Roads (access roads and haul roads)	The impact of mining on roads (access and haul roads)	Low	The size of the area is 1.5 and this limits the duration of the mining. New roads will possibly only haul roads on the mine area when moving from one area to the next on the site.	• Keep to existing roads as far as possible and when diverting from these roads to get to the excavation points, where at all possible drive over previously disturbed areas (in this case within the mine area). • Roads must be constructed properly (also see erosion control measures in given in C.6.6.2 • Where possible construct roads parallel to the contours to reduce the potential for erosion. • Access roads must be strengthened with sabunga (found in the area and will be suitable). • Loose resource must be removed to make the road safe. • Maintain roads and repair when and where needed.
			The roads on or to the site can be constructed or improved to be more permanent or stronger.	For more formal roads the following must be taken into account and applied where possible and necessary. Erosion in and along access and construction roads could be a problem during and after construction. Mitigating measures include: • Design and install adequate drainage measures • Include regular culverts and control downstream erosion by incorporating velocity reduction measures and fanning outflow • Construct regular drainage berms across roads and regulate flow into the surrounding area • Construct side drains upslope of roads and install velocity reduction measures such as inclusion of grass to reduce flow • Ensure culvert drop inlets remain active; do not silt, and are not constructed before channel invert with concomitant diversion across the road surface • Drainage measures must ensure that the long-term integrity of the access roads remain intact. • This will require regularly and closely spaced inspections and maintenance periods to ensure this objective.

				• With adequate design and construction erosion should not prevent a serious problem. • Mitigation is therefore possible and necessary. **Access roads: Embankments** • Side slope fill embankments will be required along steeper slopes. • Slope instability may occur through poor design that will result in mass movement down-slope. • This will not only render the access road impassable but will also cause environmental degradation down-slope of the road. <u>Mitigating measures should consist of:</u> • Design of embankments to a minimum of 34° (1 Vertical: 1.5 Horizontal or 1:1.5). • Vegetating all embankments side slopes must be undertaken where possible. Vegetation will seldom grow on road slopes steeper than 1:1.5. • Decrease the down slope batter when constructing with materials of low shear strength viz material with a low angle of internal friction and cohesion • Provide measures such a subsoil drains to minimize moisture and hence the phreatic surface Remove deleterious topsoil and subsoil materials prior to embankment construction • Retaining walls may be required in certain circumstances and it is recommended that the services of a geotechnical expert be called on to undertake slope stability analyses in areas of very poor ground conditions. • Mitigating measures, though many and varied, are easily to implement and relatively inexpensive.

Impact on air quality due to exhaust fumes, gas emissions and dust generation with regards to mining	• The effect mining could have on people, animals; natural vegetation and crops if dust or exhaust fumes are generate by the trucks or the earthmoving equipment and transport trucks.	Low. Due to the scale and duration of the activity.	• The rate of mining is about 10 –12 trucks per day. • At this rate of mining (relatively slow) mining will only moderate amount of dust. • There is a relationship between speed and dust generation. Earthmoving machinery moves slowly and creates little dust. • More dust is created when winds blow over exposed land (land void of vegetation). • If this dust has not damage natural vegetation or crops to date then mining at this scale will also not cause damage in future. • The type and scale of the operation will not significantly contribute to the cumulative effect of dust that is generated. • Apart from the dust created when driving on the dirt roads another possible contaminant is from the exhaust fumes of the vehicle. The impact is small and on this low density populated farm the dilution is relatively quickly. • Exhaust emissions contribute to the local, regional and global atmospheric gasses. However, seen in context or comparing with the traffic on the Main Road especially during holiday seasons, the contribution is low. • The area in which the mine is located is undulated and the topography as well as the vegetation that covers it collect or screen the resource so it won't reach only the closest residents. • The earthmoving machines do not run continuously, but only when loading resources and during rehabilitation. Dust and exhaust fumes are only generated for a limited duration initially for two years. • Dust is suppressed by wet, damp weather. • The formation of dust can be reduced if the face is watered down before it is mined and the surface layer of the soil on the tucks can also be water down followed by the covering of the soil with canvas or any other material that will not allow dust particle to pass through (e.g. canvas). • Dust formation and distribution is aggravated by strong winds and low rainfall.	• Limit the size of the area opened (vegetations and topsoil removed and mining occurring) at a time to a small as practically possible. • Trucks must drive slowly on dirt roads (not more than 40 – 60 km/hr on public roads and 30 km/hr on private roads (access and haul roads). • All vehicles must be properly maintained and serviced regularly to ensure they are mechanically sound to reduce the quality and quantity of the gasses that are emitted. • Roads can be water down to suppress the dust if and when necessary. • All vehicles and earthmoving equipment must be fitted with exhaust systems. • Cover the resource on the trucks to ensure the material is not blown onto other vehicles. Use shade cloth, canvas or any other suitable material. • Use water sparingly and only where and when needed use alternative methods of dust suppression or to combat wind erosion. • Alternative mechanisms for dust and wind erosion control. Cover exposed mine areas in the process of rehabilitation with straw, reeds, bark, branches or other suitable material to suppress the dust and prevent wind erosion. • Also see the management plan in the table below • The exhaust fumes of the trucks contribute to the atmosphere along with other vehicles and the vehicles should be mechanically in a good condition to reduce the creation of black smoke and toxic gasses. Also see C.6.1 • Also see description of the effects of dust and the management thereof in the previous sections. • The liberation of dust into the surrounding environment shall be effectively controlled by the use of, *inter alias*, water spraying and/or other dust-allaying agents.

1.			•	• The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used.
Impact on air quality due to exhaust fumes, gas emissions and dust generation	The effect mining could have on people, animals, natural vegetation and crops if dust Under standard operating practices, the proposed regional landfill site would be characterized by three main sources of gaseous emissions: Sources of fugitive dust emissions would include: • Vehicle-entrained dust from paved and unpaved roads • Material handling operations • Wind erosion of open areas and soil covering • Vehicle activity on the mine site, including general vehicles traffic (tractors, trucks, etc) and earthmoving • Dust is also created when driving on the dirt roads.	Low	• There is a relationship between speed and dust generation. Earthmoving machinery moves slowly and creates little dust. • More dust is created when winds blow over exposed areas without vegetation then when mining takes place. • The further possible contaminant is from the exhaust fumes of the vehicle. The impact is small and in this rural area the dilution is relatively quickly. • The area in which the mine is located is undulated and the topography, the distance between the mine and the residential areas (gas dissipates over distance), as well as the vegetation that covers the remaining area on the farm collect or screen the activity so less gas reaches the residents. • The earthmoving machine does not run continuously but only when loading and backfilling. Dust and exhaust fumes are only generated for a limited duration. • The exhaust fumes of the trucks contribute to the atmosphere along with other vehicles and the vehicles should be mechanically in a good condition to reduce the creation of black smoke and toxic gasses.	• Limit the size of the area opened (vegetations and topsoil removed and mining occurring) at a time to a small as practically possible. • Trucks must drive slowly on dirt roads (not more than 40 – 60 km) on public roads and 20 – 30 on private roads (access and haul roads). • All vehicles must be properly maintained and serviced regularly to ensure they are mechanically sound to reduce the quality and quantity of the gasses that are emitted. • Roads can be water down to suppress the dust if necessary. • All vehicles and earthmoving equipment must be fitted with exhaust systems. • Reduce the speed when driving past residences to reduce the potential for dust generation. Wet the road surface or used chemicals to suppress dust. • Cover the resource on the trucks to ensure the resource is not blown onto vehicles and especially the tarred roads. Use shade cloth, netting or any other suitable material. • Use water sparingly and only where and when needed use alternative methods of dust suppression or to combat wind erosion. • Alternative mechanisms for dust and wind erosion control. Cover exposes mine areas in the process of rehabilitation with straw, reeds, bark, branches or other suitable material to suppress the dust and prevent wind erosion. • Vehicles must be serviced regularly to ensure toxic gas emissions are reduced as far as possible.

Impact on noise	When the resource is excavated and loaded noise is general. The trucks transporting the resource also generate noise. Trucks driving nearby residences can cause irritation. Potential noise impacts of the proposed regional landfill site and the mine could possibly have noises from: • Backfilling activities, such as off loading, load distribution and compaction) • Removal of the resources • Loading and trucking of the resources (about 10 –11 trucks per day). • Noise is also created by agricultural activities as well as light and heavy vehicles on the R346 • Noise from generators, farming equipment, pumps, etc.	Negligible to low. Due to the nature, scale and duration of the activity the impact from mining is low in significance and more so if mitigation and management measures are followed. However, earthmoving vehicles with reverse warning signals are used and they normally exceed acceptable noise levels up to a distance of 1030 m.	♦ Noise emitted from the vehicle on the site competes with light and heavy vehicles travelling on the R346. ♦ Noise created by the mining activity is not continuous. The earthmoving machinery will only work when the trucks arrive to load resource and during rehabilitation. ♦ The mine will not produce additional to the current mining in the sabunga mine. ♦ The nearest noise sensitive receptor is the landowner, which is located within 15 m from Site A. The landowner is aware of the activity and approved of the resource mine. ♦ The traffic volume is about 10 – 12 trucks per day if 50000 cubic meters are mined per year... ♦ The SANS standard for acceptable noise levels would be reached at a distance of between 48 and 190 m (depending on weather conditions) although the noise would be clearly audible fro some distance beyond that.	♦ It is important to see that vehicles are in a good working order thereby reducing the noise resulting from friction of mechanical parts. ♦ The use of effective silencers also reduces the noise created by vehicles. ♦ Change to lower gear before reaching residential areas to reduced the noise created. ♦ Bleepers must be switched off and exchanged for flashing lights if legally allowed and if the sound bothers residents (especially where sound is carried by the wind). ♦ Mining must take place between sunrise and sunset (working hours) mainly unless an urgent contract requires longer hours in which case it must be cleared with the landowner whose residence is the closest to the activity. ♦ The vehicles must be mechanically sound to reduce noise generated as a result of friction or movement of mechanical parts. ♦ Should the noise become a problem a berm (as noise barrier) can be constructed that will not only screen most of the sound generated, but also function as a visual screen. For long-term activities, trees can also be planted on the berm or around the mining activity. The noise barrier can be 2 – 3 m high and should be erected about 6 m from the school boundary. ♦ Stored topsoil can be used to construct a berm. Topsoil stockpiles should preferably not be higher than 2 m but should not exceed 5 m.

Impact on surface water	If there is surface water on the site there is a chance that water could be polluted.	Negligible to low.	Surface water is not present on site in the form of dams, drainage channels, streams, rivers or wetlands.	♦ The excavation will not be within 100 m from the centre of the rivers or streams, 25 m from any wetlands or drainage channels and not within 10 m from any man made dam. ♦ As further precaution, remove all contaminants (spills from contaminants) to prevent runoff water from flowing over them and collecting toxic materials as it drains towards river courses, streams, dams, etc. ♦ Any water flowing from the mine area will be collected in a settling pond or sump where the suspended solids can settle before clear water can be used. ♦ Water used for dust suppression will not be allowed to contain contaminants - contaminants must be removed before using water (such as that collected in the borrow pit). ♦ Natural watercourses may not be diverted without permission from DWAF. Natural water coarses do not exist on the sites.
Impact on cultural and heritage sites.	Heritage and archaeological sites have been found in the East London area.	None to Negligible	♦ The Phase 1 heritage and archaeological assessment is negative – no sites or artefacts were found and there is no heritage or cultural sites. ♦ The site is small (1.5 ha) and the impact will be relatively small compared with the rest of the area. ♦ The heritage and archaeological assessment did not note any sites or artefacts	○ Graves, if found, must be reported to the SAP and SAHRA and may not be disturbed. ○ Excavations must avoid the heritage/cultural/ archaeological site - these may not be disturbed. ○ If any archaeological or heritage material is found during mining it must be dealt with in accordance with the National Heritage Resource Act (No. 25 of 1999). ○ If sites are found a specialist will be appointed to do further assessments
Impact on infrastructure	The excavation of resource could cause damage to infrastructure if it occurs too close to such structure.	Negligible	There are no plans to damage any infrastructure. Improvements may occur. Should infrastructure be damaged as a resultr of mining, the damaged infrastructure will e repaired.	♦ The excavation will be within a reasonable distance from any buildings (at least 10 m) and at least 9 m from fences, gates and other infrastructure. ♦ Any accidental damage will be repaired or replaced as the case may be (to fences or gates). ♦ A new gate may be installed at one of the approved accesses to the site, such as where there is currently just a "fence gate".

				• All access roads must be repaired and maintained as discussed above. Where necessary, material from the site (sabunga) will be used to strengthen the road surface. • Only remove fences and gates where there is no alternative. Replace these structures as soon as possible. • Repair roads if damage occurs. No mining in close proximity of residence. No mining within 30 m of power lines, no mining within 20 m of the R346, no mining within 10 m off any other permanent structure (dams, fences, gates).
Impact on IAPs	Health, dust, noise, safety.	Negligible to scale and duration of the operation (each is discussed separately in the assessment)	• The activity is conducted on farms where the people live far apart. The activity will not impact on any people other than the landowner or workers. The activity is short term (two year application that can be extended to a maximum of 5 years) • The possible negative impacts that can occur can be managed or mitigated. • This is a rural location of the site with settlements not in close proximity	• No action needed during this phase except for considerate and safe driving on shared access roads. Trucks may not exceed the speed limit on and off the mine site. • Manage impacts identified by Yaps as far as is practicable or possible. • Log all complaints and provide in the annual performance assessment report. • The management of dust is discussed elsewhere in this document. • Noise management is discussed elsewhere in this document. • Visitors to the mine may only be allowed on the mine with permission and supervision of the mine owner or the contractor (when and where applicable).
PHASE 3 OF THE OPERATION IS REHABILITATION PHASE	**Potential impacts of the activities in each phase**	**Rating: High/medium/ low/negligible**	**Mitigation**	**Management**
Topsoil management during rehabilitation.	The topsoil that was removed and stored is not replaced over the mined areas (no rehabilitation takes place).	Negligible	• The topsoil is retained specifically for rehabilitation that is a requirement according to the proposed rehabilitation plan and mine. • Topsoil or soil mixed with the topsoil cannot be used by the building and construction industry.	• All the available topsoil must be removed, stored and replaced. • No topsoil may be sold or taken from the site. • The area must be rehabilitated and this will be included in the contractual requirements of the applicant with the DME (in this document). • Roads are no longer required, they must be lifted, graded or ripped and the topsoil replaced.
	When replacing the topsoil the	Low	• The topsoil compaction is inevitable, although the extent of the	• When replacing the topsoil and levelling the

	machinery drives over the topsoil to spread and level it. During the process the topsoil can be compacted, therefore impacting on the capacity for the soil to absorb water and root penetration.		compaction can be limited. The topsoil can be treated to reduce the effect.	area, drive over the area as little as possible. If possible used the blade or bucket of the earthmoving machine to scrape and loosen the soil. ♦ If further loosening of the soil is required, a tractor with a plough, ripper, tilled or graded can be used.
	The compacted topsoil is not loosened before the reinstatement of the vegetation and the vegetation success is hampered.	Negligible	♦ The loosening of the soil forms part of the rehabilitation i.e. the preparation of the soil for the reinstatement of the vegetation.	♦ As stated under the previous point, the soil will be loosened before planting or seeding takes place.
	Topsoil that has been stockpiled for longer than 6 months looses it viability.	Negligible to low	♦ The topsoil will be enriched before replacing	♦ Replace the topsoil as soon as possible after it has been removed from an area to be mined. ♦ Any topsoil that has been stockpiled from longer than 6 months will be ameliorated. ♦ Replace the soil. Ameliorate the topsoil if necessary after replacement. ♦ If the vegetation struggles to establish after the topsoil has been replaced immediately after it has been removed, the topsoil must also be ameliorated.
	The reinstatement of vegetation does not take place and erosion of the exposed soil will take place.	Low	♦ Management measures are in place to reduce the potential of wind and water erosion on exposed soil until vegetation has settled.	♦ Straw or reeds can be placed over exposed areas until the vegetation has established. ♦ Ensure trenches, ditches and contours are in place so that topsoil is not washed away.
	Mining too deep to successfully rehabilitate the area.	Negligible	♦ Elevation pegs can be used to ensure that the depth of mining does not exceed the maximum depth of the excavation across the site.	♦ Mining will remain at least 500 mm above any root and water-limiting layer.
	Soil fertility. Topsoil is compacted or contaminated and this reduces the spoil fertility	Negligible. With mitigation and management, negligible	♦ Topsoil is a valuable commodity as it contains organic material and embedded seeds. It must be managed (preserved and protected) during the mining operation. Therefore, the topsoil will not be discarded but stored, and replaced after inspection of the prospect holes. ♦ Soil on the site is compacted and microbes and organisms in the soil cannot function optimally if management and mitigation measures are not followed.	♦ Store the topsoil for as short a period as possible. ♦ Ameliorate replaced topsoil if necessary, for example when re-vegetation success is low. ♦ Replace vegetation as soon as possible to reduce the potential for water and wind erosion. ♦ Do not rip, plough or scarify deeper than the depth of the topsoil to prevent the mixing of the topsoil and subsoil.
	Impact on IAPs	Negligible to low.	♦ The area is rural with people living far apart. The activity will not be visible all the time. ♦ Damage to infrastructure will not be permanent and will be	♦ Repair infrastructure damaged. ♦ Take complaints seriously and try to accommodate IAPs where at all possible.

			repaired. ♦ Mining activities on site is short term – therefore of short duration.	♦ Clean spills ♦ Rehabilitate site to the satisfaction of the landowner (and the regional Manager: DME). ♦ Manage dust and noise – keep to the arranged daily commencement and termination time.
Supporting activities	Water extracted or supplied	None to negligible	Water will be used for dust repression when required. The scale of the operation is small and the water required will not be significant. Water will be obtained from the landowner (man made dam or if necessary borehole)	Use water sparingly. Water from the man-made dam on the farm or the water collecting in the dsump on the mine floor to suppress dust
	Firewood	NA	None will be collected on site.	No action required
	Workshop: repairs and maintenance of equipment	Negligible. When mitigated and managed, negligible	The workshop is off-site or repairs and maintenance will be conducted at the landowner's facility (if permission can be obtained).	No action, no impact because these activities do not occur on site.
	Most probable fuel storage	Low-negligible. When mitigated and managed, negligible	A diesel bowser will be used to transport fuel to the equipment and to store fuel. The alternative (drums on site) is discussed above.	The management of spills and storage is discussed above. The management of toxic waste is also discussed in detail in C6.6.3

C.7 ENVIRONMENTAL MANAGEMENT PLAN: ENVIRONMENTAL IMPACT ASSESSMENT

For most mines the management of the impacts is similar as it involves not only managing the impacts that occur, but also management of the operation to prevent impacts from occurring. On a mine site there are standard operational and management procedures that relate to all mining activities and then some that are specific to a particular site. Those particular to a specific mine site are related to differences in the environmental conditions.

