoing basis and reported to the EEA. The implementation and efficacy of the water conservation policy and plan will be assessed as part of the biannual performance assessments.
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1.3 Releases to Water (Point)	
Objectives:	<p>To ensure that the project does not impact negatively on the ground and surface water quality and therefore the health of other users, and of the environment.</p> <p>To ensure that any polluted water is treated and discharged in accordance with the legislation with negligible risk to the health of other users and the environment.</p> <p>To prevent the loss of soil through erosion caused by point source discharge.</p>
Targets:	<p>All water which is discharged on or off site either as stormwater, wastewater or process water must meet the DWA standards for water quality.</p> <p>The discharge of water from point sources must not result in the pollution or loss of soils through erosion.</p>
Activities:	<ul style="list-style-type: none"> • Dust suppression
Impact:	<p>The contamination of soils through discharge of polluted water.</p> <p>The pollution of surface and groundwater sources through the discharge of polluted water.</p>
Mitigation Measure:	<p>Potential point sources of pollution include any machinery required for use for dust suppression or generators required for electricity.</p> <p>Temporary work areas (eg during the construction phase) are to be equipped with chemical porta-loos, which should be emptied on a regular basis and the contents disposed of at a registered sewage treatment works.</p> <p>All temporary / portable toilets shall be secured to the ground to prevent them toppling due to wind or any other cause. All toilets are to be maintained in a clean, sanitary condition. The Site Agent shall ensure that no spillage occurs when the toilets are cleaned, or emptied, and that the contents are properly stored and removed from Site. Discharge of waste from toilets into the environment, and burial of waste, is strictly prohibited.</p> <p>Refueling activities should not be conducted where runoff could carry contaminants into drainage pathways (including stormwater drains / trenches and sewers).</p>

	<p>Washing of vehicles must not be allowed on site and must be undertaken elsewhere.</p> <p>Washing, whether of the person, or of personal effects, and acts of excretion and urination, are strictly prohibited other than at the facilities provided.</p> <p>No wastewater shall be discharged into rivers or streams.</p>
Responsibility:	Site Agent
Permit Requirements:	No permits are required.
Institutional and Training requirements:	<p>The prevention of pollution through the discharge of contaminated water will form part of the Environmental Awareness Programme.</p> <p>Appointment of a designated Environmental Control Officer (ECO) on site.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p>
Monitoring:	Possible pollution of soil or water bodies will be monitored by the EEA during the bi-annual site inspections and reported to the DMR on a bi-annual basis as part of the environmental performance assessments. The contractor must monitor for such pollution between the inspections by the EEA.

1.4 Releases to Water: Diffuse (Stormwater Management)

Objectives:	<p>To ensure that the project does not impact negatively on the ground and surface water quality and therefore the health of other users, and of the environment.</p> <p>To ensure that all contaminated water (eg. sediment laden runoff) is treated and discharged in accordance with the legislation with negligible risk to the health of other users and the environment.</p> <p>To prevent the loss of soil through erosion caused by stormwater runoff.</p>
Targets:	<p>Provide for appropriate stormwater control, protecting exposed areas from stormwater runoff and directing and dissipating stormwater in such a manner as to prevent erosion.</p>
Activities:	<ul style="list-style-type: none">• Clearing and grubbing• Stripping of topsoil• Creation of stormwater drainage systems• Excavation of material• Stockpiling of topsoil and overburden• Rehabilitation measures.
Impact:	<p>The overland flow of stormwater may result in the erosion and loss of soil, the transformation of the surface through gully and sheet erosion and the contamination of surface water bodies through sediment ingress and pollution with consequent impacts on the aquatic flora and fauna.</p>
Mitigation Measure:	<p>No rock, silt, cement, grout, petroleum product, timber, vegetation, domestic waste, or any deleterious substance shall be placed or allowed to disperse into the local surrounding environment.</p> <p>Halt construction activity on exposed soil during events of high rainfall intensity and runoff.</p> <p>Minimise vegetation cover removal on all the cleared areas - ie only clear those areas where mining and stockpiling is currently taking place.</p> <p>Water that has been contaminated with suspended solids, like soils and silt, may be released into natural watercourses or stormwater channels. However, all suspended solids shall be removed from water before it is discharged by settling out these solids in an energy dissipater / settling pond.</p> <p>Soil erosion shall not be tolerated at any of the sites. Uncontrolled erosion will cause siltation and pollution of drainage lines and other downstream areas and result in loss of valuable topsoil. The Site Agent / Contractor should take all reasonable measures to prevent soil erosion and protect areas susceptible to erosion. Erosion prevention measures must be implemented to the satisfaction of the EEA and DMR.</p> <p>Areas particularly susceptible to erosion include:</p>