ENVIRONMENTAL MANAGEMENT PLAN: MANAGEMENT OF IMPACTS				
	Rules and objectives	Action Plan	Requirements for implementation	Schedule
A.	**To assign rules and regulations for the implementation of the EMP requirements**	The company (including the workforce) is ultimately responsible for compliance with the EMP	Knowledge of the contents of the EMP. Knowledge of the mining operation and mine plan. In the case of this mine, the operations will be managed by the applicant and mine owner together with the operations manager and the site manager/supervisor.	Immediately on the approval of the EMP
		The company (through the mine owner and site manager) is ultimately responsible for the implementation of the EMP.	The mine owner will also be the site manager, but with training and through skills development, the earthmoving operator will be trained to manage the site and the basic activities on the site with the mine manager overseeing operations (including the rehabilitation).	Immediately on the approval of the EMP
		If the mine manager is not able to conduct such activities, appoint a responsible person for the environmental induction training, environmental site assessment and performance monitoring.	Assigning responsibility and liability for compliance with the EMP. In this case the site manager/supervisor and the operations manager.	Immediately on the approval of the EMP
B.	**To ensure that all members of the mining team are aware of their responsibilities towards environmental protection and requirements**	All personal involved in the project will undergo environmental induction training.	On a mine such as this, much of the training is obtained on site during normal operations, but the difference is that specific attention is placed on how the activity is affecting the environment and best practices are introduced to avoid or minimize any impacts. Induction training in this case would be to set out rules and procedures that must be followed. These rules are also relevant to the contractors or truck drivers. Environmental Induction Programme including: • Environmental awareness Job specific training • Emergency procedures Code of conduct (if available)	Prior to commencement of work on site.

	of the EMP.			
		All personnel should sign a register acknowledging that they have understood and will adhere to the code of conduct.	Code of Conduct and Emergency Procedure posters can be displayed on site if necessary. In the case of this mine, communicating the requirements or providing the workers on site, the truck drives and visitors to the site with a paper copy of the requirements.	When appointed/prior to commencement of work
C.	**Reduce the impact on the land capacity and land capability**	Managing the removal of topsoil	**The mine area is excavated systematically so that all the topsoil is not removed from the site at once.** • Remove the vegetation before removing the topsoil. • The most viable topsoil (most organic material and nutrients) is the first 500 mm of soil. However, soil contaminated by organic material cannot be utilized for industrial use and will also be removed for storage. The proposal is that at least 500 mm of topsoil should be removed and stored. There should, however, be about 500mm of material above the water and root-limiting layer and this 200 mm should rather be left undisturbed on the mine floor and slopes than removing it and replacing it. After mining, the topsoil is replaced over the remaining subsoil. • If using a modern earthmoving machine, the blade of the earthmoving machine (front-end loader) must be set to the correct level to make sure that the correct amount of topsoil is removed. On older machines the depth to which the blade is inserted in the resource is dependent on the training of the operator. To assist the operator, elevation pegs can be used to indicate the amount of topsoil to be removed. If an excavator is used, the operator must have adequate training to ensure he/she can judge the correct amount of material to be removed. • The topsoil that is removed must be stored for later replacement and may not be removed from site, used on any other area than the mine area and may not be sold. • Remove and storage of topsoil store separately from any subsoil (stored or mined). The topsoil is removed first and replaced last. • Topsoil must also be removed form the areas where roads will be constructed (haul road and other access roads, if required). The topsoil is removed and stored at least 2 meters from the shoulder of the road to prevent trampling and compaction by the vehicles.	During preparation for mining and continuously during mining
		Managing the storage of the topsoil and the topsoil stockpiles (Also see Topsoil Management Programme below in Section 6.1.2).	• Topsoil is stored separately from the subsoil to prevent the dilution of the nutrients per volume of the topsoil and thereby reduce the viability of the topsoil. • Store topsoil away for the mine area and access roads so that it will not be trampled and compacted by trucks and earthmoving equipment. • Store the topsoil away from the edge of a mining area so that there is no possibility for the topsoil to slide into the mine area where it can be trampled or where it can mix with the subsoil. • Store topsoil where it will not be washed away by storm water or surface water run-off. Construct diversion or collection ditches or trenches above the stockpiles to divert surface water run-off and prevent the topsoil from being washed away. Berms instead of trenches or ditches can also be used. See erosion control measures given in C.6.6.2 of the document as well as below. • Store topsoil away from any alien vegetation – especially if the alien vegetation was removed from the site and left on site to dry out. • Topsoil stockpiles may not be high than 5 meters. However, to reduce the possibility of wind erosion occurring, the stockpiles will, as far as is practicable, be 2 m (but no more than 5 m). This is	During preparation for mining and continuously during mining and rehabilitation

			achieved by stockpiling the topsoil out along the border or side of the block and spreading the stockpile over a distance.	
			• Adhere to the mine plan and schedule to ensure that concurrent mining and rehabilitation make provision for topsoil to be stored for as short a period as possible. Replace the topsoil as soon as possible after mining of an area has occurred. Mine and rehabilitate on a 1:1 basis. Is ideal. For every section mined a section equal in size is rehabilitated. This is, however, difficult in a borrow pit situation where the mine area increases by moving the previously mined face back. In most cases rehabilitation of the faces can only occur after mining has been completed. • The aim is to store topsoil as for as short a period of time as possible. Where topsoil is stored too long its viability is compromised. If the topsoil was stored for longer than 6 months, the topsoil must be ameliorated and enriched. The topsoil is enriched with fertilizer and compost (ameliorated). • Topsoil stored for shorter periods are also treated if the subsequent re-vegetation is poor. The topsoil is spread over the mined area and organic materials and nutrients are ploughed into the soil. Lupines can be planted to enrich the soil before utilizing the soil for other annual crop cultivation. • Topsoil stockpiles slopes should not exceed a gradient of 1:2.5 (1:3 is preferred).	During preparation for mining and continuously during mining and rehabilitation
		Monitoring of topsoil stockpiles	• Delineated droppers can be placed on the stockpile to monitor the erosion. • To prevent or reduce erosion of the topsoil cover the topsoil stockpile with, for example, reeds, branches, bushes, straw, shade cloth and bark until vegetation has managed to root on the topsoil. • Initially annual crops can be planted on the stockpile to bind and stabilize the soil. Seeds, such as that of annual crops previously planted or grasses that occurred on the site are embedded in the topsoil and normally germinate during the rain episodes and cover the surface of the stockpile (they germinate and grow when water becomes available). • To facilitate vegetation growth on the stockpile indigenous (perennial) grass seeds can be sown or vegetation planted on the topsoil stockpile. The reinstatement of vegetation (what type of vegetation is preferred) can be discussed with the landowner just prior to planting or seeding. • Maintain and repair the diversion ditches/trenches or berms when required. • Remove all alien vegetation from the topsoil stockpiles as soon as they are seen. Checking for invasive plants should occur everyday, but clearing must be conducted at least monthly or before the plants are too difficult to remove or to control.	Continuously during mining and rehabilitation
		Concurrent mining and rehabilitation	• Mine small areas at a time while keeping safety on the mine in mind. There must be space for the maneuvering of the earthmoving equipment, trucks and for the loading of the material onto the trucks. • Do not remove all the topsoil over the entire mine area all at once. The mine is divided into blocks to better manage and monitor the activities. Remove topsoil section by section as mining progresses. Topsoil is cleared systematically in strips along the face. If strips are cleared along the face (topsoil is cleared systematically), the removal of the topsoil and vegetation and the potential for erosion to occur is reduced. • Topsoil is replaced as soon as possible after mining is completed over a block. .	During mining and rehabilitation
		Management and monitoring of the replacement of topsoil	• Ripping, tilling, scarifying or ploughing of the mined areas (depending on what the post mining plans for the site is) and also the floor must preferably precede the replacement of the topsoil if the mine floor has become compacted as result of the heavy vehicles driving or maneuvering on the mine. Ripping of the mine floor should occur perpendicular to the natural contours of the land to facilitate	During mining and rehabilitation

			drainage from the site. Loosening of the mine floor is especially important in the case where the soil on the mine floor is in reach of the plant roots as the loosening will allow the roots to penetrate the soil easier. • Ripping, tilling scarifying or ploughing of the mine floor is also important to facilitate the absorption of water as well as the lateral and vertical movement of water through the soil. This promotes drainage as well as prevents erosion of the rehabilitated areas, especially if the area is located on a slope. • After replacement of the topsoil, the depth of the topsoil is measured to ensure the required amount of topsoil is returned. No less than 500 mm of topsoil may be replaced (or 500 mm topsoil and subsoil). • Rip the surface (after replacement of the topsoil) parallel to the contours. Ripping loosens the soil and allows effective root penetration, water absorption, drainage of water, and movement of water in the soil as well as aeration of the soil. Ripping or ploughing of the surface layer (topsoil layer) should be to a depth of about 200 mm. • Re-vegetation must occur as soon as possible after the replacement of the topsoil but only forms part of the rehabilitation during the rain episode or season when most raining occurs so that there is water available for the germination of the seeds and to optimize the success for the reinstatement of the vegetation. • Construct contours parallel to the natural contours of the area. • Where necessary make use of trenches and diversion ditches above the rehabilitated areas to control and divert water until the vegetation has established	
		Management and monitoring of the rehabilitated area	• Remove invasive plants from rehabilitated areas (if they occur). It is vital that any infestation by alien vegetation be prevented at all cost (see alien eradication plan in the document). The plants must be removed as soon as they are observed or must be cleared from the mine site at least once a month and before they are taller than 500 mm. On this agricultural land there is no alien vegetation, but it sometimes happens that alien vegetation does root on mine site, or even on the rehabilitated areas. This is most often as a result of seeds being transported when they get attached to the wheels of the trucks or transported by people or animals. The wind can also transport seeds. Where possible, a specific area must be prepared for the alien vegetation that is removed and this are must be away from any topsoil or from the rehabilitated areas. • Maintain all contours and diversion or collection ditches that were made to control surface water on and around the mine site and the topsoil stockpiles. • The measurement of the depth of the topsoil replaced must be included in the monitoring programme to make sure that the correct amount of material is replaced after mining. Profile holes should be made every 50 m to measure this. See proposed Monitoring and Performance Assessment in this document.	During mining and rehabilitation
		Construction of haul and access roads	• Existing roads are used as far as possible, but if road (haul roads) need to be constructed on the mine, the topsoil is removed and stored for later replacement. The topsoil is normally stored about 2 meters from the shoulder of the roads. This is a sufficient distance to protect the topsoil. • Sabunga can be used to re-enforce the roads. Building rubble should not be used as sub-base or base material. • Roads should be made parallel to the natural contours to reduce the chances of erosion occurring.	Prior to and during mining and rehabilitation

			• Before replacing any topsoil, rip or scarify the mine or road surface to facilitate rehabilitation (root penetration and the absorption of water). Ripping or scarifying can be done with earthmoving equipment or with appropriate agricultural equipment. • If required by the landowner, the material used for base and sub-base will be removed from the site.	
		Management of the mining activity	• The MPRDA requires that the miner have the technical skills or must have access to the technical skills to mine and rehabilitate. This requirement is investigated prior to approving the license. • The areas must be clearly demarcated. Painted rocks or flags can be used to demarcate the area. The areas are indicated in the drawings/maps and coordinates are provided. • Mine only within the demarcated area • Mining will take place according to an approved mine and rehabilitation plan and schedule. A mine and rehabilitation plan and schedule is plan is proposed in this document and will be implemented if approved by the DME. • The depth of the ground water, any raised water table as well as the drainage of the ground water and subsurface water will make up part of the limiting factors that will determine the depth to which mining should occur. In general, when a permanent water table is reached, mining should cease and at least 500 mm of material must be placed over the exposed water (ground or surface water table). Water found on site for a temporary period after a rain episode is not regarded as a water table as this water will drain away or evaporate. The slope on this site will facilitate drainage of water from the site and water is not expected to dam up on site. • Elevation pegs or marked poles driven into the resource can be used to indicate the depth of the resource to be removed. • When mining, leave enough material above the impermeable layer or remove all the material over the impermeable layer and replace before replacing topsoil. • The water can be kept off the site by making diversion ditches or berms at the top of the mine face or areas where it is found necessary to divert water away from the mine site. Permanent structures can be made if they will be required for closure. • During mining the floor of the mine can be leveled temporarily for the safety of the trucks and the earthmoving machinery. In this case the slope is corrected before replacing the topsoil. Water can collect on level areas especially if the mine floor has been compacted, but will drain after the mine floor has been ripped and the slope has been corrected. The slope is corrected during rehabilitation and before the replacement of the topsoil. • The angle of the slope must be measured before mining commences as a control against which the slope of the area can be checked during mining, after mining has been completed, before replacing the topsoil as well as after replacement of the topsoil. The impact on the topography will be reduced and the impact on the drainage of water from the site will be prevented. • Any oil, lubricants and toxic material is removed from the mine floor to the depth of penetration before the topsoil is replaced to prevent pollution of surface and ground water. Follow the pollution prevention and control methods in the document to manage possible pollution resulting form solid and toxic waste.	During mining and rehabilitation
		Preparation for rehabilitation and rehabilitation of the	• Visual inspection and surveying of the (or taking GPS height points measurements) area is undertaken to ensure the slope is maintained. The slope is corrected after topsoil is replaced and	During mining and rehabilitation

		mined areas	before re-vegetation of the area. The slopes may, however, not exceed 1:2.5 (1:3 is preferred). • The slope between the mined and the un-mined areas must also not be steeper than 1:2.5 (1:3 is preferred). • Sloping is maintained to prevent the impact of mining on the drainage as well as reduce the impact the removal of the resource has on the topography. • The surface of the mine floor is checked before the topsoil is replaced to see if water dams up. Depressions are removed (scraped away or backfilled) to prevent surface water from collecting in them giving a false indication of a raised water table after mining as well as prevent the depressions interfering with the drainage of the water from the site. • Re-vegetate the mined areas as soon as possible to bind and stabilize the soil and thereby prevent erosion. • Any oil, lubricants and toxic material is removed from the mine floor to the depth of penetration before the topsoil is replaced to prevent pollution of surface and ground water. Follow the pollution prevention and control methods in this document to manage possible pollution resulting form solid and toxic waste.	
		Maintenance and monitoring of the mining and rehabilitation activities	• The proposed mining and rehabilitation must be followed as far as is practical to reduce the potential impact from mining on the land-end (see proposed mine and rehabilitation plan in this document 4). Compliance to the mine and rehabilitation plan in the EMP must be checked and monitored on a regular basis and reported to the DME on a biennial basis (every second year). • Re-vegetation is more successful when it coincides with the availability of water such as when it rains. • Check rehabilitated areas during the rainy episodes to determine if the gradient is effective in allowing water to drain from the area. • Check the site regularly and utilize the pollution prevention methods in this document to control and manage possible pollution resulting form solid and toxic waste. • Remove alien vegetation if they are found.	During mining and rehabilitation
D.	**Visual Impacts**	Mining is conducted in a fashion that will reduce the visual impact resulting from mining	• As mining proceeds, areas are systematically cleared of vegetation and the entire mine site is not cleared at once. The areas exposed (vegetation and topsoil removed) must be as small as possible The size of the area mined at a time must not exceed one block (preferably smaller) and occurs in strips within the blocks (see section B on the Mine and Rehabilitation Plan and Schedule) • To reduce any possible visual impact of the mine from the R346, topsoil can be stockpiled along the southern or northern boundary. • As soon as the stockpile is vegetated, there will be no contrast that will indicate the position of the stockpile. • Mined areas must be rehabilitated and re-vegetated as soon as possible after mining has been completed to reduce the potential visual impact resulting from mining. • The mine areas should be landscaped to blend in with the un-mined area and the slope must be as slack as possible (see management of mining above). • Landscaping will involve smoothing over and rounding off of all the sharp edges between mine and un-mined areas.	Ongoing during the preparation, mining and rehabilitation stage and afterwards

			• Topsoil should be placed as a berm rather than a heap. • Erosion must be prevented to reduce the impact on the topography and the visual impact. See the management of erosion in below. • Mining and rehabilitation must occur according to the DME approved mine and rehabilitation plans and schedule. • Re-vegetation should occur as soon as possible after mining has been completed to reduce the impact of mining on the landscape.	
E.	Flora	Ensure the removal and replacement of vegetation is managed and controlled according to best practices for mining	• The land is used for grazing and crop cultivation and the vegetation on the site is removed and stored with the topsoil. Where there is bush or trees they are removed first before the topsoil is removed. Seeds are retained within the topsoil. • Remove vegetation only from the area where mining is going to take place, keeping the exposed areas as small as possible (see the section in this document on mining and rehabilitation above) • The seeds of these plants will in all probability remain in the topsoil and some will germinate in the stockpile or when the topsoil is returned. • Keep topsoil stockpiles as low as possible to expose as much of the surface area of the soil (with embedded seeds) to air and sunlight as possible. Ensure that as much organic material and seeds are preserved within the topsoil. See the topsoil management programme in this document. • If any alien vegetation manages to establish on the site prior to mining commencing, they must be removed prior to the removal of the topsoil and the aliens must be separated from the topsoil stockpile. • As stated above, alien vegetation must be removed from the topsoil stockpile and from the rehabilitated areas. The alien vegetation control programme is provided below. The removed alien vegetation must either be stored on a stockpile and left to dry out or must preferably be removed to an approved landfill site. • As the area is zoned for agriculture, re-vegetation can occur with Grade-A annual crops sown at a density of 70-100 kg/ha. • Commence with re-vegetation as close as possible to the major rain period (just prior to or during) to ensure that there is water available for the vegetation to grow. • All the slopes must be re-vegetated. The surface layer (topsoil layer) must be prepared as describe above before re-vegetation can commence. • Mine within the mine borders and do not cause physical damage to indigenous vegetation outside the mine area. • If necessary, make use of a water cart to reduce any possible dust created during mining to reduce the amount of fall-out dust on the indigenous vegetation.	During the preparation, mining and rehabilitation stage and afterwards. Ongoing on a daily basis for the duration of mining
E.	Fauna	Protect fauna as far as possible during mining	• Animals in this case do not include the insects that might be destroyed when the vegetation is removed. Special attention must be given to all animals that can be removed from site such as tortoises, snakes, small mammals, buck/deer, porcupine or any others that might venture on the site before or during the mining operation. • Before starting to mine at the beginning of the day, the site is checked for animals. If found they are chased or physically removed from the area to be mined. • On a daily basis, check the site for traps and also check on the action of personnel during the day. • Continual awareness regarding the protection of the fauna and flora should be communicated.	During the entire mining and rehabilitation process.