	<ul style="list-style-type: none"> • areas stripped of topsoil, and • soil stockpiles. <p>Where erosion does occur, the Site Agent shall reinstate such areas to the satisfaction of the DMR and the EEA through the construction of contour berms, cut-off drains, or planting of grass sods / ground cover, as may be necessary. Topsoil that has been washed away shall be replaced.</p>
Responsibility:	Site Agent
Permit Requirements:	There are no permit requirements for the control of erosion and stormwater discharge.
Institutional and Training requirements:	<p>There are no specific institutional or training requirements for the control of stormwater.</p> <p>Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p>
Monitoring:	<p>Areas affected by mining related activities must be monitored regularly for evidence of erosion.</p> <p>Results will be reported in the Environmental Performance Assessment Reports submitted to the DMR.</p>

1.5 Emissions to Air

Objectives:	<p>To reduce dust emissions to levels that are acceptable in terms of the following aspects: nuisance, road hazards, aesthetics and health hazards.</p> <p>To minimise the risk to human health through the minimisation of emissions and the provision of protective equipment.</p>
Targets:	<p>Identify all potential sources of dust.</p> <p>To ensure that dust emissions do not exceed the legal standards and where these standards are exceeded, to take the necessary precautionary measures to protect the health of the exposed persons.</p>
Activities:	<ul style="list-style-type: none">• Upgrade of access to site• Clearing and grubbing• Stripping of topsoil• Stripping of overburden• Stockpiling of topsoil and overburden• Excavation and loading of material• Rehabilitation measures.
Impact:	<p>Excessive exposure to dust may impact on human health. Lower levels are primarily of a nuisance value. Dust is regarded as a nuisance when it reduces visibility, soils private property, reduces the palatability of grazing grasses and may retard plant growth. It is also aesthetically displeasing.</p>
Mitigation Measure:	<p>Minimise areas of exposed soil by only clearing those areas where prospecting or stockpiling is taking place and by revegetating prospecting and stockpiling areas progressively where possible.</p> <p>Employ dust suppression measures on dry dusty surfaces. This may involve the spraying of water from water carts.</p> <p>Operators exposed to high levels of dust must be equipped with dust masks. This is a health and safety requirement and must be managed via the mine's Health and Safety Plan.</p> <p>Ensure all equipment is in good operating order, and fitted with standard air emission control devices.</p> <p>Minimise idling of engines at all times.</p>
Responsibility:	Site Agent.
Permit	No permits required.

Requirements:	
Institutional and Training requirements:	<p>The minimisation of dust and gaseous emissions and the use of protective equipment will form part of the health, safety and environmental awareness and training programmes.</p> <p>Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p>
Monitoring:	<p>Dust will be monitored by the EEA and the Health and Safety Auditor during the bi-annual site inspections.</p>