			• Site manager or responsible environmental person must check the site and surrounding areas regularly and ensure that the site personnel and visitors to the site (truck drivers) stay on site. • Do not remove the vegetation and soil that provide shelter and food to the fauna from the entire mine area all at once. Remove only sections of vegetation and soil at a time - as mining proceeds – to ensure that the animals can move or flee to undisturbed areas in close proximity. • Follow the guideline provided in the Mine and Rehabilitation Plan and Schedule to ensure the least impact is exerted on the fauna. • Rehabilitation of an area occurring as soon as possible will make the area available to the fauna for re-habitation. • Truck drivers will be instructed to keep within the speed limit and to be vigilant to avoid killing animals on the road.	
F.	**Water**	Ensure responsible utilization of water	• Water must be used sparingly and bark, branches, straw, etc. can be placed over the topsoil on the stockpile or rehabilitated areas to reduce dust rather than use water for dust suppression. • Potable water for drinking and sanitation must be brought to site on a daily basis. The water normally does not exceed 20 to 25 liters per person per day. Sanitation will require 20 liters at most. Since mining is not continuous, it is possible for the site personnel to walk to the homestead for drinking water and to wash their hands. • An environmental awareness plan details guidelines on how and what information can be presented to the workers to conserve water. An environmental awareness plan is not required for the permit application, but could be useful in any event to draw up a plan. • Do not leave any taps running.	During the entire mining and rehabilitation process.
		Prevent the pollution of surface and ground water	• When refueling, use funnels that are suitable for the type of equipment so that no fuel is spilled onto the soil. • Place an impermeable PVC lining or other suitable cover or drip tray under the re-fuelling point to collect any spillage that could occur. • If spillage occurs, the excess fuel is absorbed with a product such as "Spillsorb" (peat or pine needles). • Spillage on to the soil must be removed with the contaminated soil to the depth of penetration into the soil. • The contaminated soil is either taken to an appropriate landfill site that allows the dumping of the toxic material or is treated on site. • The soil is either treated in a container or in a previously prepared area. The latter area is a depression or ditch covered with a PVC lining to prevent further leaching of the hydrocarbons into uncontaminated soil. • This treatment involves the bio-degradation of the pollutant and allows the recovery of the soil. The treated soil can be re-used as a result of the microbes in the soil that break down the hydrocarbons. • The contaminated soil can be mixed with additional microbes (supplied by Spill-sorb and similar companies) to enhance the breakdown process (also see emergency procedures for waste). • Toilets must be clean and in a working order. If a chemical toilet is used, it must be removed before it is full and must be cleaned regularly. The toilet must be placed on an impermeable permanent	During the entire mining and rehabilitation process

			structure or PVC (or similar) lining if at all possible. Alternatively a diversion ditch can be made to divert water away from the area around the toilet. • Fuels, oils and lubricants are not stored on site. These toxic pollutants must be stored in a bunded area on a floor that is covered with an impermeable material. There is a workshop on the farm with a cement floor that is used for farming activities and storage of farming equipment. If a permanent bunded area (cement) is not available for the fuel used on the mine, a designated area near the workshop must be selected for storage. The floor of this area must be covered with impermeable PVC lining (or equivalent material) and resource bags can be used to bund the area. No more than 30 m^3 may be stored on a particular site. Resource bags can also be used on a concrete floor to bund the area if there is no bund to contain fuel spills. The bund should be adequate to contain 110% of the stored material. Bags made from material and filled with fill-resource. Provide bins with lids for the solid waste to prevent waste from being blown around over the landscape. • Collect and store solid waste from the site and discard at a suitable landfill site. • Toxic materials should only be discarded at landfill sites designated to treat toxic materials. • Contaminants are normally collected from sites or depots by waste disposal companies, such as Oilkol, across the Cape and taken to toxic waste disposal sites or are treated at established facilities. • The contaminated rags must be collected in a container and the full container must be discarded at a suitable landfill site or can be washed. Discard contaminated (soapy) water in a proper manner. • Do not burn oil rags or contaminants on site. • Do not discard solid waste on site and particularly not oil filters, cans, paint, etc. • The applicant on a regular basis will remove scrap metal. • Also see Emergency Procedures in this document.	
G.	**Dust and exhaust gas control**	Management and control of fall-out dust on the mine site, the access roads as well the R346.	• The transporting of resource is not part of the mining activity (is linked to the mining activity), but the mine owner can consult with the truck owners to adhere to the requirements that will reduce the generation of dust on the access road. • Ensure that dust is controlled on the access roads if there is a possibility that the dust will cause irritation to the residents living close to the access road. • Dust will be measured once mining commences to determine whether mining and the dust generated on the access roads are above allowable SABS standards. • If measurements determine that dust is above allowable levels, the impact will be managed as follows: ➢ More trees will be planted in front of the landowner's residents or along the R346. ➢ On average, 10-12 trucks use the road on a daily basis and the roads are also used by other persons (including another resource mine). ➢ Mr.Gerry Kuhn is a specialist on fall-out dust and the effect thereof on health. According to Mr. Kuhn (personal communication), it is speed rather than the size of the vehicle that determines the amount of dust generated. Therefore, the trucks should not exceed the 60 km speed limit on public dirt roads and 30 km on the site. • Netting or shade cloth must cover the resource on all trucks leaving the site to prevent resource being blown off onto oncoming vehicles.	During the entire mining and rehabilitation process

			• Put control measures in place to prevent the blowing of dust, saltation and crawling of resource (wind erosion). If vegetation (grass) does not yet cover the stockpile or rehabilitated areas, use straw, bark or branches as cover if necessary. Water can also be used, but water is a scarce resource and should be used sparingly. • Provide personal protective equipment (PPE) such as dust masks for protection against dust as preventative measure, even if the dust created is negligible. The PPE must be suitable to effectively protect the site worker against dust entering his nose and mouth. • Site workers should be checked to ensure that PPE is used.	
			• Do not apply dust suppressants within 100 m of water that is used as a water reservoir, near critical habitats or endangered species or a bio-criteria reference stream or within 30 m from a river or permanently flowing stream of water. • Apparently the subsequent treatment of the salts of calcium and magnesium required is less than the initial treatment and depending on the traffic may need to be re-applied once or twice a season. • Saline or brine water with salts such as magnesium chloride or calcium chloride is very effective in improving the ability of water as a dust control agent (a palliative). Salts have been used for many years and have the added advantage that it stabilizes the road surface. The amount of calcium chloride used with the brine solution is 0.75 l – 1.89 l per 0.83 m^2 and for magnesium chloride 0.95 l – 3.78 l per 0.83 m^2. The salts work by absorbing moisture from the air that binds to the small dust particles. Heavy rains can leach the salts, but during the rain seasons it is not necessary to wet the roads. Certain salts become slippery during heavy rains and should not be used. The salts have a disadvantage in that they can be harmful to many plants and some animal life. This can be prevented by not adding salts when it rains. Even a weekly spray is a huge saving and reduction in the water use. Salts are corrosive to steel and other metals and although the product specifications state that in the prescribed dosages it will not be problematic, the existing saline conditions could aggravate the problem and it might be necessary to rubberize the under carriages of the vehicles.	
		Control and management of exhaust fumes	• All vehicles must be fitted with effective exhaust or filter systems that can filter emission gasses • The vehicles must be serviced regularly to ensure the engine is in a good working condition. • Fuel and oil of good quality must be used to reduce the possibility that engine will smoke excessively and the engine must be in a good condition so that fuel burning is clean. The owner of a truck must be contacted to have the problem fixed if a truck emits excessive black smoke. The problem should be fixed before the truck is allowed on site.	
H.	**Noise**	Ensure management and control of noise as result of mining exhaust fumes	• Vehicles must have a working silencer or noise muffling equipment. • If possible (and it is allowable according to safety standards) earthmoving vehicles without warning sounds can be used. • If the noise made by the trucks is above allowable standard, trees can be planted in front of the landowner's house. • All complaints must be logged and addressed immediately. • Vehicles and earthmoving machinery must be serviced regularly. • Ensure that mechanical equipment is in a sound condition to reduce potential noise created as a result of friction of mechanical parts. Mining takes place between 07h00 and 18h00	During the entire mining and rehabilitation process.

			• Mining will not occur over weekends or public holidays unless it occurs in consultation with IAPs. • A forum can be established so that communication with the landowner and affected residents can occur on a continual basis and problems can be addressed. • Provide personal protective equipment (PPE) such as (ear plugs for protection against noise). The PPE must be suitable to effectively protect against any noise on site. • Site workers should be checked to ensure PPE is used.	
I.	**Access roads and Traffic**	Requirements for the access roads. To ensure that the access and haul roads are in a good condition.	• To prevent accidents and damage to vehicles, ensure that the access and haul roads are in a good condition. • The access roads must be maintained and repaired. Repair potholes by scraping or by backfilling and remove loose resource from the road. • Strengthen the road surface with gravel or calcrete or other suitable road material. No building rubble to strengthen the roads unless approval is obtained from the DME or servitude rights holders. • All gates on private roads are to be closed and left open if found open. • Driving on private roads not designated as site access roads is to be prohibited, unless prior permission has been obtained from the landowner.	• During site establishment and as the mining activity proceeds.
		Safety on the roads must be adhered to prevent accidents from occurring	• Ensure that the access roads that are used on site are wide enough to ensure the safety of the trucks onto and from the mine site. The roads must be wide enough for two trucks to pass each other or alternatively there must be an entrance and an exit road (circle route). • Ensure that the mine access road onto a public road is safe and according to requirements of the relevant authorities (provincial or local authorities and the DME) • Place boards warning oncoming traffic that trucks can possibly enter onto a public road (from the access road from the site onto the R346). Two boards must be placed one on either side of the access point and a distance each about 500 m to one kilometer from the access point from the R346. • The access road will not enter the public road on a bend (unless this is the approved municipal access) or behind trees and the access will be clearly visible coming from both sides of the public road. • Where trees or vegetation obscure the view so that oncoming traffic cannot be seen, the trees must be trimmed. • All trucks must have clear (large enough) contactable phone number on the truck. • The trucks do not belong to the applicant but to the builders and contractors. General rules of the road should be adhered to. • If possible and allowed by the local authority, the applicant must erect a fence around the borrow pit to make it safe. • Vehicles must be in a roadworthy and sound mechanical condition. The engine, tyres, brakes, oil leaks, etc. • Where and if required, the maintenance and the repairs of the public roads used by the applicant must be discussed with the local authority to assist them.	For the duration of mining.
J.	**IAPs**	• Ongoing communication with IAPs.	• Land use agreement such be in place • A forum can be established to lodge complaints, discuss and investigate possible solutions. • All complaints are to be recorded in the incident log.	For the duration of mining

			• Complaint form and/or contact details of the responsible person on the mine must be made available. • At all cost, and where practicable manage and control all aspects causing a nuisance or disturbance to affected parties	
K.	**Legal requirements**	• Ensure that all legal requirements are adhered to	• Adhere to instructions from the DME and the specialists. • Do not mine in the areas excluded by the relevant authorities or specialists. • Mark sensitive areas that were excluded before mining begins. Mine according to legal requirements If archaeological sites are found during the excavation of the resource they must be reported to the relevant authorities: *Graves – SAP; SAHRA *Archaeological or Heritage sites – Heritage authorities for Eastern Cape • Legislation of the local authority	For the duration of mining and until closure of the mine

C.8 FIANACIAL PROVISION: (REGULATION 54)

The amount that is necessary for the rehabilitation of damage caused by the operation, in the event of sudden closure during the normal operation of the project and at final closure, will be estimated by the regional office of the DME, based on the information supplied in this document. This amount will reflect how much it will cost the Department to rehabilitate the area disturbed in case of liquidation or ascendance.

Enter the amount of financial provision required here: **R160 000.00**

What method will be used to furnish DME with this financial provision?

Cash deposit	
Bank guarantee	X
Trust Fund	
Other: (specify) (Note: other methods must be approved by the Minister)	

The standard formats for each of these types of guarantees are available from your regional office of the DME.

Calculations are per one hectare to maximum of 1.5 ha should it not be rehabilitated concurrently (mining in windrows) i.e. if one entire hectare area is disturbed. With concurrent mining, the excavator is used to replace the topsoil, and leveling will occur with the farming equipment. If the entire area were left undisturbed, a bulldozer would most likely be used. The worst-case scenario is anticipated.

Unit N0	DETAILS	UNIT RATE /hr	NUMBER OF UNITS	VOLUMES m^3	AMOUNT
1	Machinery/Equipment				
	Farming: plough, rip, etc	200			
	Front-end loader				
	Bulldozer	500			
	Excavator	450			
2	Transportation/establishment of all equipment				2 000
3	Size of the excavation (width x length x depth) 1.5 Ha and about 20 m deep				
	Cost of decommissioning of the plant and associated infrastructure	Plant, chemical toilet removal if necessary			
5	Removal of plant infrastructure	250	40		10000.00
6	Cost of profiling disturbed areas	500	80		40000.00
7	Cost of replacing topsoil (2500 m^3)	500	36		18000.00
8	Cost of surface preparation (leveling, ripping, ploughing, etc)	250	24		6000.00
9	Cost of re-vegetation				
	Initial annual crop to bind and stabilize soil or legumes (to enrich the soil).	@R70/ha	2	70	140.00
	Plants) along with seeds from the indigenous vegetation/grass seeds from the area – if required for rehabilitation Seeds (@R700/ha (700 – 1500 per ha)	@R700/ha	2	700	1400.00
	Hydro seed (add surface preparation if it is included in the price) – not practical in this area and too costly.				
	Machine				

	Hand sown				
10	Trenches, ditches, berms	250	16		4000.00
	Cost of interim storm water control				0.00
	Cost of removal of storm water control measures				0.00
11	Roads	500	24		12000.00
	Lifting of road (removal of material)				
	Ripping	500	16		8000.00
	Replacing topsoil	200	8		1600.00
	Re-vegetation	500	8		4000.00
12	Waste and Rubble removal				
	Skips and bins removal/waste removal				0.00
	Scrap metal removal	150	1		150.00
	Toxic waste (oil spills, lubricants, fuels, contaminated soils) removal	150	2		300.00
13	Aftercare and maintenance	150	2		300.00
14	Labour cost	100	52		5200.00
	SUBTOTAL	150	100		15000.00
	10% Supervision fee				**128090.00**
	15% Vat				12809.00
	TOTAL				17932.60
					158831.60

C.9 MONITORING AND PERFORMANCE

C.9.1 Monitoring and performance assessment.

Regulation 55 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) clearly describes the process and procedure as well as requirements for monitoring and auditing of the performance of this plan to adequately address environmental impacts resulting from the operation. The following information must be provided:

Performance Assessment Report of the mining activity must be provided to the DME at least every two years – (biennially) as stipulated in Regulation 55 of the Mineral and Petroleum Resource Development Act 2002, No. 28 of 2002. However, the DME can stipulate if a report should be handed in more regularly. **(Biennial: recurring every two years and bi-annual: twice a year)**

Description	Limit	Measure	Time (Report)
Mining will be approved for a designated area	Mining may not extend beyond the border of the mine	• Demarcate mine area before mining commences according to the approved coordinates. • Check coordinate continuously, especially if mining along the borders of the mine	Layout map and Bienniel Report
Mine areas open Areas where topsoil is removed or where mining is taking place.	One block (0.5 ha) over the entire mine area.	• Size of areas • GPS coordinates of areas	Continuous visual checking, readings Biennial Report and layout map
Areas where mining has been completed (Indicate area(s) on the layout map)	As per the EMP plan and schedule.	• Area mined • Amount of resource removed from area that was mined. • Rate of mining	Continuous checking Indicate area(s) on Layout map. Biennial Report
Area Rehabilitated (Indicate area(s) on layout map)	One block (0.5 ha) over the entire mine area are mined at a time. Rest of the site must be rehabilitated (topsoil replaced and contoured, where possible – seeding depends on the rain season).	• Size of area rehabilitated. • Profile holes every 50 m intervals to indicated depth of topsoil replaced • Indicate areas with vegetation • Indicate areas without vegetation.	Continuous checking Indicate area(s) on Layout map. Biennial Report
Area(s) still to be mined	Total mined area	• How much must still be mined. • Adjusted production rates and mine schedule.	Indicate area(s) on Layout map. Biennial Report
Topsoil stockpiles	Along each phase.	• Position of stockpile and where possible: • Length of stockpile • Width of stockpile • Height of stockpile • Estimated reserves	Indicate area(s) on Layout map. Biennial Report

Description	Limit	Measure	Time (Report)
Depth of topsoil replacement	After replacement of topsoil, before sowing of seeds, Make profile holes to determine depth of topsoil over the rehabilitated areas (±50 m)	Recorded after replacement over each block	Measure after topsoil has been replaced on each block. Biennial Report
Maintain correct slope as per the natural contours of the site	Maintain existing gradient.	• Determine before mining and continue to maintain as mining proceeds. • Check slope gradient before and after replacement of topsoil over each block	Prior to ripping of each block. Biennial Report
Maintain correct bench formation or sloping of faces	Maintain existing gradient.	• Benches must have the correct width and height according to safety requirements (see description and illustrations) • Where benches are not used, the slope may not exceed 1:2.5 (1:3 is preferred) to ensure optimal re-vegetation success.	Prior to ripping of each block. Biennial Report
Depressions on the mine floor or rehabilitated areas	There may be no depressions	• Remove all depressions from the mine floor before and after replacing topsoil to prevent water from collecting in these depressions.	Prior to replacing topsoil and after replacing topsoil. Biennial Report
Depressions for collection of water at the bottom of the borrow pit	Their must be proper management of the collection area and drainage from the borrow pit so the entire bottom of the borrow pit is not flooded	• See that collection sump works effective and does not leak silty water into streams or watercourses. • Pump water out if it gets too high	Check continuously Biennial Report
Access roads and haul roads	Roads must be repaired and maintained. All access roads not in use must be ripped and the topsoil replaced.	• Position of roads • Condition of roads • Change in planning • Repairs done to the roads must be noted • Strengthening of existing roads • Ensure proper drainage along access roads so the roads do not wash away and are stable.	Check continuously Biennial Report
Visibility of Surface water	No surface water may be dammed up.	▪ Determine the position of surface water and describe steps for mitigation. ▪ Indicate the places where erosion occurred	Continuous checking, especially before and after replacement of topsoil. Biennial Report
Noise	SABS standards. Measured at the closest homestead	• Measure at nearest homestead and/or periphery of the mine nearest • Or measure periphery of the mine nearest	Continuous measuring. Biennial Report Noise levels not significant, but should it be requested, it must be done)
Dust	Acceptable according to	• Measure at nearest homestead	Base-line data is obtained

Description	Limit	Measure	Time (Report)
	SABS standards.	and/or periphery of the mine nearest • Or measure periphery of the mine nearest	initially and then over a period determined by the specialist. Biennial Report
Invasive plants	100% removal from mined area.	• Determine the amount of invasive species (brush and trees) present on the mined out area if they are present and not removed. • Remove invasive trees and bushes from the site.	Continuous checking and removal. Biennial Report
Waste removal	Prevention of waste disposal/removal once a week	Inspect site for dumping of waste and any domestic waste due to the mining process	Continuous checking and removal (weekly) removal. Biennial Report
Interested and Affected Parties		▪ List complaints received. ▪ List response to complaints and issues arising.	Address continuously as soon as possible Biennial Report
Erosion	No erosion may be visible	▪ Identify and indicate position of areas where erosion occurred. ▪ List mitigation steps taken. ▪ Fix erosion ▪ Repair erosion control measures	Continuous checking and repairs. Biennial Report
Contours	All contours must be stable and work effectively	▪ Check the functioning and stability of the contours	Continuous checking and construction of contours where necessary. Biennial Report
Diversion of collection ditches or trenches	These must be constructed properly an must be stable	Construction must be wide and shallow (and planted) rather than deep and narrow	Continuous checking, repairs and maintenance. Biennial Report
Vegetation growth	At least 70 - 80% coverage	Determine the percentage growth over the area. Re-seed /plant where necessary.	Continuous checking on rehabilitated areas, but mostly after the rain season. Biennial Report
Signage	Signs must be legible and in place	Check all sign boards – repair or replace if necessary	Continuous checking, repairs and maintenance. Biennial Report
Progress Report	March of the second year		**Biennial Report**

C.9.2 Please describe how the adequacy of this programme will be assessed and how any inadequacies will be addressed. (Regulations 55(1) and 52(2)(e))

Example: I will, on a bi-monthly basis, check every aspect of my operation against the prescriptions given in Section F of this document and, if I find that certain aspects are not addressed or impacts on the environment are not mitigated properly, I will rectify the identified inadequacies immediately.

The table above addresses the way in which the project will be monitored. Due to the nature and the scale of the operation, quarterly checks should be adequate. Though regular checks (such as monthly) will help to observe problems sooner and the cost of repairs can be reduced. The table above can be used, but all aspects of the EMP must be adhered to. Section F of the document can also assist in ensuring the operation is conducted in an acceptable manner. The mitigation and management measures given in C6.8 are evaluated at this stage to determine if they are still appropriate and if they effectively prevent or minimize impacts associated with the activity. All inadequacies must be addressed immediately and if adjustments to the EMPlan are required, this must be indicated in the report. Permission for changes must be applied for at the DME.

C.10 CLOSURE

C.10.1 Closure and Environmental objectives: (Regulation 52(2)(f))
Clearly state the intended end use for the area prospected/mined after closing of operations

Agricultural activities will continue on the farm and the excavated areas will be sloped where possible to an angle of 1:2.5 (1:3 is preferred) or the faces will be benched to ensure the site is safe.

The slopes will:

- Be levelled to remove all the depressions that can result in water damming up,
- The sharp edges on the slope will be rounded and the excavations are landscaped so that the mined area will as far as is practical, blend in with the un-mined areas.
- The topsoil will be replaced over the mined areas
- The topsoil layer ripped or scarified to loosen the soil so that water and roots can penetrate,
- Contours will be constructed on the slopes at 25 – 50 m offset depending on the requirements of the site
- Storm water management systems will be in place at the top of the slope and draining along the side of the slopes to divert or at least control runoff water so that the topsoil is not washed away and erosion does not occur.
- Vegetation would be established on the mined areas.
- All scrap metal will be removed
- Any buildings or plant equipment erected for mining purposes would be removed
- There will be no pollution on site either from solid waste or spills of oil, fuel or lubricants
- The intended land use of the area remains agriculture on the slopes where planting or crop cultivation is possible.
- The site must at best blend in with the surrounding area.

Benches.

- Topsoil is replaced over the horizontal surface of the benches and vegetation must be reinstated on the benches to reduce the visual effect and prevent erosion of the benches as far as possible.
- The top of the benches must be rounded of to blend in with the surrounding area.
- Fix all the fences, buildings and gates (or other infrastructure damaged as result of mining.
- Lift and rehabilitate access and haul roads made by the applicant if they are no longer going to be used by the landowner.
- Repair all roads that remain

Future land use or capability:

(Provide broad future land use objective(s) for the site)

- The land is zoned agriculture and the area must be rehabilitated so that the area will be suitable for agricultural use where at all practicable. All fissures, rifts or clefts that occurred during mining will have been rehabilitated. The landowner intends to blend Site A into the water feature he is currently building adjacent to the proposed site, but that would not form part of the rehabilitation at this stage.

C.10.2 Describe, in brief terms, what the environment will look like after a closure certificate has been obtained.

A. Status of the environment after closure: Site specific

- At closure (after completion of prospecting) the entire mine area would have been levelled.
- All the depressions on the mined area will have been removed either by scraping them level with the surrounding area or by backfilling.
- All the topsoil that was removed and stored prior to mining commencing will be replaced and evenly spread over the mined area.
- The topsoil layer will also have been levelled and all the depressions remove. If the topsoil layer has become compressed during the replacement and levelling activities, the surface would be ripped, graded or scarified to loosen the soil. This would have allowed optimum root penetration and water absorption and movement of water through the soil.

- All faces formed between mined and un-mined areas will be sloped to a gradient that does not exceed 1:3 and all the sharp edges formed between the mined and un-mined areas would be rounded and shaped to, as far as is practicable, blend in with the surrounding area.
- At closure vegetation would have been reinstated. Initially the area would be covered with an annual crop to bind and stabilized the soil. This is agricultural land and the land will be used for the planting of annual crops (for animal feed) and/or grassed to be used for grazing as with the surrounding land.
- There will be no domestic or other solid waste on the site, and this includes no scrap metal.
- Any buildings or plant equipment would have been removed.
- Any infrastructure removed or damaged as a result of mining would have been repaired or replaced (fences, gates, buildings, etc.).
- All access and haul roads made by the applicant will be removed if they are no longer going to be used by the applicant.
- All the roads that will remain will be repaired and will be in a good condition
- The chemical toilet would have been removed.
- There must be no signs of spillage of hydrocarbons.
- After the reinstatement of the vegetation, the ideal situation would be that the site would blend in with the surrounding environment.
- Informal tracks should not be visible (unless they are required by the landowner).
- There will be no alien vegetation on the site at the time of closure.
- There will be no signs of erosion on the site.
- Contours must be in place where required and must be constructed in such as way as to have as little as possible visual impact (e.g. round off sharp edges).
- Where necessary, diversion or collection ditches or trenches must be in place to divert runoff water where necessary to prevent erosion.

B. Legal requirements of closure and procedures and per the MPRDA and EMPlan proforma document

Regulations 56 to 62 outlines the entire process of mine closure, and these are copied in Section F of this document, both as a guide to applicants on the process to be followed for mine closure, and also to address the legal responsibility of the applicant with regard to the proper closure of his operation. In terms of Section 37 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), the holder of a right or permit is liable for any and all environmental damage or degradation emanating from his/her operation, until a closure certificate is issued in terms of Section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).

As this is a working document to be used by the applicant and is, therefore, also compiled to assist the applicant to mines in accordance with the requirements of the MPRDA, the closure requirements and procedures are given below.

Decommissioning phase and closure

(Regulation 52(2)(f)) & Regulation 52(2)(g).

The primary objective is to obtain a closure certificate at the end of the life of the operation. To realise this objective a closure report will be compiled as prescribed in the MPRDA 2002 (Act no 28 of 2002). The application will be accompanied by the following documents:

Closure objectives form part of this EMPlan and must include the following-

➲ ***Key objectives for closure:***
Identify the key objectives for mine closure to guide the project design, development and management of environmental objectives;

(i) Final rehabilitation:

- To conduct final rehabilitation to the extent that all environmental objectives have been reached (replacement of topsoil, ripping, levelling of the area, re-vegetation, waste removal, alien vegetation removal, etc.).

- A plan contemplated in Regulation 2(2), coordinated according to generally accepted standards, showing the land or area under closure;
- A summary of the regulatory requirements and conditions for closure (in relation to the MPRDA) negotiated and documented in the environmental management plan (this document).
- A summary of the results of the environmental risk report and details of identified residual and latent impacts;
- A summary of the results of progressive rehabilitation undertaken;
- A description of the methods to decommission the mining component and the mitigation or management strategy proposed to avoid, minimize and manage residual or latent impacts;
- Details of any long-term management and maintenance expected;
- Details of financial provision for monitoring, maintenance and post closure management, if required;
- A plan or sketch at an appropriate scale describing the final land use proposal and arrangements for the site;
- A record of interested and affected persons consulted; and
- Technical appendices, if any.
- Description and details for closure and post closure management; Residual impacts, monitoring and requirements to obtain closure in terms of the Act.
- Decommissioning, closure and after care:

The decommissioning, closure and post closure management will be addressed in the closure plan, which will contain the following –

- A final layout plan will be submitted at closure of the mine or when operations have ceased.
- the environmental classification, including assumptions on which the classification were based;
- the closure objectives, final land use or capability;
- conceptual description and details for closure and post closure management;
- cost estimates and financial provision for closure and post-closure management; and
- residual impacts, monitoring and requirements to obtain closure in terms of the Act.

(ii) **Final Performance Assessment Report**

A final performance assessment will be conducted and a report submitted to the Minister to ensure that –

- The requirements of the relevant legislation have been complied with;
- The closure objectives as described in the EMPlan have been met; and
- All residual environmental impacts resulting from the holder's operations have been identified and the risks of latent impacts, which may occur, have been identified, quantified and arrangements for the management thereof have been assessed.
- The final performance assessment report will either precede or accompany the application for a closure certificate in terms of the Act.
- This report will contain information on the following:
  - Areas mined
  - Areas rehabilitated
  - Depth of topsoil on rehabilitated areas
  - Areas not mined
  - Areas not rehabilitated
  - Areas under cultivation
  - Gradient of the slopes
  - Success of rehabilitation and re-vegetation
  - Include a layout plan indicating the above in the report.
  - Removal of any infrastructure and equipment from the site (digger loader) and improving the condition of the access roads to the mine.
  - Removal of waste from the site.
  - Letter of satisfaction regarding rehabilitation from the landowner and input from Authorities.
  - Also see progress report and monitoring.
  - Photographic-evidence if possible for record purposes

(iii) Environmental Risk Report

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

- The undertaking of a screening level environmental risk assessment where-
  - all possible environmental risks are identified, including those which appear to be insignificant;
  - the process is based on the input from existing data;
  - the issues that are considered are qualitatively ranked as –
    - a potential significant risk; and/or
    - an uncertain risk; and/or
    - an insignificant risk.
- The undertaking of a second level risk assessment on issues classified as potential significant risks where-
  - appropriate sampling, data collection and monitoring be carried out;
  - more realistic assumptions and actual measurements be made; and
  - a more quantitative risk assessment is undertaken, again classifying issues as posing a potential significant risk or insignificant risk.
- Assessing whether issues classified as posing potential significant risks are acceptable without further mitigation;
- Issues classified as uncertain risks be re-evaluated and re-classified as either posing potential significant risks or insignificant risks;
- documenting the status of insignificant risks and agreement with interested and affected persons;
- identifying alternative risk prevention or management strategies for potential significant risks which have been identified, quantified and qualified in the second level risk assessment;
- agreeing on management measures to be implemented for the potential significant risks which must include-
  - a description of the management measures to be applied;
  - a predicted long-term result of the applied management measures;
  - the residual and latent impact after successful implementation of the management measures;
  - time frames and schedule for the implementation of the management measures;
  - responsibilities for implementation and long-term maintenance of the management measures;
  - financial provision for long-term maintenance; and
  - monitoring programmes to be implemented."

Note: The proposed end-state of your area must be consulted with interested and affected parties in terms of Regulation 52(2)(g). Details of the acceptability of the end-state must appear in the section below.

C.11 PUBLIC PARTICIPATION (Regulation 52(2)(g)

In terms of the above regulation consultation with interested and affected persons or person must take place prior to the approval of the environmental management plan. This regulation is quoted below for ease of reference.

"a record of the public participation undertaken and the results thereof"

C.11.1 Any comments lodged by an interested and affected person or persons in terms of section 10(1)(b) of the Act, must be in writing and addressed to the relevant Regional Manager.

C.11.2 Any objections lodged by an interested and affected person or persons against the application for a right or permit in terms of the Act, must set out clearly and concisely the facts upon which it is based and must be addressed to the relevant Regional Manager in writing.

C.11.3 The Regional Manager must make known by way of publication in a local newspaper or at the office of the Regional Manager, that an application for a right or permit in terms of the Act has been received.

C 11.4 METHODOLOGY APPLIED TO CONDUCT PUBLIC PARTICIPATION

C.11.4.1 General objectives of the public participation report

(a) To facilitate the involvement of IAPs in the identification of the issues of concern which need to be addressed in the EMPlan. Valuable information is sometimes obtained from IAPs that can assist in making the EIA process more meaningful and contribute to the compilation of a better EMPlan. The ultimate aim is the protection of the environment and personal comments aimed at causing damage or harm to the applicant should have no place unless it specifically deals with environmental issues that can help to determine whether the activity will cause unacceptable pollution and/or degradation to the environment. The environment includes the harm to people and their property that is unacceptable according to the MPRDA (which is compiled in consideration of the principles of NEMA.

(b) To provide IAPs an opportunity to raise issues, comment or object.

C.11.4.2 Public Consultation/Public participation process

Engagement with Interested and Affected Parties (IAPs) forms an integral component of the EIA process. IAPs will have an opportunity at various stages throughout the EIA process to gain more knowledge about the proposed project and to provide input.

The proposed project was advertised in the local and regional newspapers to alert as many people as possible about the project and associated EIA process. This was done to elicit comment from - and register IAPs from as broad a spectrum of the public as possible. Apart from involving the GOs and NGOs, the Public Participation Process (PPP) will focus mainly on registered IAPs and the local communities.

In addition to the advertising, a public meeting was held in Gonubie to introduce the proposed project to the community and discuss any comments, questions or issues of concern. Responses received thus far have been noted and after all feedback has been received, the issues raised will be addressed in the EIA/EMP report. Gonubie was selected as the complaints received were

related to mining on Portion 1 the Farm 800, Gonubie rather than Portion 3 of the Farm 860, East London area.

The process followed so far:

(a) The application was lodged with the DME for the proposed site on in mid June 2009. The application documentation was handed in together with a Mining Work Programme and as Social and Labour Plan, none of which forms part of the MPRDA EIA requirements and the documents are, therefore, not attached.
(b) Advertisements were placed in The Gonubie Bugle and The Daily Dispatch (see Annexure A) to inform IAPs of the proposed operation (Annexure A).
(c) Two notice boards informing road users that an application was submitted was placed on the perimeter fence at the entrance to the farm from Main Road as well as at the proposed mine in Mount Coke.
(d) Notice boards were also placed at shops in the informal and formal settlements bordering the farm and at the municipal office.
(e) Residents of neighbouring farms and the landowner were informed of the proposed activity via registered mail. A Background Information Document (BID) was included.
(f) Registered letters with background information were also sent to the relevant GOs & NGOs.
(g) Relevant GOs identified by the Department of Minerals and Energy (DME) will receive a copy of the documents from the DME (Section 40(i) of the MPRDA).
(h) The Public Participation Report will be submitted to the DME in August 2008.
(i) To allow the IAPs access to the scoping - as well as the EIA/EMP report, a copy of the documents will be placed in the library or other public places.
(j) Proof of the public participation process can be found in the Annexures at the back of this document and will also be included in the EIA/EMP report.
(k) The applicant must complete the public participation exercise within 60 days and the result of the public participation process will then be included in the EIA/EMP report.
(l) The EMPlan Report will be made available to GOs, NGOs and IAPs about a week after the 60 days from the acceptance of the application by the DME. The date for the submission of the EMP will not be later than 28 September 2009.
(m) The DME will distribute copies of the EIA/EMP report to the relevant Government Departments identified by the DME.

C.11.4.3 Registered as IAPs

Details of all persons and organizations that were contacted or who received the BID are included in the IAP database. All IAPs were asked to register if they felt inclined to do so. Those who returned the response sheet were automatically registered as IAPs and will be kept updated as to the progress of the application. Responses to the newspaper advertisement as well as the e-mails were also included. Details are included in the Annexures.

Table 17: List of Annexures included in the document

Annexure A	Advertisement	Placed in Daily Dispatch and Gonubie Bugle
Annexure B	Notice board	Placed at the access point to the farm from the Main Road; at the shops in the informal and formal settlements and municipality
Annexure C	Communication with the neighbouring IAPs	Registered Mail; Fax; E-mail
Annexure D	Communication with the NGOs and GOs	Registered Mail; Fax; E-mail
Annexure E	Response from IAPs	Comments and issues raised by IAPs received at this stage are included

Annexure F	Response from NGOs & GOs	Comments and issues raised by NGOs & GOs received at this stage are included
Annexure G	Community Meeting	A public meeting is scheduled for September 22, 2009. All IAPs were notified either by registered mail or e-mail, notices were put up in the settlement near the farm and at the municipality and community notices were sent to the Gonubie Bugle and Daily Dispatch
Annexure H	Comments Register	Response to the comments will be provided once all the relevant information and data had been gathered.
Annexure I		
Annexure J	Communication with the Landowner	Direct communications as well as registered letter to the landowner
Annexure K	Archaeological Report	

Public participation commenced when the application was accepted by the DME. The applicant must provide proof of the public participation to the DME within 30 days. A further 30 days will be given to IAPs after the EIA&EMP has been made available to them. Registered IAPs will be informed when and where the EIA/EMP, will be available (expected dates are provided above). Providing specific dates and places are often problematic for two reasons:

- Reports must be handed in within a specific time frame (deadlines). Often the information required for the reports is outstanding by the time the report is due. The applicant must then re-apply and previous dates quoted are no longer relevant. This confuses IAPs.
- Registered IAPs often request that the document be placed at locations more convenient to them; information that only becomes available as the process continues.

Table 18. Government organizations

Institution	Address	Contact Details
The Department of Land Affairs ATTN: MR MABUTHI HLOPHEKAZI	P.O. Box 1952 EAST LONDON 5200	Fax: 043 722 1788
Department of Land Affairs State Land Unit ATTN: MS BAHLEKILE KIKELANA	P.O. Box 1958 EAST LONDON 5200	Fax: 043 743 4786
The Municipal Manager Buffalo City Municipality ATTN: MS AMANDA MGWENTSHU	P.O. Box 134 EAST LONDON 5200	Fax: 043 743 8568
The Regional Manager Department of Minerals and Energy: Eastern Cape	Private Bag X 6076 PORT ELIZABETH 6000	
The Superintendent General Department of Agriculture and Rural Development Eastern Cape ATTN: ADV AMON NYONDO	Dukumbana Building Private Bag X 040 BISHO 5605	Fax: 040 635 1222
Department of Transport Roads Infrastructure ATTN: MR UNATHI TELE	Private Bag X 0023 BISHO 5605	Fax: 043 642 4407
The Superintendent General Department of Local Government and Traditional Affairs	Private Bag X 0035 BISHO	Fax: 040 639 2163

Eastern Cape ATTN: MR STANLEY KHANYILE	5605	
The Acting HOD Department of Economic Development and Environmental Affairs Eastern Cape ATTN: MS MENDO DUKAKA	Private Bag X 0054 BISHO 5605	Fax: 040 609 3219
The Manager ESKOM Southern Region	Private Bag X 1 BEACON BAY 5205 EAST LONDON	Fax: 043 703 2929
WILDLIFE AND ENVIRONMENTAL SOCIETY OF SA	P.O. BOX 30145 TOKAI 7966	
BOTANICAL SOCIETY OF SA	PRIVATE BAG X 10 CLAREMONT 7735	
The Regional Manager: Environmental Affairs Department of Economic Development and Environmental Affairs	Private Bag X 9060 East London 5200	
Gonubie Ratepayers Association PO BOX 540 GONUBIE 5262 roelf@discoverymail.co.za ATTN: Roelf Berg		

Within the 60 days the applicant must have completed the public participation and include the comments in the results in the EIA/EMP has been compiled. Comments from the relevant State departments are only available 60 days after the submission of the EIA/EMP.

C.11.4.4 Interested and Affected Parties

In the table below, please list the names of people or organisations likely to be influenced by the proposed operations (these might include neighbours, other water users, etc.) Kindly indicate how these people were consulted (eg. By letter or by phone) *and provide proof* of that consultation. What were the main concerns/ objections raised by the interested and affected parties to the proposed operation?

Statutory bodies

Table 19. Detail regarding relevant GOs

Government Organization	Address
The Department of Land Affairs ATTN: MR MABUTHI HLOPHEKAZI	P.O. Box 1952 EAST LONDON 5200
Department of Land Affairs State Land Unit ATTN: MS BAHLEKILE KIKELANA	P.O. Box 1958 EAST LONDON 5200
The Municipal Manager	P.O. Box 134

Buffalo City Municipality ATTN: MS AMANDA MGWENTSHU	EAST LONDON 5200
The Regional Manager Department of Minerals and Energy Eastern Cape	Private Bag X 6076 PORT ELIZABETH 6000
The Superintendent General Department of Agriculture and Rural Development Eastern Cape ATTN: ADV AMON NYONDO	Dukumbana Building Private Bag X 040 BISHO 5605
Department of Transport Roads Infrastructure ATTN: MR UNATHI TELE	Private Bag X 0023 BISHO 5605
The Superintendent General Department of Local Government and Traditional Affairs Eastern Cape ATTN: MR STANLEY KHANYILE	Private Bag X 0035 BISHO 5605
The Acting HOD Department of Economic Development and Environmental Affairs Eastern Cape ATTN: MS MENDO DUKAKA	Private Bag X 0054 BISHO 5605
The Regional Manager: Environmental Affairs Department of Economic Development and Environmental Affairs	Private Bag X 9060 East London 5200

Detail regarding relevant NGOs

Table 20. Contact details of organisations, associations and institutes

Non-Governmental Organization	Address
WILDLIFE AND ENVIRONMENTAL SOCIETY OF SA	P.O. BOX 30145 TOKAI 7966
BOTANICAL SOCIETY OF SA	PRIVATE BAG X 10 CLAREMONT 7735
East Cape Environmental Network ATTN: Ingela Richardson	10 Bowers Street GONUBIE 5257
Gonubie Ratepayers Association ATTN: Roelf Berg	PO BOX 540 GONUBIE 5262

IAPs. The proposed mining on both Portion 1 of the farm 800 (Gonubie) and Portion 1 of the farm 860, East London were advertised together. Although most of the comments is only relevant to Portion 1 of the Farm 800, Gonubie, some of the comments could also be relevant to Portion 3 of the farm 860 and the relevant comments are discussed below. The comments not relevant to this application is indicated below.