1.6 Noise Disturbance

Objectives:	To minimise the risk to human health through the minimisation of noise and the provision of protective equipment.
Targets:	Identify all potential sources of noise. Take the necessary measures to ensure that noise does not exceed the legal standards and where these standards are exceeded, to take the necessary precautionary measures to protect the health of the exposed persons.
Activities:	<ul style="list-style-type: none">• All prospecting activities (operation of machinery etc)• Transportation of material.
Impact:	Excessive exposure to high level noise may result in temporary or permanent damage to hearing. Exposure to lower noise levels (eg at areas where houses are close to some of the prospecting sites) may be of nuisance value (irritation).
Mitigation Measures:	No nighttime activities are to take place at the prospecting sites. All activities with high noise levels should be restricted to daylight hours on weekdays. Working hours on Saturdays should be from 06h00-13h00. All operators exposed to noise in excess of 85dB will be equipped with hearing protection devices. The Site Agent shall take the necessary measures to limit noise levels on site to within legally acceptable limits. The regulations framed under the Machinery and Occupational Safety Act, 1983 (Act No. 6 of 1983) apply. All vehicles to be kept in a serviceable condition and fitted with silencers. Where possible physical barriers are to be placed between noise sources and the community.
Responsibility:	Site Agent
Permit Requirements:	No permits are required.
Institutional and Training	The minimisation of noise and the use of protective equipment will form part of the health, safety and environmental awareness and training programmes.

requirements:	<p>Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p>
Monitoring:	Noise will be monitored by the EEA and the Health and Safety Auditor during the bi-annual site inspections. The site agent and contractor must undertake more regular inspections to ensure that the requirements of the approved EMP are complied with.

1.7 Surface Disturbance (Soil Compaction and Loss)	
Objectives:	To minimise the disturbance or loss of topsoil and subsoil through limiting the footprint of the operations and / or recovering and protecting soil for use in final rehabilitation of the sites. There is generally only a limited amount of topsoil in the local environment so a considerable effort must be employed to ensure whatever is available on site.
Targets	<p>To ensure that all activities which might impact negatively on the soils are restricted to the smallest area possible.</p> <p>To ensure that rehabilitation is such that the minimum land with agricultural potential is compromised.</p> <p>To limit soil erosion and consequent degradation of soil and pollution of air and surface water.</p>
Activities:	<ul style="list-style-type: none"> • Clearing and grubbing • Stripping of topsoil
Impact:	<p>Compaction of soil may result in the loss of soil viability (ie ability to sustain vegetation). Compacted soils decrease infiltration and increase runoff which increases the risk of erosion.</p> <p>Soil may be lost through erosion.</p>
Mitigation Measure:	<p>Topsoil should be viewed as a precious commodity on site. Every effort must be made to preserve topsoil from construction areas, to protect it from loss through erosion and to maintain its viability.</p> <p>Topsoil shall be removed from the prospecting sites only when they are excavated and should be replaced as soon as possible</p> <p>During site clearing and establishment activities, topsoil shall be excavated to a depth of 150 mm. Topsoil must be placed separately from overburden.</p>

	<p>The topsoil stockpiles shall be clearly demarcated with appropriate signage.</p> <p>Topsoil shall not be mixed with any other material (subsoils etc).</p> <p>Topsoil should under no circumstances be used to create diversion berms or for general erosion control measures.</p> <p>All overburden (decomposed rock) and subsoil must be stockpiled for use in backfilling of each trial pit.</p> <p>The size of required work areas must be restricted to the minimum required for efficient and effective work.</p> <p>The minimum amount of vegetation must be removed from the construction sites.</p> <p>Plan for the worst case, that is, for heavy rainfall and runoff events, or high winds.</p> <p>Care must be taken not to introduce alien plant material into the stockpile areas.</p> <p>All disturbed sites must be revegetated and rehabilitated immediately after excavation on each site has been completed so as to limit the exposure of the disturbed areas to wind and water erosion.</p> <p>Should any soil become contaminated by pollutants (eg oil spillages), this must be dug up and removed from site for treatment and / or disposal at a licensed facility. No treatment of contaminated soils (e.g. bioremediation) shall be allowed on site.</p>
Responsibility:	Site Agent
Permit Requirements:	No permits required.
Institutional and Training requirements:	<p>The protection and conservation of soil will form part of the health, safety and environmental awareness and training programmes.</p> <p>Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p>
Monitoring:	Soil conservation and protection will be monitored as part of the bi-annual EEA visits and reported on in the environmental performance assessment reports.