Table 21. Registered Interested and affected Parties

Name	Address	Summary of issues raised	
Attenborough, RK	17 Second Street Gonubie East London 5259	• Health risk • Waste disposal site • Impact on property values • Impact on school	• Dust, noise discussed in C.6.1, C.6.3 • NA to this site • NA to this site • NA to this site
Bottcher, Brendon	16 Lourie Lane Gonubie 5256	• Traffic safety • Damage to road • Dust	• See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading)
Burmeister, Michael	6A Dikkop Road Gonubie	• Air pollution (dust, smoke) • Rehabilitation • Waste disposal site • Noise • Water • Rehabilitation • Impact on roads • Traffic safety	• Dust, noise discussed in C.6.1, C.6.3 • Section B.3 • NA for this site • See C.6.8 • See C2.4 – C 2.13, C.6.6.2,C.6.6.3, C.6.8, C.7 • See B.3 • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading)
Deysel, GJ	PO Box 13487 Vincent	• Map incorrect • Too close to houses and school • Impact on environment • Damage to roads • Impact on traffic safety • Waste disposal site • Mining impact negative on development • Negative impact on property values	• Maps proven to be correct during public meeting – also NA to this application • N/A to this application but mining is close to landowner's house. Permission has been granted • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • Waste disposal: N/A to this site • NA to this application • NA to this application
Eardley, Ron	17 First Street Gonubie East London 5256	• Insufficient information • Maps incorrect • Impact on traffic • Dust • Waste disposal site • Legality of current mining operation • Fit in with municipal planning?	• Background information document (BID) is to introduce application – not to provide details • Maps proven to be correct during public meeting – also NA to this application • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • This is a new application in process • NA to this application
Field, Ian	16 Heidia Street Gonubie 5257	• Map incorrect • Query about application process • Waste disposal site (impact thereof) • Rehabilitation query	• Maps proven to be correct during public meeting – also NA to this application • Process explained during public meeting and BID • See B.3
Grobbelaar, Nadia	26 Gullsway Gonubie East London	• Map incorrect • Dust • Impact on school	• Maps proven to be correct during public meeting – also NA to this application • Dust, noise discussed in C.6.1, C.6.3.

	5257	• Damage to road	See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • NA to this application • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) •
Haig, June	121 Eleventh Ave Gonubie	• Too close to town • Dust and resource – health risk • Damage to road • Impact on traffic safety • Negative impact on bird and animal life	• NA to this application • Dust, noise discussed in C.6.1, C.6.3. • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • See C.1.2 under relevant heading
Hannah, Joan	20 Gonubie Glen Dikkop Ave Gonubie 5257	• Smoke from burning of vegetation • Dust • Traffic safety	• NA to this application • Dust, noise discussed in C.6.1, C.6.3. • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) •
Jones, Keith & Maureen	124 Eleventh Ave Gonubie 5257	• Environment • Impact on property values • Dust • Noise	• See C section • NA to this application • Dust, noise discussed in C.6.1, C.6.3. • Dust, noise discussed in C.6.1, C.6.3. •
Jordaan, H	111 Thirteenth Ave Gonubie	• Visual impact • Too close to houses • Mining operation boundary not believable	• Visual See C.4.12 • NA to this application • Boundary according to Surveyor General Coordinates
Le Roux, Dirk	20 Kalinka Gardens Cnr Heide and Main Roads Gonubie	• Dust • Visual impact • Damage to roads • Traffic safety	• Dust, noise discussed in C.6.1, C.6.3. • Visual See .4.12 • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading)
Le Roux, Jeanette	20 Kalinka Gardens Cnr Heide and Main Roads Gonubie	• Health hazard (allergies) • Dust • Visual impact • Impact on property value • Structural damage to properties • Damage to roads • Impact on tourism	• NA to this application • Dust, noise discussed in C.6.1, C.6.3. • Visual See C.4.12 • NA to this application • NA to this application, but structural damage has been addressed. See • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • Not relevant to this application – not on tourist route
Naude, Wayne	5 Estuary Drive Lourie Heights Gonubie 5257	• Dust and resource • No benefit to the community • Proximity of mine to town • Waste disposal site • Impact on tourism • Character of town in danger	• Dust, noise discussed in C.6.1, C.6.3 and C 6.8 (under relevant heading) and C.7 (under relevant heading) • Explained benefit during the public meeting • NA to this application • Not applicable to this application • NA to this application • NA to this application – not near to town.

Phumgula, Sikhumbuzo	4 Jasmine Place Double Delight Crescent Gonubie 5256		
Stutt Quarries (RW Schroeder)	PO Box 197 Stutterheim 4930	• Legality of current operation	• Legality explained during public meeting and in Scoping Report
Wood, W	51 Oceanway Gonubie 5257	• Traffic volume • Damage to road • Dust • Noise • Ground water • Visual impact • Rehabilitation monitoring	• See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • Dust, noise discussed in C.6.1, C.6.3 and C 6.8 (under relevant heading) and C.7 (under relevant heading) • Dust, noise discussed in C.6.1, C.6.3 and C 6.8 (under relevant heading) and C.7 (under relevant heading) • Visual See C.4.12 • See B.3
The Superintendent General Department of Agriculture Eastern Cape Dukumbana Building	Private Bag X 040 BISHO 5605	• In favour of application	•
The Superintendent General Department of Local Government and Traditional Affairs Eastern Cape	Private Bag X 0035 BISHO 5605		
The Acting HOD Department of Economic Development and Environmental Affairs Eastern Cape	Private Bag X 0054 BISHO 5605		

Other interested and affected parties

Table 22. Interested and affected parties and use of adjacent land or land in the vicinity

Neighbouring Farm	Name of Interested/ affected party	Contact details: Address	How did consultation take place?	Current use of property	What was his/her main concern about the operation?	Response
Ptn 47 of FARM 799 KALIN FARM	Wegner, Kathy	PO Box 758 GONUBIE 5256	Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle; E-mail	Agriculture	• Impact on road • Traffic Safety • Dust	• See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • Dust, noise discussed in C.6.1, C.6.3.
Ptn 18 of Farm 799, GONUBIE	Pacific Coast Investments 97/ Bopa Lesedi	2 Rosalee Gardens 11 Stanmore Rd Nahoon	Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle; E-mail	Development	• Proximity • Visual impact • Impact on road • Traffic safety • Dust • Erosion • Waste • Health threat - silicosis	• NA to this application • Visual see C.2.14 • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • Dust, noise discussed in C.6.1, C.6.3. • Erosion see C.6.6.2 and C 6.8 (under relevant heading) and C.7 (under relevant heading) • Waste See C.6.5 • NA to this application (waste disposal site)
Portion 20 of Farm 799	Wheatly, Malcolm	PO Box 128 Gonubie 5256	Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle; E-mail	Agriculture	• Environment • Negative impact on aesthetic value of town • Impact on main road • Waste disposal site • Farm boundary bulldozed	• See section C • Visual see C.2.14 • See C.214, C.3.1, C 6.8 (under relevant heading) and C.7 (under relevant heading) • NA to this application • Disputed by applicant. No proof provided
Ptn 28 and 34 of Farm 807	Buffalo City Municipality	P.O. Box 134 EAST LONDON 5200	Registered Letter; Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle		• Land to be rezoned	• Issue to be taken up with DME and Local Authority
Ptn 9 of Farm 800	ESKOM	Private Bag X 1	Registered Letter; Notice board			

	Southern Region	BEACON BAY 5205 EAST LONDON	placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle			
Ptn 12 of Farm 800	H KINGON	PO BOX 226 GONUBIE 5256	Registered Letter; Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle			
Ptn 41 of Farm 799	WENGARY	P O BOX 759 EAST LONDON 5200	Registered Letter; Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle			
Erf 4732	VISION HOMES	PTY LTD P O BOX 1470 HILLCREST 3650	Registered Letter; Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle	Residential		
Ptn 2 of Farm 809	THARRATT AND FREITAG	P O BOX 19710 TECOMA EAST LONDON 5214	Registered Letter; Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle	Mining		
Ptn 30 of Farm 807	MR W GAUSS	PO BOX 18242 QUIGNEY 5211	Registered Letter; Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle			
Ptn 55 of Farm 807	RODCHER INVESTMENTS CC	P O BOX 13606 VINCENT 5217	Registered Letter; Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle	Residential		
Ptn 31 of Farm 807	ED JOHNSON		E-mail; Notice board placed at site; Posters; Advertisement in The Daily Dispatch & Gonubie Bugle	Residential		

C.12 SITE EMERGENCY PROCEDURES AND CONTINGENCY PLANS

C.12.1 Overall objective of the plan

- Prevent fatalities and injuries;
- Reducing damage to buildings, stock, equipment, etc.
- Accelerating the resumption of normal operations

C.12.2 Developing the plan

- **Make a list of the possible hazards** that (fire, explosion, building collapse, accidents with vehicles and equipment on site, spills of flammable liquid, accidental release of toxic substances, deliberate release of hazardous biological agents, terrorist or criminal activities (dangerous areas), exposure to ionising radiation, loss of electrical power, loss of water supply, loss of communication, environmental agencies). These hazards are man-made or associated with technology and are flammable, explosive or chemical of nature. Natural hazards should also be investigated. Possible natural hazards include floods, earthquakes, tornadoes, server windstorms, snow or ice storms, severe or extremes in temperatures (cold or hot) and pandemic diseases like influenza

- **Vulnerability assessment.** This means to determine whether a potential hazard is a possible threat or poses a threat in the specific situation that is analysed.
  - How likely is it that the situation will occur
  - What means are available to stop or prevent the situation
  - What is necessary for the situation
- **Elements of an emergency plan includes**
  - All possible emergencies, consequences, required actions, procedures on how to perform the actions and the resources available.
  - Detailed list of the personnel including home telephones, duties and responsibilities.
  - Floor plans
  - Large-scale map showing evacuation routes and services such as gas and water lines as well as where the different emergency equipment is located.
  - At least one person should be trained and made responsible for emergency procedure (an emergency coordinator) with a back-up coordinator. Specific duties, responsibilities, authorities and resources must be defined.

C.12.3 Emergency plan sequence of events

- Report the emergency/declare an emergency
- Activate the emergency plan
- Assume overall demand
- Establishing communication
- Alerting staff/sound the alarm
- Order evacuation /and initiate rescue operations
- Confirm evacuation complete
- Alerting outside population of possible risk
- Requesting external aid **

- Coordinate activities of various groups/persons
- Advising relatives of casualties

C.12.4 Hazards, emergencies, procedures and contingency plans

There needs to be a clear evidence of an emergency procedure that must be adhered to. In addition to the drafting of such a procedure each "building/housing structure" must have a floor plan clearly posted in that building, indicating emergency exits, fire extinguishers and assembly points. There must be a way in which all persons on site can be accounted for during an emergency. After drafting of such a plan, regular emergency drills should be undertaken.

On site where there are no floor plans but emergency procedures as well contingencies plan must be clearly understood and must be reinforced on a regular basis and checks must be carried out to see that the procedures and plans are understood.

The following are possible risks that could occur on site and which would require an emergency response. These considerations are relevant to all operations. Emergency procedures and a contingency plan for some of the emergencies that can occur are given below:

C.12.5 Fires

Emergency Procedures

a) If the fire is small, use a fire extinguisher and if available, water, to contain the fire.
b) Use water or foam according to the required situation. Fuel and oil fires are best doused with foam since foam is lighter than the accelerant.
c) In the event of a fire that is too big to contain, or is spreading too fast, the fire brigade, police and ambulance – if there are any casualties – must be called immediately.
d) Immediately evacuate personnel and livestock from the site.
e) Warn all residents in the area.
f) Call the mine owner and/or manager if they are not on or near the site.
g) Contact the traffic department if smoke causes a hazard on the road.

Contingency Plan

a) A list of procedures and contact numbers must be available in the earthmoving vehicle.
b) At least one fire extinguisher must be available on site, in this case in the earthmoving vehicle. The equipment should be placed in a mounted clamp or other secure structure so that it does not roll around and become damaged or cause a distraction. If a temporary site office is required, an extinguisher must also be placed in the site office.
c) The equipment should also not be placed in the sun or left in the vehicle parked in the sun, but should be removed or placed in a cool place.
d) All staff on site must be trained to use the fire extinguisher.

e) In buildings on the mine site, one fire extinguisher should be mounted for every 25 square meters of a structure / building. These fire extinguishers need to be mounted as least 1 meter above the ground as this prevents the extinguishers from rolling around and becoming a hazard and prevents their bases from rusting. In addition, a 'fire extinguisher" sign should be displayed above all fire extinguishers.

f) Fire Extinguishers need to be inspected on a regular basis depending on their service intervals.

g) Other emergency equipment must be checked regularly in accordance with Health and Safety Regulations.

h) The telephone numbers of the fire brigade, police and ambulance must be clearly visible in the earthmoving vehicle and at the office.

i) At least one cell phone or pager must be available on site to allow the workers to contact the responsible persons and emergency services. On this site the residences are close enough that the worker can run to the house to phone as well as warn the residents and proprietors.

j) Basic environmental and safety knowledge must be provided. Training is addressed in the Social and Labour plan, but awareness of dangerous and hazardous situations and how to control such events must be habituated with regular awareness training exercises.

k) Fires should preferably not be made on site but if necessary fires for cooking and heating must only be made in a suitable, safe, designated area. For example, use a fire drum in safe, designated area. Such areas must be away from buildings fuel storage areas and vegetation (green or dry).

l) Construct a firebreak around the site to prevent accidental fire spreading to the adjacent vegetation. Mining involves clearing the vegetation, which also functions as a firebreak. A firebreak can be made on the inside or around the mine border to further prevent damage as a result of accidental fires.

m) The removal of vegetation will reduce the possibility of hot burning fires especially where alien vegetation is plentiful.

n) Do not make any fires or smoke near flammable liquid and that includes smoking when refuelling or working with oils or other flammable hydrocarbons.

o) If fires are made, they must not be left smouldering when leaving the site. All cinders and coal must be doused with water and covered with resource.

p) For general housekeeping, clean the fireplace regularly.

q) Store flammable material in a lockable and secure place and do not store with other chemicals.

r) Do not discard any cigarette buts or other flame source near flammable liquid, dry branches or in the trees. Cigarettes must be distinguished in the containers provided. Butts may not be discarded on the site, but must be placed in special containers provided.

s) If fires are needed (not expected on this site) water must be available (e.g. in a water cart) and a fire extinguisher (appropriate type and size).

t) Do not store liquid and gas in the same area.

u) Do not store chemicals and fuels under trees.

v) No smoking within at least 3 m from any fuel or chemical storage areas.

C.12.6 Accidents

Emergency Procedures

a) In the event of an accident ensure that the police, traffic department and if necessary, the ambulance is contacted and provide as much detail as possible.
b) Ensure that the area is made safe from oncoming traffic, etc.
c) Make the patient comfortable.
d) If trained in First Aid, provide emergency treatment (stop blood, etc).
e) Stay with the patient until the ambulance arrives.
f) If not trained, try to get someone to locate a person with knowledge of First Aid.
g) Call mine owner/manager if they are not on site.

Contingency Plan

a) A list of procedures to follow and contact numbers must be available at the site office and the earthmoving vehicle.
b) It is best practice to place a first aid station in the work area, allowing unhindered access to the first aid kit, with signage clearly displaying the location of this kit and the relevant First Aider on duty. This said, there should be a First Aider on site at all times where possible or the staff should receive first aid training where possible. In the case of small operations where only one or two people work on the site, at least one must be trained to administer First Aid (training schedule should be provided in the Social and Labour Plan). It is better that all personnel on site be trained in first aid since workers on the site are often alone and either one could be hurt.
c) At least one First Aid kit must be available on site. If there is no building, then the kit must be kept in the earthmoving vehicle.
d) The emergency equipment and First Aid kit must be checked regularly (according to Health and Safety Regulations) to ensure that the contents are still usable and that the kit contains all the required pieces.
e) The telephone numbers of the fire brigade, police and ambulance must be clearly visible in the earthmoving vehicle.
f) At least one cell phone or pager must be available on site to allow the workers to contact the relevant persons. The worker can run to the nearest house or business to call for help.
g) Trucks must adhere to speed limits set by the users of the haul roads on site, servitude roads and other access roads. Truck must also adhere to the legal speeds limits set for the provincial and municipal roads.
h) Safety Signage:
    - On approaching working areas, the mandatory safety signage indicating the required PPE should be located at the entrance to this work area.
    - It is also advised that a general disclaimer be displayed at the entrance to the camp area. The disclaimer informs people that they are entering a restricted work area, and that the contractor(s) / project managers will not be held liable for damages/loss etc.
    - Signage can also be included, or displayed separately to warn of special actions required on the site.
    - Warnings, such as speed limits, must also be indicated.

- Signage should preferable also be available that prohibit the removal of indigenous vegetation as well as killing animals and the setting of traps and snares.
- Signage must be placed at the entrance from the access road onto the public road or entrance onto the access road from the public road.
- The signage must warn the road users of the access point of the trucks onto the public road.
- A stop sign must be placed at the mine exit for the truckers to observe the oncoming traffic before exiting the site.
- Therefore, the relevant and necessary road signs (in accordance with the National Road Traffic Act) must be displayed.

i) Personal Protective Equipment

PPE is to be utilized where applicable.

- Hard hats are to be used in:

  Any area where there is use of heavy machinery of plant equipment

  Any area displaying the mandatory hardhat safety sign

  Any area where there is a risk of falling

  Any area where there are suspended/raised items

- Eye protection is to be used in any area that:
  - displays the mandatory use of eye protection sign
  - may be present the risk of small projectiles entering the eyes
  - may present the risk of any chemical splashes
- Ear protection should be utilized in any area that:
  - presents excessive noise levels
  - displays the mandatory use of hearing protection sign
- Respiratory Protection: Respiratory devices must be used in any area that:
  - has the presence of excessive dust/smoke
  - displays the mandatory use of respiratory devices safety sign
  - In the presence of chemicals
- Hand Protection

  Gloves and hand protection must be used when:
  - risk of injury to hands exists
  - handling raw/sharp items
  - the mandatory use of gloves sign is displayed

j) Other PPE: Any other required PPE should be outlined and implemented during the risk assessment phase. Examples may include use of: steel toecap boots/gumboots, aprons, fall/arresting devices, gloves, etc.

k) Basic environmental and safety knowledge must be provided to all personnel on site.

l) Vegetation (alien vegetation) must be removed if the view at intersections is obscured, other vegetation can be trimmed.

m) Unauthorized persons on site are strictly forbidden and any such incidences must be immediately reported to the site supervisor/manager.

n) Roads and grounds within mine areas should be of a satisfactory standard allowing safe movement of vehicles and pedestrians. Roads must also be, repaired and maintained regularly to prevent accidents.

Parking areas should be demarcated and marked accordingly. Personnel are to pay special attention and give way to animals and pedestrians when crossing roads, particularly at night or in adverse weather conditions.

o) Vehicles should also be in a good condition and serviced regularly. For example, prevent blow-outs (tyres are not in a good condition), exhaust smoke obscuring the view, sudden stoppage or parking (emergency) in the road, etc.

C.12.7 Managing Accidental Toxic Waste Spillage

The principles of any clean-up operation are:

a) Contain the spill and stop it from spreading.
b) Remove the source of the polluting substance – i.e. close any taps or valves where necessary and replace leaking taps.
c) Clean up by removing the contaminated soil to the depth of penetration.
d) Rehabilitate the area.
e) Avoid the use of chemicals to absorb/emulsify oil, but making use of natural material (e.g. peat or pine needles) to absorb the waste is acceptable.

Recovering contaminated soil

a) Place any excess oil, diesel, chemicals and contaminated soil in a drum and label the container.
b) Add the bioremediation agent. The addition of soil to the contaminants will ensure that the microbes in the soil also aid in the break down process. Use a bioremediation agent (e.g. Enretech 1 or Spillsorb) containing "oil/diesel eating bacteria" (microbes).
c) Bacteria are anaerobic, and need not be aerated. It is however, necessary to keep the mixture slightly moist to sustain the bacteria.

Procedure

a) Any oil, diesel, petrol or hazardous chemical spill must be reported to the mine manager.
b) The responsible person must take steps to prevent the spill from spreading and immediately begin with clean up procedures.
c) Personal protective equipment (PPE) must be worn when handling oil, diesel, solvents or other chemicals.
d) In the case of large spills i.e. more than 100 litres of diesel, oil, acid or any other hazardous substance:
e) This would be deemed an emergency.
f) Report spill immediately to the responsible person who must contact a Pollution Control Specialist in the area.
g) The number of the Pollution Control Specialist must be posted on the mine and be available to the person(s) responsible for working with the oil, fuel and lubricants.
h) Pump/scoop excess material or fluid into 210 liter drums immediately. Place any contaminated soil or material into drums labeled for that purpose.
i) Chemicals and fuels should only be stored once the necessary permits and documents have been obtained from the local municipal authority and the storage of the chemicals/fuels needs to be done in accordance with the aforementioned permits and by-laws.

j) In addition to this, all Occupational Health and Safety guidelines need to be followed with regards to fire extinguishers, safety signage (incl. UN boards) and instructions for emergency handling of these chemicals/fuels. The applicable MSDA's (Material Safety Data Sheets) should be readily available. In addition products required to safely and efficiently contain any accidental spillages as per the material safety data sheet must be on site. Your staff needs to do a study of the material safety data sheet; so that they are efficiently informed and trained as to how one would contain and of mop up any spill.

k) The area allocated to store fuel/chemicals needs to be clearly sign posted (no flames, no smoking etc). The bunding wall around this area needs to be high enough to contain one and a half times the volume of fuels to be kept.

C.12.8 Safety, Health and Environmental Policy (SHE)

C.12.8.1 SHE policy induction program needs to undertaken (provided as a guideline)

- The Policy then needs to be understood by all and measures need to put into place to ensure this. To Regular checks must be made of the site and the operating procedures on the site. A competent person must make the checks. A checklist or dates of checking can be planned to ensure regular checks although random checks can also be made.
- Standard Operating Procedures (SOP') need to be written and adhered to. Because this is a site with no permanent structures, the procedures should preferably be available in the earthmoving equipment and if a temporary site office (site office) will be established, it must also be placed at this office.
- A responsible person needs to be formally appointed. The responsible person should check the site on a regular basis.
- All incidents and accidents need to be thoroughly investigated by the site or mine manager.

C.12.8.2 Emergency procedure records for safety, health and environment (SHE):

- A file should preferable be kept on site containing documents and checklists relevant to HSE. These include daily checklists for PPE (Personal Protective Equipment), site layout and compliance, ablutions, vehicle checklists etc. In addition to this, a record of daily "tool-box talk" can occur and should be documented and filed. This is a must for ISO compliance, but not necessarily practical on the smaller mines. Checks on whether PPE are available, whether the equipment is suitable, effective - in a good condition and whether personnel actually wear the equipment.
- Personal register needs to be kept on site, and need to be kept up to date as per personnel changes.
- In the case of truck drivers and persons visiting the site, it would be advisable that they sign an entry register to indicate when they entered and left the site. This will indicate whether truckers had remained on site longer than required as well as to check that all personnel or visitors to the site had actually left the premises.

C.12.8.3 Work permits and access

- Identification of the personnel should be clearly displayed by all personnel where possible or at least on their person.
- Personnel have access only to demarcated access routes and mine sites.
- Access onto private property and driving on non-designated routes is strictly forbidden
- Entry onto areas which are out of bounds is also forbidden

- Personnel are not to interfere with the daily activities of the surrounding communities.
- Exit/Egress routes and points, need to be kept free of obstructions at all times, with adequate lighting to ensure safe passage in the event of an emergency.
- In addition to this, the relevant safety signage needs to be clearly displayed showing such routes and exits. Where possible, emergency exists should have outward opening doors. Keys to all emergency exists must be readily available alongside the exit, thus ensuring that there are no unnecessary delays in exiting any building or camp.

C.12.8.4 Environmental Considerations

- An Environmental Management Plan should have been completed before operations commence.
- Personnel are forbidden to disturb/interfere, trap, lure or kill any animal encountered on site or within a specified area.
- Personnel are strictly forbidden from poaching any animals. Poaching is illegal and all offenders will be prosecuted.
- Personnel are not to pick, cut or damage any flora on site and in the area, unless told to do so by a supervisor after environmental impact study has been completed.
- Firewood is not to be collected from sire or the surrounding area.
- The making of fires on site is prohibited except in designated areas
- Cigarette buts must be extinguished and disposed of on the waste containers provided.
- Littering of any kind is strictly forbidden.
- Driving is only to be done on designated roads

C.12.9 Checklist for monitoring risks

Table 23. Checklist for monitoring risks

EXAMPLE OF A CHECK LIST: FIRE MANAGEMENT	
Aspects to check (building refers to the temporary site office)	**Yes/ No**
Have you identified all potential ignition sources	
Have you identified all potential fuel sources?	
Have you identified all potential sources of oxygen?	
Have you identified who is at risk	
Have you identified why they are at risk	
Have you made a note of your findings?	
Can the existing means of detection ensure a fire is discovered quickly enough for the alarm to be raised in time for all the people to escape to a place of total safety?	
Are detectors of the right type and in the appropriate locations?	
Can the means of warning be clearly heard and understood by everyone throughout on the entire site when initiated from a single point?	
Are there provisions for people or locations where the alarm cannot be heard?	

If the fire detection and warning system is electrically powered, does it have a back-up power supply?	
Are the extinguishers suitable for the purpose?	
Are there enough extinguishers sited throughout the premises at appropriate locations?	
Are the right types of extinguishers located close to the fire hazards and can users get to them without exposing themselves to risk?	
Are the extinguishers visible or does their position need indicating	
Have you taken steps to prevent the misuse of extinguishers	
Do you regularly check equipment provided to help maintain the escape routes	
Do you carry out daily checks to ensure that there is clear access for fire engines	
Are those who test and maintain the equipment competent to do so?	
Do you have the necessary procedures in place to maintain any facilities that have been provided for the safety of people (or for the use of firefighters, such as access for fire engines and firefighting lifts)?	
Are the escape routes and final exits kept clear at all times?	
Do the doors on escape routes open in the direction of escape (example the site office)?	
Can all final exit doors be opened easily and immediately if there is an emergency?	
Will everybody be able to safely use the escape routes from your site/premises?	
Are staff aware of the importance of maintaining the safety of the escape routes, e.g. by ensuring that fire doors are not wedged open and that combustible materials are not stored within escape routes?	
Are there any particular or unusual issues to consider?	
Is your building constructed so that in the case of a fire there is a fire, heat and smoke will not spread uncontrolled through the building to the extent that people are unable to use the escape routes?	
Can all the occupants escape to a place of total safety in a reasonable time?	
Are the existing escape routes adequate for the numbers and type of people that may need to use them, e.g. staff, pupils and students, members of the public, disabled people, and young children?	
Are the exits in the right place and do the escape routes lead as directly as possible to a place of total safety?	
If there is a fire, could all available exits be affected or will at least one route from any part of the premises remain available?	
Are your premises used during periods of darkness?	
Will there always be sufficient lighting to safely use escape routes?	
Do you have back-up power supplies for your emergency lighting?	
Where necessary, are escape routes and exits, the locations of firefighting equipment and emergency telephones indicated by appropriate signs?	
Are you provided notices such as those giving information on how to operate security devices on exit doors, those indicating doors enclosing hazards must be kept shut and fire action notices for staff and other people?	
Are you maintaining all the necessary signs and notices so that they continue to be correct, legible and understood?	
Are you maintaining signs that you have provided for the information of the fire and rescue service, such as those indicating the location of water suppression stop valves and the storage of hazardous substance?	
Do you regularly check all fire doors and escape routes and associated lighting and signs?	
Do you regularly check all your firefighting equipment?	
Do you regularly check your fire detection and alarm equipment?	

Are those who test and maintain the equipment competent to do so?	
Do you keep a logbook to record tests and maintenance?	
Evaluating the risk to people in the immediate area if a fire starts?	
Considering the need for fire detection and for warning?	
Considering the need for firefighting equipment?	
Determining whether your escape routes are adequate?	
Checking that you have adequate signs and notices?	
Regularly testing and maintaining safety equipment?	
Considering whether you need any other equipment or facilities?	
Have you recorded the significant findings of your assessment?	
Have you recorded what you have done to remove or reduce the risk?	
Are your records available for inspection by the enforcing authority?	
Do you have an emergency plan and, where necessary, have you recorded the details?	
Is the plan readily available for staff to read?	
Is the emergency plan available to the enforcing authority?	
Have you told your staff about the emergency plan?	
Have you informed visitors about what to do in an emergency?	
Have you identified people nominated to do a particular task?	
Do you have arrangements for informing temporary or agency staff?	
Do you have arrangements for informing other employers whose staff are guest workers in your premises, such as maintenance contractors and cleaners?	
Have you co-coordinated your fire safety arrangements with other responsible people on the farm?	
Have you recorded details of any information or instructions you have given and the details of any arrangements for co-operation and co-ordination with others?	
Are employees aware of specific tasks if there is a fire?	
Are you maintaining a record of training sessions?	
Do you carry out training and fire drills?	
If you use or store hazardous or explosive substances have your staff received appropriate training?	

D. SCORING

D.1 SCORING OF EIA – FOR OFFICIAL USE

Instructions for officials:
In this table, complete the totals of each section indicated below and do the calculation. ***Remember to first add all the values of sections C 1,2,4 and 5 and then to multiply it by the time factor in Section C 3***
Note that the value for the time factor element of the impact rating appears in Section C3. This is the total amount of time that the operation is expected to impact on the environment and all other factors are MULTIPLIED by this value. Compare the score (Impact rating) with the table below to help you make a decision on the total impact of the operation and also on the sufficiency of this programme to address all expected impacts from the operation on the environment.

D.1.1 Calculation Table

Table 20. Calculation Table

Section **C 1** Total	+	Section **C 2** Total	+	Section **C 4** Total	+	Section **C 5** Total	=	*Subtotal*	X	Time Factor Section **C 3**	=	Score (Impact rating)

D.1.2 Impact Rating Scaling

Table 21. Impact rating Scaling

SCORE ATTAINED	IMPACT RATING	REMARKS
46 – 300	Low	No additional objectives needed – this programme is sufficient
301 – 800	Medium	Some specific additional objectives to address focal areas of concern may be set.
801 – 1160	High	Major revision of Environmental Management Plan for adequacy and full revision of objectives.

Additional Objectives:
Based on the information provided by the applicant and the regional office's assessment thereof, combined with the interpretation of the scoring and impact rating attained for the particular operation above, the Regional Manager of the regional office of the DME may now determine additional objectives /requirements for the mine owner/manager to comply with. *These measures will be specific and will address specific issues of concern that are not adequately covered in the standard version of this document.* These requirements are not listed here, but are specified under Section G of this document, so as to form part of the legally binding part of this Environmental Management Plan.

E. UNDERTAKING

I, Blaire Rieger, the applicant for a mining permit/ right hereby declare that the above information is true, complete and correct. I undertake to implement the measures as described in Sections F and G hereof. I understand that this undertaking is legally binding and that failure to give effect hereto will render me liable for prosecution in terms of Section 98 (b) and 99 (1)(g) of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). I am also aware that the Regional Manager may, at any time but after consultation with me, make such changes to this plan as he/she may deem necessary.

Signed on this 28 day of September 2009 at Port Elizabeth (Place)

BLAIRE LAUREN RIEGER

.....

Signature of applicant

The following section is provided in addition to the above. The section is an extract of the guideline document and is placed in its entirety to ensure all possible impacts are addressed. Although not part of the main section of the document it is signed by the applicant meaning that all requirements relevant to prospecting of resource and gravel will be adhered to in addition to the requirements of the main documents.

F. ENVIRONMENTAL MANAGEMENT PLAN

INTRODUCTION

This Environmental Management Plan contains guidelines, operating procedures and rehabilitation/pollution control requirements which will be binding on the holder of the mining permit/ prospecting permission/ reconnaissance permission after approval of the Environmental Management Plan. It is essential that this portion be carefully studied, understood, implemented and adhered to at all times.

F.1 GENERAL REQUIREMENTS

F.1.1 Mapping and Setting out

F.1.1.1 Layout Plan

- A copy of the layout plan as provided for in Regulation 2.2 must be available at the prospecting/mining site for scrutiny when required.
- The plan must be updated on a regular basis with regard to the actual progress of the establishment of surface infrastructure, mining operations and rehabilitation (a copy of the updated plan shall be forwarded to the Regional Manager on a regular basis).
- A final layout plan must be submitted at closure of the mine or when operations have ceased.

NOTE: Regulation 2.2 of the regulations promulgated in terms of the Act requires:

"An application contemplated in sub-regulation (1) must be accompanied by a plan that must contain –
(a) the co-ordinates of the land or area applied for;
(b) the north point;
(c) the scale to which the plan has been drawn;
(d) the name, number and location of the land or area covered by the application; and
(e) in relation to farm boundaries and surveyed points-
(i) the size and shape of the proposed area;
(ii) the boundaries of the land or area comprising the subject of the application concerned;
(iii) the layout of the proposed reconnaissance, prospecting, exploration, mining or production operations;
(iv) surface structures and servitudes;
(v) the topography of the land or area; "

F.1.1.2 Demarcating the prospecting area

- The mining/ prospecting area must be clearly demarcated by means of beacons at its corners, and along its boundaries if one corner beacon cannot be seen from the next.
- Permanent beacons as indicated on the layout plan or as prescribed by the Regional Manager must be firmly erected and maintained in their correct position throughout the life of the operation.
- Mining/ prospecting and resultant operations shall only take place within this demarcated area.

F.1.1.3 Demarcating the river channel and riverine environment

The following is applicable if operations are conducted within the riverine environment (See F 3.2):

- Beacons as indicated on the layout plan or as prescribed by the Regional Manager must be erected and maintained in their correct position throughout the life of the operation.
- These beacons must be of a permanent nature during the operations and must not be easily removable, especially those in a river channel. The beacons must, however, be removed at the end of the operations.

- The mining of and prospecting for any mineral shall only take place within this demarcated mining area.
- If riverine vegetation is present in the form of reeds or wetland vegetation, the presence of these areas must be entered in Part C 1.45 of the EMPlan and indicated on the layout plan.

F.1.2 Restrictions on mining or prospecting

- On assessment of the application, the Regional Manager may prohibit the conducting of mining or prospecting operations in vegetated areas or over portions of these areas.
- In the case of areas that are excluded from mining or prospecting, no operations shall be conducted within 5 m of these areas.

F.1.3 Responsibility

- The environment affected by the mining/ prospecting operations shall be rehabilitated by the holder, as far as is practicable, to its natural state or to a predetermined and agreed to standard or land use which conforms with the concept of sustainable development. The affected environment shall be maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof.
- It is the responsibility of the holder of the mining permit/prospecting right to ensure that the manager on the site and the employees are capable of complying with all the statutory requirements, which must be met in order to mine, which includes the implementation of this EMP.
- If operations are to be conducted in an area that has already been disturbed, the holder must reach specific agreement with the Regional Manager concerning the responsibilities imposed upon himself/herself pertaining to the rehabilitation of the area and the pollution control measures to be implemented.

F.2 INFRASTRUCTURAL REQUIREMENTS

F.2.1 Topsoil

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

F.2.2 Access to the site

F.2.2.1 Establishing access roads on the site

- The access road to the mining/prospecting area and the campsite or site office must be established in consultation with the landowner/tenant and existing roads shall be used as far as practicable.
- Should a portion of the access road be newly constructed the following must be adhered to:
  - The route shall be selected so that a minimum number of bushes or trees are felled and existing fence lines shall be followed as far as possible.
  - Watercourses and steep gradients shall be avoided as far as is practicable.

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

- If imported material is used in the construction or upgrading of the access road this must be listed in C 2.17
- The erection of gates in fence lines and the open or closed status of gates in new and existing positions shall be clarified in consultation with the landowner/tenant and maintained throughout the operational period.
- No other routes will be used by vehicles or personnel for the purpose of gaining access to the site.

NOTE: The design, construction and location of access to provincial roads must be in accordance with the requirements laid down by the Provincial or controlling authority.

F.2.2.2 Maintenance of access roads

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

F.2.2.3 Dust control on the access and haul roads

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

F.2.2.4 Rehabilitation of access roads

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

F.2.3 Office/Camp Sites

F.2.3.1 Establishing office / camp sites

- Office and campsites shall be established, as far as is practicable, outside the flood plain, above the 1 in 50 year flood level mark within the boundaries of the mining/prospecting area.
- The area chosen for these purposes shall be the minimum reasonably required and which will involve the least disturbance to vegetation. Topsoil shall be handled as described in F 2.1 above.
- No camp or office site shall be located any closer than 100 meters from a stream, river, spring, dam or pan.
- No trees or shrubs will be felled or damaged for the purpose of obtaining firewood, unless agreed to by the landowner/tenant.
- Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a firebreak shall be cleared around the perimeter of the camp and office sites.
- Lighting and noise disturbance or any other form of disturbance that may have an effect on the landowner/tenant/persons lawfully living in the vicinity shall be kept to a minimum.

F.2.3.2 Toilet facilities, waste water and refuse disposal

- As a minimum requirement, the holder of a mining permit/ prospecting right shall, at least, provide pit latrines for employees and proper hygiene measures shall be established.
- Chemical toilet facilities or other approved toilet facilities such as a septic drain shall preferably be used and sited on the campsite in such a way that they do not cause water or other pollution.
- The use of existing facilities must take place in consultation with the landowner/tenant.
- In cases where facilities are linked to existing sewerage structures, all necessary regulatory requirements concerning construction and maintenance should be adhered to.
- All effluent water from the camp washing facility shall be disposed of in a properly constructed French drain, situated as far as possible, but not less than 200 meters, from any stream, river, pan, dam or borehole.
- Only domestic type water shall be allowed to enter this drain and any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.
- Spills should be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognized facility.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., shall be stored in a container at a collecting point and collected on a regular basis and disposed of at a recognized disposal facility. Specific precautions shall be taken to prevent refuse from being dumped on or in the vicinity of the campsite.
- Biodegradable refuse generated from the office/camp site, processing areas, vehicle yard, storage area or any other area shall either be handled as indicated above or be buried in a pit excavated for that purpose and covered with layers of soil, incorporating a final 0,5 meter thick layer of topsoil (where practicable). Provision should be made for future subsidence of the covering.