1.8 Surface Disturbance (Vegetation degradation and loss)

Objectives:	<p>To minimise the impact on the vegetation, taking special consideration of species of high conservation value (rare or protected species – none identified on either site).</p> <p>To protect and preserve as far as possible, the indigenous animal life affected by the construction operations.</p>
Targets:	<p>No loss of biodiversity.</p> <p>The reestablishment of indigenous vegetation following closure and rehabilitation of the prospecting sites.</p> <p>The prevention of the spread of alien invasive plant species.</p>
Activities:	<ul style="list-style-type: none"> • Clearing and grubbing.
Impact:	<p>Loss of vegetation, loss of animal habitat and spread of alien invasive vegetation.</p>
Mitigation Measure:	<p>Natural features, in other words the indigenous flora and fauna within the vicinity of the project works, should be protected and damage or disturbance prevented or minimised, specifically:</p> <p>No plant species outside of the designated prospecting sites and associated areas may be removed.</p> <p>No prospecting staff may have access to indigenous vegetation outside of the site areas.</p> <p>The use of indigenous plants as firewood is prohibited.</p> <p>All fauna (including domestic livestock) within, and surrounding the sites, shall be protected. They shall not be caught, poisoned, trapped, snared or killed.</p> <p>The minimum amount of vegetation must be removed. Excessive clearing of the sites must be avoided. Disturbance outside of the immediate construction areas must be avoided.</p> <p>Planning and construction must ensure that alien plants are not introduced to the disturbed areas. This can be accomplished by:</p> <ul style="list-style-type: none"> • Utilising the saved topsoil from the construction areas and regular monitoring during the revegetation phase and immediately after the revegetation phase. • Preventing continuous disturbances of the rehabilitated areas. • Alien invader species must be removed from the sites and destroyed as per the DWA Working for Water specifications for that species. Any regrowth must be controlled in the same manner.

	<ul style="list-style-type: none"> • Soil should not be moved from one part of a site to another unnecessarily.
Responsibility:	Site Agent.
Permit Requirements:	No Permit required.
Institutional and Training requirements:	<p>Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p> <p>The protection and rehabilitation of vegetation cover will form part of the environmental awareness training programme.</p>
Monitoring:	Protection and rehabilitation will be monitored as part of the bi-annual EEA visits and reported on in the environmental performance assessment reports.

1.9 Surface Disturbance (Cultural Heritage, Archaeology, Palaeontology)

Objectives:	To identify, protect and preserve any sites of cultural, religious, archaeological or palaeontological significance.
Activities:	<ul style="list-style-type: none"> • Clearing and grubbing • Stripping of topsoil • Stripping of overburden
Impact:	All sites of cultural heritage, archaeological or palaeontological significance identified during the specialist archaeological and palaeontological assessments (to be submitted separately) within the proposed prospecting areas will be avoided completely and will not be damaged in any way (unless, where allowed, a permit is first received for doing so). There is also always some potential that sites may be uncovered during the site preparation and prospecting activities. It is necessary therefore to put in place an action plan for this eventuality.
Mitigation Measures:	<p>All activities must be restricted to the smallest area possible. All areas outside of the designated prospecting areas will be placed out of bounds.</p> <p>Should an archaeological or cultural site be located during site preparation or the proposed mining activities, it should immediately be reported to the South African</p>

	<p>Heritage Resource Agency. Failure to report a site of archaeological and/or cultural significance is a contravention of the National Heritage Act (Act No 25 of 1999).</p> <p>Before excavation recommences, a site visit by a qualified palaeontologist be undertaken to record, and if necessary sample, fossil heritage and relevant sedimentological data that may be exposed within the prospecting area. The field assessment report should make recommendations for any further mitigation that may be necessary.</p> <p>All site staff must be briefed to immediately report any potential sites which are encountered during the project. In the event of finding what appears to be an archaeological site or a cultural and / or historic site or object, work should be terminated until a qualified archaeologist or historian can examine the item or find.</p> <p>In the case of significant fossil finds, these should be safeguarded - preferably <i>in situ</i> - and reported by the ECO as soon as possible to the relevant heritage management authority (SAHRA) so that any appropriate mitigation by a palaeontological specialist can be considered and implemented, at the developer's expense.</p> <p>Should any sites be discovered, the Site Agent shall take reasonable precautions to prevent any person from removing or damaging any fossils, coins, articles of value or antiquity and structures and other remains of archaeological interest discovered on the sites, immediately upon discovery thereof and before removal. All works within the vicinity of the discovery must cease immediately and the area shall be cordoned off until such time as the SAHRA authorises resumption of the works in writing.</p> <p>The palaeontologist concerned with mitigation work will need a valid collection permit from SAHRA. All work would have to conform to international best practice for palaeontological fieldwork and the study (<i>e.g.</i> data recording fossil collection and curation, final report) would have to adhere to the minimum standards for Phase 2 palaeontological studies currently being developed by SAHRA.</p>
Responsibility:	Site Agent.
Permit Requirements:	No permits are required as no sites have been identified.
Institutional and Training requirements:	<p>The possible uncovering of sites of cultural heritage or palaeontological significance and the actions to be taken in event of this occurring will be covered by the Environmental Awareness Training Course.</p> <p>Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p>

Monitoring:	The possible discovery of sites of cultural heritage or palaeontological significance will be monitored during the bi-annual ECO visits and reported during the environmental performance assessment reports.
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1.10 Surface Disturbance (Landuse and Productivity)	
Objectives:	To minimise the impact on surrounding landuses during construction. To, where possible, return the affected areas to their previous landuse capabilities following completion of construction.
Targets:	Rehabilitation of the prospecting areas and stockpiles in order to allow for the resumption of the previous landuse (ie grazing) within a reasonable time frame following completion of the mining operations.
Activities:	<ul style="list-style-type: none"> • Clearing and grubbing • Stripping of topsoil • Stripping of overburden • Stockpiling and spoiling • Prospecting operations (general)
Impact:	The mining operations will result in a temporary change of landuse. The small patches of affected land at the prospecting sites will not be available for their current use (grazing) for the duration of the prospecting operations.
Mitigation Measure:	All activities must be restricted to the smallest area possible. All areas outside of the prospecting sites should be placed out of bounds. Measures outlined in 1.8 (vegetation), above, are to be implemented in order to return the site to the previous landuse on closure.
Responsibility:	Site Agent.
Permit Requirements:	No permits are required.

<i>Institutional and Training requirements:</i>	Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP. Appointment of an External Environmental Auditor (EEA) to conduct monthly site inspections and audits.
<i>Monitoring:</i>	This impact will be monitored by an independent EEA on completion of the mining operations and rehabilitation programme.

1.11 Surface Disturbance and Changes in Landform and Topography (Aesthetics)

<i>Objectives:</i>	To minimise as far as possible the visual impacts resulting from the prospecting activities on site and to return the land to its previous condition as far as possible on completion of the mining operations.
<i>Activities:</i>	<ul style="list-style-type: none"> • Clearing and grubbing • Stripping of topsoil • Stripping of overburden • Stockpiling and spoiling • Prospecting operations (general)
<i>Impact:</i>	The impact of the prospecting activities on the aesthetics of the general landscape surrounding the prospecting area.
<i>Mitigation Measure:</i>	<p>In addition to the mitigation measures described under Section 1.7, the following will apply:</p> <p>Photographic records to be kept throughout prospecting actions, starting prior to any activities getting underway. Fixed point photo sites are to be selected. These photographic site records should be used to ensure that the affected topography and vegetation can be reinstated, where practical, to a state which closely approximates the natural situation.</p> <p>Prospecting is to take place according to the plans included in this EM Plan document.</p> <p>All site equipment shall be positioned to limit visual intrusion on neighbours and the size of areas disturbed.</p> <p>The EEA shall approve all stockpiling and spoiling sites and confirm the end-use or rehabilitation plans for these sites. Stockpiling will generally be temporary in nature as the material will be returned to the pit after investigation. The stockpiles should be located adjacent to each prospecting location. Material must be stockpiled in such a way as to minimise the spread of materials and the impact on the natural</p>