F.2.3.3 Rehabilitation of the office/camp site

- On completion of operations, all buildings, structures or objects on the camp/office site shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), which states:

  (1) 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 any such right or permit may not demolish or remove any building, structure, object -

  (a) which may not be demolished 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

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

F.2.4 Vehicle maintenance yard and secured storage areas

F.2.4.1 Establishing the vehicle maintenance yard and secured storage areas

- The vehicle maintenance yard and secured storage area will be established as far as is practicable, outside the flood plain, above the 1 in 50 year flood level mark within the boundaries of the mining/prospecting area.
- The area chosen for these purposes shall be the minimum reasonably required and involve the least disturbance to tree and plant life. Topsoil shall be handled as described in F 2.1 above.
- The storage area shall be securely fenced and all hazardous substances and stocks such as diesel, oils, detergents, etc., shall be stored therein. Drip pans, a thin concrete slab or a facility with PVC lining, shall be installed in such storage areas with a view to prevent soil and water pollution from hydrocarbons.
- The location of both the vehicle maintenance yard and the storage areas are to be indicated on the layout plan.
- No vehicle may be extensively repaired in any place other than in the maintenance yard.

F.2.4.2 Maintenance of vehicles and equipment

- The maintenance of vehicles and equipment used for any purpose during the mining/prospecting operation will take place only in the maintenance yard area.
- Equipment used in the mining/prospecting process must be adequately maintained so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid.
- Machinery or equipment used on the mining/prospecting area must not constitute a pollution hazard in respect of the above substances. The Regional Manager shall order such equipment to be repaired or withdrawn from use if he or she considers the equipment or machinery to be polluting and irreparable.

F.2.4.3 Waste disposal

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

F.2.4.4 Rehabilitation of vehicle maintenance yard and secured storage areas

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

F.3 OPERATING PROCEDURES IN THE MINING AREA

F.3.1 Limitations on mining/prospecting

- The mining of or prospecting for precious stones shall take place only within the approved demarcated mining or prospecting area.
- Mining/prospecting may be limited to the areas indicated by the Regional Manager on assessment of the application.
- The holder of the mining permit/ prospecting right shall ensure that operations take place only in the demarcated areas as described in section F 1.1.2 above.
- Operations will not be conducted closer than one and a half times the height of the bank from the edge of the river channel and in such manner that the stability of the bank of the river is affected.
- Precautions shall also be taken to ensure that the bank of the river is adequately protected from scouring or erosion. Damage to the bank of the river caused by the operations, shall be rehabilitated to a condition acceptable to the Regional Manager at the expense of the holder.
- Restrictions on the disturbance of riverine vegetation in the form of reeds or wetland vegetation must be adhered to. The presence of these areas must be entered in Part of the programme and indicated on the layout plan.

F.3.2 Mining/prospecting operations within the riverine environment

NOTE: The Department of Water Affairs and Forestry may impose additional conditions, which must be attached to this EMP. In this regard, please see the Best Practice Guideline for small-scale mining developed by DWAF (BPG 2.1)

(Available from http://www.dwaf.gov.za)

- The mining of or prospecting for precious stones in the river or the banks of the river will be undertaken only after the Regional Manager has consulted with the Department of Water Affairs and Forestry.
- The canalisation of a river will not be undertaken unless the necessary permission has been obtained from the Department of Water Affairs and Forestry. Over and above the conditions imposed by the said Department, which conditions shall form part of this EMPlan, the following will also apply:

  - The canalisation of the flow of the river over different parts of the river bed shall be constructed in such a manner that the following are adhered to at all times:

- The flow of the river may not be impeded in any way and damming upstream may not occur.
- The canalisation of the flow may not result in scouring or erosion of the river-bank.
- Well points or extraction pumps in use by other riparian users may not be interfered with and canalisation may not impede the extraction of water at these points.

↳ Access to the riverbed for the purpose of conducting excavations in the riverbed, shall be through the use of only one access at a time. The location of the access to the river channel across the riverbank shall be at a point of the riverbank where the least excavation and damage to vegetation will occur and shall not be wider than is reasonably required. The position of the river access together with all planned future access points must be indicated on the layout plan.

F.3.2.1 Rehabilitation of access to riverbed

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

F.3.2.2 Rehabilitation of mining/prospecting area in the bed of the river

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

F.3.3 Excavation

F.3.3.1 Establishing the excavation areas

- Whenever any excavation is undertaken for the purpose of locating and/or extracting ore bodies of all types of minerals, including precious stone-bearing gravels, the following operating procedures shall be adhered to:

  - Topsoil shall, in all cases (except when excavations are made in the river-bed), be handled as described in F 2.1 above.
  - Excavations shall take place only within the approved demarcated mining/prospecting area.
  - Overburden rocks and coarse material shall be placed concurrently in the excavations or stored adjacent to the excavation, if practicable, to be used as backfill material once the ore or gravel has been excavated.
  - Trenches shall be backfilled immediately if no ore or precious stone-bearing gravel can be located.

F.3.3.2 Rehabilitation of excavation areas

The following operating procedures shall be adhered to:

- The excavated area must serve as a final depositing area for the placement of tailings during processing.
- Rocks and coarse material removed from the excavation must be dumped into the excavation simultaneously with the tailings.
- Waste, as described in paragraph F 2.3.2 above, will not be permitted to be deposited in the excavations.
- Once excavations have been refilled with overburden, rocks and coarse natural materials and profiled with acceptable contours and erosion control measures, the topsoil previously stored, shall be returned to its original depth over the area.
- The area shall be fertilised if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects to the soil arising from the mining/prospecting operation, be corrected and the area be seeded with a vegetation seed mix to his or her specification.

F.3.4 Processing areas and waste piles (Dumps)

F.3.4.1 Establishing processing areas and waste piles

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

F.3.4.2 Rehabilitation of processing areas

- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

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

F.3.5 Tailings dam(s) (slimes dam)

The permission of the Regional Manager must be obtained should a tailings dam be constructed for the purpose of handling the tailings of the mining/prospecting operations. The construction, care and maintenance of tailings dams have been regulated and the relevant regulation is copied herewith, both for your information and as a guideline to the commissioning, management, operation, closing and aftercare of a tailings deposition facility.

Regulation 73 promulgated under the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) requires the following:

Management of residue stockpiles and deposits

56. *(1)* *The assessment of impacts relating to the management of residue stockpiles and deposits, where appropriate, must form part of the environmental impact assessment report and environmental management programme or the environmental management plan.*

(2) *Residue characterisation*

(a) *Mine residue must be characterised to identify any potentially significant health and safety hazard and environmental impact that may be associated with the residue when stockpiled or deposited at the site(s) under consideration.*

(b) *Residue stockpiles and deposits must be characterised in terms of its –*

(i) *physical characteristics, which may include -*

(aa) *the size distribution of the principal constituents;*
(bb) *the permeability of the compacted material;*
(cc) *void ratios of the compacted material;*
(dd) *the consolidation or settling characteristics of the material under its own weight and that of any overburden;*
(ee) *the strength of compacted material;*
(ff) *the specific gravity of the solid constituents; and*
(gg) *the water content of the material at the time of deposition, after compaction, and at other phases in the life of the deposit.*

(ii) *chemical characteristics, which may include -*

(aa) *the toxicity;*
(bb) *the propensity to oxidize and /or decompose;*
(cc) *the propensity to undergo spontaneous combustion;*
(dd) *the pH and chemical composition of the water separated from the solids;*
(ee) *stability and reactivity and the rate thereof; and*
(ff) *neutralising potential.*

(iii) *mineral content, which include the specific gravity of the residue particles and its impact on particle segregation and consolidation;*

(3) *Classification of residue stockpiles and deposits*

(a) *All residue stockpiles and deposits must be classified into one or a combination of the following categories –*

(i) *the safety classification to differentiate between residue stockpiles and deposits of high, medium and low hazard on the basis of their potential to cause harm to life or property; and*

(ii) *the environmental classification to differentiate between residue stockpiles and deposits with -*

(aa) *a potentially significant impact on the environment due to its spatial extent, duration and intensity of potential impacts; or*

(bb) *no potentially significant impact on the environment.*

(b) *All mine residue stockpiles and a suitably qualified person(s) must classify deposits.*

(c) *The classification of residue stockpiles and deposits shall determine the –*

(i) *level of investigation and assessment required;*

(ii) *requirements for design, construction, operation, decommissioning, closure and post closure maintenance; and*

(iii) *qualifications and expertise required of persons undertaking the investigations, assessments, design, construction thereof.*

(d) *The safety classification of residue stockpiles and deposits shall be based on the following criteria –*

Number of residents in zone of influence	*Number of workers in zone of influence*	*Value of third party propert in zone of influence*	*Depth to underground mine workings*	*Classiication*
0	*< 10*	*0 – R2 m*	*> 200m*	*Low hazard*
1 – 10	*11 – 100*	*R 2 m – R20 m*	*50 m – 200 m*	*Medium hazard*
> 10	*> 100*	*> R20 m*	*< 50 m*	*High hazard*

(e) *A risk analysis must be carried out and documented on all high hazard residue stockpiles and deposits.*

(f) *The environmental classification of residue stockpiles and deposits must be undertaken on the basis of –*

(i) *the characteritics of the residue;*

(ii) *the location and dimensions of the deposit (height, surface area);*

(iii) *the importance and vulnerability of the environmental components that are at risk; and*

(iv) *the spatial extent, duration and intensity of potential impacts.*

(g) *An assessment of the environmental impacts shall be done on all environmental components which are significantly affected.*

(h) *The assessment of impacts and analyses of risks shall form part of the environmental assessment and management programme.*

(4) *Site selection and investigation:*

(a) *The process of investigation and selection of a site must entail -*

(i) *the identification of a sufficient number of possible candidate sites to ensure adequate consideration of alternative sites;*

(ii) *qualitative evaluation and ranking of all alternative sites;*

(iii) *qualitative investigation of the top ranking sites to review the ranking done in (ii);*

(iv) *a feasibility study to be carried out on the highest ranking site(s), involving -*

(aa) *a preliminary safety classification;*

(bb) *an environmental classification;*

(cc) *geotechnical investigations; and*

(dd) *groundwater investigations.*

(b) *The geotechnical investigations may include-*

(i) *the characterization of the soil profile over the entire area to be covered by the residue facility and associated infrastructure to define the spatial extent and depth of the different soil horizons;*

(ii) *the characterization of the relevant engineering properties of foundations soils and the assessment of strength and drainage characteristics.*

(c) *The groundwater investigations may include-*

(i) *the potential rate of seepage from the residue facility;*

(ii) *the quality of such seepage;*
(iii) *the geohydrological properties of the strata within the zone that could potentially be affected by the quality of seepage;*
(iv) *the vulnerability and existing potential use of the groundwater resource within the zone that could potentially be affected by the residue facility.*

(d) *From these investigations, a preferred site must be identified.*

(e) *Further investigation on the preferred site, shall include –*
(i) *land use;*
(ii) *topography and surface drainage;*
(iii) *infrastructure and man-made features;*
(iv) *climate;*
(v) *flora and fauna;*
(vi) *soils;*
(vii) *ground water morphology, flow, quality and usage; and*
(viii) *surface water.*

(f) *The investigations, laboratory test work, interpretation of data and recommendations for the identification and selection of the most appropriate and suitable site for the disposal of all residue that have the potential to generate leachate that could have a significant impact on the environment and groundwater must be carried out by a suitably qualified person.*

(5) *Design of residue stockpile and deposit*

(a) *The design of the residue stockpile and deposit shall be undertaken by a suitably qualified person.*

(b) *An assessment of the typical soil profile on the site is required for residue stockpiles and deposits which -*
(i) *have a low hazard potential; and*
(ii) *have no significant impact on the environment.*

(c) *The design of the residue stockpile and deposit must take into account all phases of the life cycle of the stockpile and deposit, from construction through to closure and must include –*
(i) *the characteristics of the mine residue;*
(ii) *the characteristics of the site and the receiving environment;*
(iii) *the general layout of the stockpile or deposit, whether it is a natural valley, ring dyke, impoundment or a combination thereof and its 3-dimensional geometry at appropriate intervals throughout the planned incremental growth of the stockpile or deposit;*
(iv) *the type of deposition method used; and*
(v) *the rate of rise of the stockpile or deposit.*

(d) *Other design considerations, as appropriate to the particular type of stockpile and deposit must be incorporated –*
(i) *the control of storm water on and around the residue stockpile or deposit by making provision for the maximum precipitation to be expected over a period of 24 hours with a frequency of once in a 100 years, in accordance with the regulations made under section 8 of the National Water Act, 1998;*
(ii) *the provision, throughout the system, of a freeboard of at least 0.5 m above the expected maximum water level, in accordance with regulations made under the National Water Act, 1998, to prevent overtopping;*
(iii) *keeping the pool away from the walls; where there are valid technical reasons for deviating from this, adequate motivation must be provided and the design must be reviewed by a qualified person as required in terms of sections 9(6) or 9(7) of the Mine Health and Safety Act, 1996;*
(iv) *the control of decanting of excess water under normal and storm conditions;*
(aa) *the retention of polluted water in terms of polluted water in terms of GN R991(9), where measures may be required to prevent water from the residue deposit from leaving the residue management system unless it meets prescribed requirements;*
(bb) *the design of the penstock, outfall pipe, under-drainage system and return water dams;*
(cc) *the height of the phreatic surface, slope angles and method of construction of the outer walls and their effects on shear stability;*

(dd) the erosion of slopes by wind and water, and its control by (ee) vegetation, berms or catchment paddocks; and

(ee) the potential for pollution.

(e) A design report and operating manual shall be drawn up for all residue stockpiles and deposits which –

(i) have a medium to high hazard; and

(ii) have a potentially significant impact on the environment.

(f) Relevant information must be included in the draft environmental management programme or environmental management plan.

(6) Construction and operation of residue deposits:

(a) The holder of any right or permit in terms of the Act, must ensure that-

(i) the residue deposits, including any surrounding catchment paddocks, is constructed and operated in accordance with the approved environmental management programme or environmental management plan;

(ii) the design of the residue deposit is followed implicitly throughout the construction thereof, and that any deviations from the design be approved by the Regional Manager and the environmental manage programme and environmental management plan be amended accordingly;

(iii) as part of the monitoring system, measurements of all residues transported to the site and of all surplus water removed from the site are recorded;

(iv) the provision for appropriate security measures be implemented to limit unauthorised access to the site and intrusion into the residue deposit;

(v) specific action be taken in respect of any sign of pollution;

(vi) adequate measures be implemented to control dust pollution and erosion of the slopes; and

(vii) details of rehabilitation of the residue deposit be provided in the draft environmental management programme or environmental management plan.

(b) A system of routine maintenance and repair in respect of the residue deposit must be implemented to ensure the ongoing control of pollution, the integrity of rehabilitation and health and safety maters at the site.

(7) Monitoring of residue stockpiles and deposits:

(a) A monitoring system for residue stockpiles and deposits with respect to potentially significant impacts as identified in the environmental assessment must be included in the environmental management programme or environmental management plan.

(b) In the design of a monitoring system for a residue stockpile or deposit, consideration must be given to –

(i) baseline and background conditions with regard to air, surface and groundwater quality;

(ii) the air, surface and groundwater quality objectives;

(iii) residue characteristics;

(iv) the degree and nature of residue containment;

(v) the receiving environment and specifically the climatic, local geological, hydrogeological and geochemical conditions;

(vi) potential migration pathways;

(vii) potential impacts of leachate;

(viii) the location of monitoring points and the prescribed monitoring protocols; and

(ix) the reporting frequency and procedures.

(8) Decommissioning, closure and after care:

(a) The decommissioning, closure and post closure management of residue deposits must be addressed in the closure plan, which must contain the following -

(i) the environmental classification, including assumptions on which the classification were based;

(ii) the closure objectives, final land use or capability;

(iii) conceptual descrption and details for closure and post closure management;

(iv) cost estimates and financial provision for closure and post-closure management; and

(v) residual impacts, monitoring and requirements to obtain mine closure in terms of the Act.

F.3.6 Final rehabilitation

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

F.4 MONITORING AND REPORTING

F.4.1 Inspections and monitoring

- Regular monitoring of all the environmental management measures and components shall be carried out by the holder of the prospecting right, mining permit or reconnaissance permission in order to ensure that the provisions of this programme are adhered to.
- Ongoing and regular reporting of the progress of implementation of this programme will be done.
- Various points of compliance will be identified with regard to the various impacts that the operations will have on the environment.
- Inspections and monitoring shall be carried out on both the implementation of the programme and the impact on plant and animal life.
- Visual inspections on erosion and physical pollution shall be carried out on a regular basis.

Regulation 55 promulgated in terms of the MPRDA requires the following:

Monitoring and performance assessments of environmental management programme or plan

(1) As part of the general terms and conditions for a prospecting right, mining right or mining permit and in order to ensure compliance with the approved environmental management programme or plan and to assess the continued appropriateness and adequacy of the environmental management programme or plan, the holder of such right must-

(a) conduct monitoring on a continuous basis;
(b) conduct performance assessments of the environmental management programme or plan as required; and
(c) compile and submit a performance assessment report to the Minister to demonstrate adherence to sub-regulation (b).

(2) The frequency of performance assessment reporting shall be-

(a) in accordance with the period specified in the approved environmental management programme or plan , or, if not so specified;
(b) as agreed to in writing by the Minister; or
(c) Biennially (every two years).

(3) The performance assessment report, shall be in the format provided in guidelines that will from time to time be published by the Department and shall as a minimum contain-

(a) information regarding the period that applies to the performance assessment;
(b) the scope of the assessment;
(c) the procedure used for the assessment;
(d) the interpreted information gained from monitoring the approved environmental management programme or plan;
(e) the evaluation criteria used during the assessment;
(f) the results of the assessment; and
(g) recommendations on how and when deficiencies that are identified and/or aspects of non-compliance will be rectified.

(4) The holder of a prospecting right, mining right or mining permit may appoint an independent qualified person(s) to conduct the performance assessment and compile the performance assessment report provided that no such appointment shall relieve the holder of the responsibilities in terms of these regulations.

(5) Subject to section 30(2) of the Act, the performance assessment report submitted by the holder shall be made available by the Minister to any person on request.

(6) If upon consideration by the Minister, the performance assessment executed by the holder is not satisfactory or the report submitted by the holder is found to be unacceptable, the holder must-
- *(a) repeat the whole or relevant parts of the performance assessment and revise and resubmit the report; and/or*
- *(b) submit relevant supporting information; and/or*
- *(c) appoint an independent competent person(s) to conduct the whole or part of the performance assessment and to compile the report.*

(7) If a reasonable assessment indicates that the performance assessment cannot be executed satisfactorily by the holder or a competent person(s) appointed by the holder, the Minister may appoint an independent performance assessment person(s) to conduct such performance assessment. Such appointment and execution shall be for the cost of the holder.

(8) When the holder of a prospecting right, mining right or mining permit intends closing such operation, a final performance assessment shall be conducted and a report submitted to the Minister to ensure that -
- *(a) the requirements of the relevant legislation have been complied with;*
- *(b) the closure objectives as described in the environmental management programme or plan have been met; and*
- *(c) all residual environmental impacts resulting from the holder's operations have been identified and the risks of latent impacts, which may occur, have been identified, quantified and arrangements for the management thereof have been assessed.*

(9) The final performance assessment report shall either precede or accompany the application for a closure certificate in terms of the Act.

F.4.2 Compliance reporting / submission of information

- Layout plans will be updated on a regular basis and updated copies will be submitted on a biennial basis to the Regional Manager
- Reports confirming compliance with various points identified in the environmental management programme will be submitted to the Regional Manager on a regular basis and as decided by the said manager.
- Any emergency or unforeseen impact will be reported as soon as possible.
- An assessment of environmental impacts that were not properly addressed or were unknown when the programme was compiled shall be carried out and added as a corrective action.