	<p>vegetation.</p> <p>The Site Agent shall ensure that, insofar as he has the authority, all persons, machinery, equipment and materials are restricted to the specific prospecting sites and therefore limit their impact on surrounding areas not associated with the project.</p>
Responsibility:	Site Agent
Permit Requirements:	None
Institutional and Training requirements:	<p>Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p>
Monitoring:	The visual impact of the mining operations will be assessed as part of the bi-annual ECO site visits and reported on in the environmental performance assessment reports.

1.12 Changes in Landform and Topography (Public Health and Safety)

Objectives:	To prevent any injury to staff or members of the public which might incur through access to unstable surfaces, high faces etc.
Activities:	<ul style="list-style-type: none"> • Prospecting activities (general)
Impact:	Injury or death incurred as a result of access to prospecting trial holes.
Mitigation Measure:	<p>A Health and Safety Plan and Programme is to be compiled and implemented on site.</p> <p>The prospecting areas must be placed out of bounds to members of the public and other unauthorised persons.</p> <p>Security must be put in place to prevent unauthorised access to the sites.</p> <p>The prospecting sites are to be marked with danger tape.</p> <p>Appropriate warning signage is to be erected around the prospecting areas.</p>

Responsibility:	Site Agent Health and Safety Officer
Permit Requirements:	None
Institutional and Training requirements:	Appointment of a health and safety officer. All staff is to attend the health and safety training programme.
Monitoring:	Health and Safety to be monitored by an external, independent health and safety professional.

1.13 Solid Waste Generation and Disposal

Objectives:	To ensure that the establishment and operation activities at the prospecting sites do not have a significant negative impact on the environment through the manner in which solid waste is stored, handled or disposed of.
Targets:	<p>Minimise the quantities of solid waste by reducing, reusing and recycling materials wherever possible.</p> <p>To store, handle and dispose of all solid waste according to sound environmental principles and in accordance with the legal requirements.</p>
Activities:	<ul style="list-style-type: none">• Prospecting operations (general)
Impact:	Inappropriate handling and disposal of waste may result in contamination of water sources, soils and general pollution of the surrounding environment.
Mitigation Measure:	<p>No waste may be disposed of at either site. All waste generated during the construction of the sites must be removed and disposed of at a registered waste disposal site.</p> <p>Adequate litter drums or other containers must be located at each prospecting site(while it is being investigated) to ensure that no litter is generated on site. The containers should be fitted with suitable lids and pegged to the ground so that dogs or any other scavengers cannot gain access to the container when the sites are unattended.</p> <p>No burning of refuse is to take place on site.</p> <p>No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall occur.</p> <p>All solid waste shall be disposed of offsite at least once weekly at an approved landfill site. The Site Agent shall provide the EEA with documentary proof of disposal during the biannual compliance audit site inspection.</p>
Responsibility:	Site Agent
Permit Requirements:	None
Institutional and Training	<p>Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site</p>

requirements:	inspections and audits. Solid Waste Management will form part of the environmental awareness training to take place on site.
Monitoring:	Solid waste management to be monitored by the EEA during the bi-annual site visits and to be reported on in the environmental performance assessment reports. The contractor must monitor solid waste management practice on a more regular basis (ie. during the period between the bi-annual inspections).

1.14 Hazardous Waste Generation and Disposal

Objectives:	To manage the hazardous waste component so as to minimise the potential to cause harm to the human and the natural environment.
Targets:	To have zero spillages of hazardous materials on site.
Activities:	<ul style="list-style-type: none">• Vehicle and plant repair and maintenance.
Impact:	The pollution of soil, surface water and groundwater as a result of spillages of hazardous substances.
Mitigation Measure:	<p>Hazardous substances used on site will likely include fuel, oil and certain degreasers.</p> <p>The relevant Material Safety Data Sheets (MSDS) shall be available on site. Procedures detailed in the MSDSs shall be followed in the event of an emergency situation.</p> <p>Fuel storage on site must be limited to a mobile fuel bowser.</p> <p>The Site Agent shall ensure that all fuels and chemicals are handled and stored in a manner so to minimise the risk of spills, leaks or structural failures.</p> <p>The Site Agent shall have on site all the necessary materials and equipment to deal with spills of any of the substances stored on site.</p> <p>The Site Agent shall set up a procedure to deal with a spillage or pollution event.</p> <p>Staff shall be appropriately trained to deal with any spills or pollution threat.</p> <p>No smoking shall be allowed within the vicinity of the fuel storage area.</p> <p>The Site Agent shall ensure that there is adequate fire-fighting equipment at the fuel stores.</p> <p>Gas and fuels shall not be stored in the same storage area.</p> <p>Where reasonably practical plant shall be refuelled at off site. If it is necessary to refuel plant on site (from mobile bowser or drums of fuel) then suitable precautionary measures must be taken (use of drip trays or suitably alternative protective measures) to prevent spillage of fuel and protect against pollution.</p> <p>The Site Agent shall ensure that there is always a supply of absorbent material (eg. Zorbit) readily available to absorb / breakdown hydrocarbon spills, and where possible, be designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200 litres of hydrocarbon liquid spill.</p> <p>Where practical, all maintenance and repair of equipment and vehicles shall be performed off site. If it is necessary to do maintenance on site, then drip trays must</p>

	<p>be used. Only emergency repair and maintenance work is allowed on site.</p> <p>The Site Agent shall ensure that there is no contamination of the soil, or vegetation, in those areas where emergency plant maintenance has been conducted.</p> <p>Drip trays shall also be provided for stationary plant (such as compressors) and for “parked” plant (such as excavators, vehicles).</p> <p>Drip trays shall be inspected and emptied daily, and serviced when necessary. Drip trays shall be closely monitored during rain events to ensure that they do not overflow.</p> <p>All vehicles and equipment shall be kept in good working order and serviced regularly.</p> <p>Leaking equipment shall be repaired immediately or removed from the site.</p> <p>The washing of equipment shall be restricted to urgent or preventative maintenance requirements only. Other washing shall be undertaken off site. The use of detergents for washing shall be restricted to low phosphate and nitrate containing, low sudsing-type, detergents.</p> <p>The appropriate danger / warning signs must be erected on the mobile diesel bowser and prospecting area.</p> <p>Fuel lubricants, solvents, paints, herbicides and other chemicals must only be brought onto site when required and must not be stored on site.</p>
Responsibility:	Site Agent
Permit Requirements:	None
Institutional and Training requirements:	<p>Appointment of a designated on site staff member who will be responsible for the contractor’s conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p> <p>Appropriate hazardous waste management will form part of the environmental awareness and training course.</p>
Monitoring:	<p>Solid waste management to be monitored by the EEA during the bi-annual site visits and to be reported on in the environmental performance assessment reports. The Site Agent must under regular compliance monitoring in between the EEA’s bi-annual inspections.</p>