F.5 CLOSURE

When the holder of a prospecting right, mining permit or reconnaissance permission intends closing down his/her operations, an environmental risk report shall accompany the application for closure. The requirements of such a risk report is contained in Regulation 60 of the Regulations promulgated in terms of the Act and is quoted below:

F.5.1 Environmental risk report

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

(a) the undertaking of a screening level environmental risk assessment where-
- *(i) all possible environmental risks are identified, including those, which appear to be insignificant;*
- *(ii) the process is based on the input from existing data;*
- *(iii) the issues that are considered are qualitatively ranked as –*
  - *(aa) a potential significant risk; and/or*
  - *(bb) a uncertain risk; and/or*
  - *(cc) an insignificant risk.*

(b) the undertaking of a second level risk assessment on issues classified as potential significant risks where-
- *(i) appropriate sampling, data collection and monitoring be carried out;*
- *(ii) more realistic assumptions and actual measurements be made; and*
- *(iii) a more quantitative risk assessment is undertaken, again classifying issues as posing a potential significant risk or insignificant risk.*

(c) assessing whether issues classified as posing potential significant risks are acceptable without further mitigation;
(d) issues classified as uncertain risks be re-evaluated and re-classified as either posing potential significant risks or insignificant risks;
(e) documenting the status of insignificant risks and agree with interested and affected persons;
(f) identifying alternative risk prevention or management strategies for potential significant risks which have been identified, quantified and qualified in the second level risk assessment;
(g) agreeing on management measures to be implemented for the potential significant risks which must include-
(i) a description of the management measures to be applied;
(ii) a predicted long-term result of the applied management measures;
(iii) the residual and latent impact after successful implementation of the management measures;
(iv) time frames and schedule for the implementation of the management measures;
(v) responsibilities for implementation and long-term maintenance of the management measures;
(vi) financial provision for long-term maintenance; and
(vii) monitoring programmes to be implemented."

F.5.2 Closure objectives

Closure objectives form part of this EMPlan and must-

(a) identify the key objectives for mine closure to guide the project design, development and management of environmental objectives;
(b) provide broad future land use objective(s) for the site; and
(c) provide proposed closure cost

F.5.3 Content of closure plan

A closure plan forms part of the EMP and must include the following:

(a) a description of the closure objectives and how these relate to the prospecting or mine operation and its environmental and social setting;
(b) a plan contemplated in Regulation 2(2), coordinated according to generally accepted standards, showing the land or area under closure;
(c) a summary of the regulatory requirements and conditions for closure negotiated and documented in the environmental management programme or plan;
(d) a summary of the results of the environmental risk report and details of identified residual and latent impacts;
(e) a summary of the results of progressive rehabilitation undertaken;
(f) a description of the methods to decommission each prospecting or mining component and the mitigation or management strategy proposed to avoid, minimize and manage residual or latent impacts;
(g) details of any long-term management and maintenance expected;
(h) details of financial provision for monitoring, maintenance and post closure management, if required;
(i) a plan or sketch at an appropriate scale describing the final land use proposal and arrangements for the site;
(j) a record of interested and affected persons consulted; and
(k) technical appendices, if any.

F.5.4 Transfer of environmental liabilities to a competent person

Should the holder of a prospecting right, mining permit or reconnaissance permission wish to transfer any environmental liabilities and responsibilities to another person or persons, the following will pertain:

(1) An application to transfer environmental liabilities to a competent person in terms of section 48) of the Act, must be completed on Form O as set out in Annexure 1 to the Regulations and be lodged to the Minister for consideration.

(2) The holder of a prospecting right, mining right or mining permit may transfer liabilities and responsibilities as identified in the environmental management plan and the required closure plan to a competent person as contemplated in Regulation 58.

(3) When considering the transfer of environmental liabilities and responsibilities in terms of section 48) of the Act, the Minister must consult with any State department which administers any law relating to matters affecting the environment.

(4) No transfer of environmental liabilities and responsibilities to a competent person may be made unless the Chief Inspector of Mines and the Department of Water Affairs and Forestry have confirmed in writing that the person to whom the liabilities and responsibilities is transferred to, have the necessary qualifications pertaining to health and safety and management of potential pollution of water resources.

F.5.5 Notes on legal provisions

NOTE: The holder of a prospecting right, mining permit or reconnaissance permission must also take cognisance of the provisions of other legislation dealing with matters relating to conservation, and which include, *inter alia,* the following:

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

F.6 THE WATER USE LICENCE

The National Water Act, (Act 36 of 1998), is based on the principles of sustainability, efficiency and equity, meaning that the protection of water resources must be balanced with their development and use.
In addition to being issued with a prospecting right or mining permit a small-scale miner may also need to get a **water use licence** for the proposed water uses that will take place, except in certain cases.
NOTE: The Department of Water Affairs and Forestry (DWAF) developed specific Best Practice Guideline for small-scale mining that relates to storm water management, erosion and sediment control and waste management. Copies of these guidelines can be obtained from the regional office of DME or DWAF.
Applications for a water use licence must be made in good time, such that approval can be granted before a water use activity can begin. The appropriate licence forms for each kind of expected water use should be completed together with supporting documentation. The main supporting document required is a technical report. To make the technical report easier, you can refer to sections in this EMPlan, as most of what the technical report requires has already been done in the EMPlan. If you refer to the EMPlan it must be attached to the technical report.

G. SPECIFIC ADDITIONAL REQUIREMENTS DETERMINED BY THE REGIONAL MANAGER.

Officials in regional offices may use the following matrix to determine the necessity for additional objectives to be included in this Section of the document:

POTENTIAL ENVIRONMENTAL IMPACTS OF MINING										
Activity	Disturbance					Pollution				Visual
	Landform	Soil	Flora	Fauna	Heritage	Land	Water	Air	Noise	
Mining										
Access										
Topsoil removal										
Overburden removal										
Mineral Extraction										
Tailings disposal										
Water Abstraction										
Pipeline route										
Transport										
Accommodation										
Waste Disposal										
Electricity										
Hydrocarbon storage										
Workforce										

Please indicate VL, L, M, H, and VH for Very Low, Low, Medium, high and Very High in each column to determine the main area and severity of impact.

G. This section outlines the specific additional requirements that may be set for the operation by the Regional Manager. Additional requirements will only have been set if the Regional Manager is of the opinion that there are specific impacts on the environment which will not be adequately mitigated by the provisions set within the standard version of the Environmental Management Plan. These requirements form part of the Environmental Management Plan and all elements and instructions contained herein must be complied with by the applicant.

H. UNDERTAKING

I, **Blaire Rieger**, the undersigned and duly authorised thereto by **Vaduba Investments CC**, Close Corporation have studied and understand the contents of this document in it's entirety and hereby duly undertake to adhere to the conditions as set out therein including the amendment(s) agreed to by the Regional Manager in Section G and approved on

Signed at Port Elizabeth this 28 day of September 2009.

Manager

BLAIRE LAUREN RIEGER

Signature of applicant

Production Manager
Designation

Agency declaration: This document was completed by Pro-Earth Consulting on behalf of Vaduba Investments CC.

I. APPROVAL

Approved in terms of Section 39(4) of the Mineral and Petroleum Resources Development Act, 2002 (Act 29 of 2002)

Signed at.....this.....day of.....20.....

.....
REGIONAL MANAGER

REGION:.....

This document has been compiled by the Directorate: Mine Environmental Management of the Department of Minerals and Energy at their Head Office in Pretoria. Any comments, suggestions or inputs will be sincerely appreciated. If you have any comments or suggestions regarding this document or its application, please forward your contribution to:

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Private Bag X 59
PRETORIA
0001

Tel : 012 317 9288
Fax: 012 320 6786
E-mail: dorothy@mepta.pwv.gov.za

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K. APPENDICES

ANNEXURES

LIST OF ANNEXURES

ANNEXURE A: NEWSPAPER ADVERTS

ANNEXURE B: NOTICE BOARD

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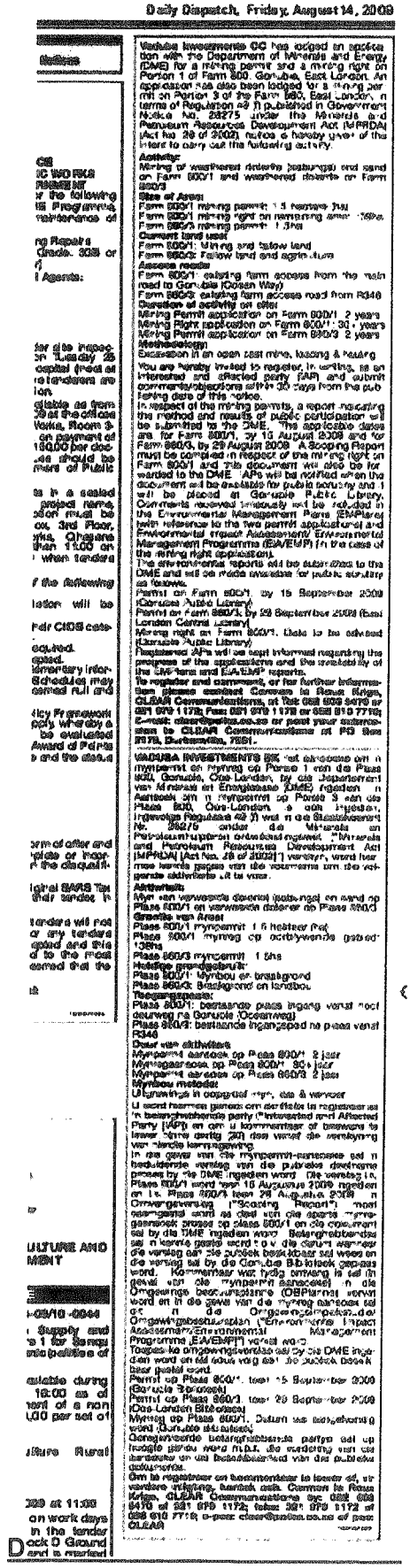
ANNEXURE A

NEWSPAPER ADVERTS



Vaalbos Investments CC has lodged an applica tion with the Department of Minerals and Energy (DME) for a mining permit and a mining right on Portion 1 of Farm 800, Gonubie, East London. An application has also been lodged for a mining per mit on Portion 3 of the Farm 800, East London, in terms of Regulation 49 (1) published in Government Notice No. 28275 under the Minerals and Petroleum Resources Development Act (MPRDA) (Act No. 28 of 2002) notice is hereby given of the intent to carry out the following activity.

Activity:
Mining of weathered dolerite (bateriggs) and sand on Farm 800/1 and weathered dolerite on Farm 800/3

Size of Area:
Farm 800/1 mining permit: 1.5 hectares (ha)
Farm 800/1 mining right on remaining area: 19ha
Farm 800/3 mining permit: 1.3ha

Current land use:
Farm 800/1: Mining and fallow land
Farm 800/3: Fallow land and agricultural

Access route:
Farm 800/1: existing farm access from the main road to Gonubie (Ocean Way)
Farm 800/3: existing farm access road from R346

Duration of activity on site:
Mining Permit application on Farm 800/1: 2 years
Mining Right application on Farm 800/1: 30+ years
Mining Permit application on Farm 800/3: 2 years

Methodology:
Excavation in an open cast mine, hauling & hearing

You are hereby invited to register, in writing, as an Interested and Affected party (I&AP) and submit comments/objections within 30 days from the publishing date of this notice.

In respect of the mining permits, a report regarding the method and results of public participation will be submitted to the DME. The applicable dates are: for Farm 800/1, by 15 August 2009 and for Farm 800/3, by 29 August 2009. A Scoping Report must be compiled in respect of the mining right on Farm 800/1 and this document will also be forwarded to the DME. APs will be notified when the document will be available for public scrutiny and it will be placed at Gonubie Public Library. Comments received previously will be included in the Environmental Management Plans (EMPrs) with reference to the two permit applications and Environmental Impact Assessment/ Environmental Management Programme (EIA/EMP) in the case of the mining right application.

The environmental reports and the documents to the DME and will be made available for public scrutiny as follows:

Permit on Farm 800/1, by 15 September 2009 (Gonubie Public Library)
Permit on Farm 800/3, by 29 September 2009 (East London Central Library)
Mining right on Farm 800/1. Date to be advised (Gonubie Public Library)

Registered APs will be kept informed regarding the progress of the applications and the availability of the EMPrs and EIA/EMP reports.

To register and comment, or for further information please contact Carmen le Roux Krige, CLEAR Communications, at Tel: 082 909 8775 or 021 979 1172; Fax: 021 979 1173 or 086 610 7718; E-mail: clear@iafrica.co.za or post your submissions to CLEAR Communications at PO Box 2178, Durbanville, 7551.

VAALBOS INVESTMENTS BK het aansoek om 'n mynpermit en mynreg op Perseel 1 van die Plaas 800, Gonubie, Oos-Londen, by die Departement van Minerale en Energiesake (DME) ingedien. 'n Aansoek om 'n mynpermit op Perseel 3 van die Plaas 800, Oos-Londen, is ook ingedien, ingevolge Regulasie 49 (1) wat in die Staatskoerant No. 28275 onder die Minerale en Petroleumhulpbronne-ontwikkelingswet, 2002 (Wet No. 28 of 2002) ("Minerale and Petroleum Resources Development Act (MPRDA) (Act No. 28 of 2002)") verskyn, word hiermee kennis gegee van die voorneme om die volgende aktiwiteite uit te voer.

Aktiwiteit:
Myn van verweerde doleriet (bateriggs) en sand op Plaas 800/1 en verweerde doleriet op Plaas 800/3

Grootte van Area:
Plaas 800/1 mynpermit: 1.5 hektaar (ha)
Plaas 800/1 mynreg op oorblywende gebied: 19ha
Plaas 800/3 mynpermit: 1.3ha

Huidige grondgebruik:
Plaas 800/1: Mynbou en braakgrond
Plaas 800/3: Braakgrond en landbou

Toegangspaaie:
Plaas 800/1: bestaande plaas ingang vanaf hoof deurweg na Gonubie (Oceanweg)
Plaas 800/3: bestaande ingangspad na plaas vanaf R346

Duur van aktiwiteite:
Mynpermit aansoek op Plaas 800/1: 2 jaar
Mynregaansoek op Plaas 800/1: 30+ jaar
Mynpermit aansoek op Plaas 800/3: 2 jaar

Mynbou metodes:
Uitgrawings in oopgrot myn, ens & vervoer

U word hiermee gemaan om aanspraak te registreer as 'n belanghebbende party ("Interested and Affected Party (I&AP)) en om u kommentaar of besware te lewer binne sestig (30) dae vanaf die aankondiging van hierdie kennisgewing.

In die geval van die mynpermit-aansoeke sal 'n bedoelende verslag van die publieke deelname proses by die DME ingedien word. Die verslag is: Plaas 800/1 word teen 15 September 2009 ingedien en is: Plaas 800/3 teen 29 September 2009 'n Omvangverslag ("Scoping Report") moet saamgestel word ten opsigte van die aansoek mynregaansoek proses op Plaas 800/1 en die dokument sal by die DME ingedien word. Belanghebbendes sal in kennis gestel word t.o.v die datum waarvan die verslag aan die publiek beskikbaar sal wees en die verslag sal by die Gonubie Biblioteek geplaas word. Kommentaar wat hulle benang is sal in gevalle van die mynpermit aansoek(e) in die Omgewings beskrywingsstukke (OBPlanne) verwerk word en in die gevalle van die mynreg aansoek sal dit in die Omgewingsimpakstudie/ Omgewingsbestuursplan (Environmental Impact Assessment/Environmental Management Programme (EIA/EMPr) verwerk word.

Toegelate omgewingsverslae sal by die DME ingedien word en sal aldus vir die publiek beskikbaar gestel word.

Permit op Plaas 800/1: teen 15 September 2009 (Gonubie Biblioteek)
Permit op Plaas 800/3: teen 29 September 2009 (Oos-Londen Biblioteek)
Mynreg op Plaas 800/1. Datum sal bekendgemaak word (Gonubie Biblioteek)

Geregistreerde belanghebbende partye sal op hoogte gehou word m.b.t. die vordering van die aansoeke en die beskikbaarheid van die publieke dokumente.

Om te registreer en kommentaar te lewer of, vir verdere inligting, kontak asb. Carmen le Roux Krige, CLEAR Communications by: 082 909 8775 of 021 979 1172; faks: 021 979 1173 of 086 610 7718; e-pos: clear@iafrica.co.za of pos: CLEAR

Advert placed in Daily Dispatch: 14 August 2009

Vaduba Investments BK het aansoeke om 'n mynpermit en mynreg op Porsie 1 van die Plaas 800, Gonubie, Oos-Londen, by die Departement van Minerale en Energiesake (DME) ingedien. 'n Aansoek om 'n mynpermit op Porsie 3 van die Plaas 800, Oos-Londen, is ook ingedien. Ingevolge Regulasie 49 (f) wat in die Staatskoerant Nr. 26275 onder die Minarale en Petroleumhulpbron-ontwikkelingswet ("Minerals and Petroleum Resources Development Act [MPRDA] [Act No. 28 of 2002]") verskyn, word hiermee kennis gegee van die voorneme om die vogende aktiwiteite uit te voer:

Aktiwiteit: Myn van verweerde doleriet (sabunga) en sand op Plaas 800/1 en verweerde doleriet op Plaas 860/3
Grootte van Area: Plaas 800/1 mynpermit: 1.5 hektaar (ha)
Plaas 800/1 mynreg op oorblywende gebied: 139ha
Plaas 860/3 mynpermit: 1.5ha
Huidige grondgebruik: Plaas 800/1: Mynbou en braakgrond
Plaas 860/3: Braakgrond en landbou
Toegangspaaie: Plaas 800/1: bestaande plaas ingang vanaf hoof deurweg na Gonubie (Oceanweg)
Plaas 860/3: bestaande ingangspad na plaas vanaf R346
Duur van aktiwiteit: Mynpermit-aansoek op Plaas 800/1: 2 jaar
Mynregaansoek op Plaas 800/1: 30+ jaar
Mynpermit-aansoek op Plaas 860/3: 2 jaar
Mynbou metode: Uitgrawings in oopgroef myn, laai & vervoer

U word hiermee genooi om skriftelik te registreer as 'n belanghebbende party ("Interested and Affected Party [IAP]) en om u kommentaar of besware te lewer binne dertig (30) dae vanaf die verskyning van hierdie kennisgewing.
In die geval van die mynpermit-aansoeke sal 'n beduidende verslag van die publieke deelname proses by die DME ingedien word. Die verslag i.s. Plaas 800/1 word teen 15 Augustus 2009 ingedien en i.s. Plaas 860/3 teen 29 Augustus 2009. 'n Omvangsverslag ("Scoping Report") moet saamgestel word as deel van die aparte mynregaansoek-proses op plaas 800/1 en die dokument sal by die DME ingedien word. Belanghebbendes sal in kennis gestel word t.o.v. die datum wanneer die verslag aan die publiek beskikbaar sal wees en die verslag sal by die Gonubie Biblioteek geplaas word. Kommentaar wat tydig ontvang is sal (in geval van die mynpermit-aansoeke) in die Omgewings bestuursplanne (OBPlanne) vervat word en in die geval van die mynreg-aansoek sal dit in die Omgewingsimpakstudie/ Omgewingsbestuursplan ("Environmental Impact Assessment/Environmental Management Programme [EIA/EMP]") vervat word.
Toepaslike omgewingsverslae sal by die DME ingedien word en sal soos volg aan die publiek beskikbaar gestel word:
Permit op Plaas 800/1: teen 15 September 2009 (Gonubie Biblioteek)
Permit on Plaas 860/3: teen 29 September 2009 (Oos-Londen Biblioteek)
Mynreg op Plaas 800/1: Datum sal aangekondig word (Gonubie Biblioteek)