1.15 Access Creation and Disruption

Objectives:	To minimise the disruption of traffic on public roads.
Activities:	<ul style="list-style-type: none">• General prospecting activities.
Impact:	The movement of plant and vehicles along the district road accessing the site may result in some disruption to traffic on the road. This is likely to be largely of nuisance value.
Mitigation Measure:	<p>Increased traffic, especially heavy vehicle traffic, has the potential to draw complaints from residents using the district road that runs past the prospecting area. The Site Agent is expected to address any complaints received.</p> <p>The Site Agent shall comply with all the applicable local, regional and national by-laws with regard to road safety and transport. He shall instruct his drivers and plant operators that vehicles will be expected to comply with all road ordinances, such as speed limits, roadworthiness, load securing / covering.</p> <p>Flagmen and signage must be utilised on site to warn motorists that heavy plant machinery will be entering and exiting the sites (when applicable).</p> <p>Site vehicles should be permitted access only within the demarcated prospecting sites or on existing roads (wherever possible), as would be required to complete their specific tasks.</p> <p>Site vehicle traffic should be limited to specific access roads or corridors to prevent unnecessary damage to the natural environment.</p>
Responsibility:	Site Agent
Permit Requirements:	None
Institutional and Training requirements:	<p>Appointment of a designated on site staff member who will be responsible for the contractor's conformance with the approved EMP.</p> <p>Appointment of an External Environmental Auditor (EEA) to conduct bi-annual site inspections and audits.</p>
Monitoring:	Will be monitored through a public complaints register.

1.16 Procurement of Goods and Services

Objectives:	To maximise the benefits to the local economy through the procurement of goods and services locally if practical.
Activities:	<ul style="list-style-type: none">• Prospecting operations (general)
Benefit:	The local economy within the Study Area and further afield within the surrounding areas of the Ndlambe Municipality stands to benefit through the supply of materials or specialist services.
Measures to enhance benefit:	A targeted procurement policy to be implemented at the mine whereby goods and services should be sourced locally if possible. "Local" meaning the study area, followed by the Ndlambe Municipality and finally by the Eastern Cape Province.
Responsibility:	Site Agent
Permit Requirements:	None
Institutional and Training requirements:	None
Monitoring:	None required.

1.17 Employment and Training

Objectives:	To maximise the social and economic benefits to the local residents through employment and training.
Activities:	<ul style="list-style-type: none">• Recruitment of labour• Training
Benefit:	The local community stand to benefit from the provision of jobs and the implementation of a staff training programme.
Measures to enhance benefit:	Staff (both skilled and unskilled) should be sourced from within the Ndlambe Municipality if possible. A training programme should be put in place to train unskilled labour into skilled positions.
Responsibility:	Site Agent
Permit Requirements:	None Required.
Institutional and Training requirements:	Implementation of a Staff Training Programme.
Monitoring:	Will be monitored via the Social and Labour Plan.

1.18 Additional Mitigation Measures

1.18.1 Community Relations

The Site Agent shall erect and maintain information boards at the entrance to the prospecting area. Such boards shall include contact details for complaints by members of the public.

The Site Agent shall keep a "Complaints Register" on site. The Register shall contain all contact details of the person who made the complaint, information regarding the complaint itself, and measures taken to address the complaint.

The landowner must be kept informed of activities and project progress on site on a regular basis.

1.18.2 Staff Safety and Education

All staff shall be given a health and safety induction course before beginning work on sites. Part of the induction course will be to make the staff aware of the potential dangers associated with the prospecting process and the potential hazards around the sites.

The contractor is required to produce a **Health and Safety Plan (HSP)** as per the requirements of the Occupation Health and Safety Act and Regulations as well as in accordance with the Mine Health and Safety Act (Act No. 29 of 1996). The HSP must include general community safety in the vicinity of the site, as well as measures to minimise the nuisance factors, such as dust and noise.

The Site Agent must maintain a suitable First Aid Kit at the site office and will have a list of the emergency service contact numbers readily available.

Telephone numbers of emergency services, including the local fire fighting service and HAZMAT / ZORBIT, shall be kept on site at all times.

No unauthorised firearms are permitted on site.

All operations on the prospecting sites must be undertaken according to the Mine Health and Safety Act No. 29 of 1996 and ensure the safety, health and welfare of the staff on site.

1.18.3 Work Stoppage

The DMR shall have the right to order work to be stopped in the event of significant infringements of the Environmental Specifications. Work will only be allowed to restart once the situation is rectified in compliance with the specifications.

1.18.4 Existing Services and Infrastructure

The Site Agent shall ensure that existing services in the extended vicinity of the project sites are not disrupted or damaged.