

# BAR & EMP Report

Part 2 of 3

Environmental Component	Land Use
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
The disturbance of land must be restricted (kept to a minimum) to the planned active, fenced-off mining site only. Remove topsoil where it is available. Take care that roads are the only areas used to enter the area for mining purposes. If new land is used for roads to enter the area it must be done in consultation with surface owner. All rehabilitation will be done according to the final rehabilitation plans after approval by the Department of Mineral Resources (DMR). Topsoil will be placed in areas where it was removed and the areas will be re-vegetated accordingly. Ensure that the rehabilitation plan is implemented.	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
The opencast section requires the land to be totally disturbed. The sloping of the sides of the excavation and replacement of topsoil would ensure that the land is able to support some grazing.	

Environmental Component	Vegetation
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
No mitigation exists except to replace the vegetation by reseedling of grasses and natural growth. mining should be done in a well-planned manner (according to a MWP) and in the process ensuring that activities are only restricted to surface areas really required.	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
During rehabilitation indigenous vegetation cover comprising of local plant species should be established in order to ensure a well-adapted sustainable plant cover that would be able to prevent erosion of the replaced topsoil on the disturbed mining site exposed surfaces, tailings dumps, etc.).	

Environmental Component	Vegetation
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
Habitat change, loss of species, spread of alien and invasive species: No mitigation exists except to replace the vegetation by reseedling of grasses. Mining should be done in a well-planned manner (according to a MWP) and in the process ensuring that activities are only restricted to surface areas really required. <b>Develop and implement an invasive and alien control programme to control the spread of weeds and other invasive species.</b> Eradicate exotic weeds and invader species if it invades the terrain. All illegal invader plants and weeds shall be eradicated as required in terms of Regulation 15 & 16 of the Act on Conservation of Agricultural Resources, 1983 (Act no. 43 of 1983) which list the plants. An invasive and alien control programme must be implemented by the mine.	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
No invasive and alien species must be present after closure. A post-closure control program must also be implemented.	

Environmental Component	Vegetation
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
Ensure that all roads on the mining site (utilized by mining vehicles) are daily sprayed with water to control dust. Site inspections to ensure the spraying are done.	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
No excessive dust must be present during the normal growth season after closure.	

Environmental Component	Wildlife (habitat)
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
Wildlife or wildlife habitat destruction /change / disturbance : To take care that no new or unnecessary destruction of habitats, other than the demarcated mining site should take place. <b>Restoration of habitat:</b> Ensure the rehabilitation plan is implemented.	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	

The animal life habitat must be restored after decommissioning. Success will be measured against the extent to which the animals return to the area.

Environmental Component	Wildlife (Injury and death)
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
<b>Injury and death to wildlife:</b> Re-establish trees and grass cover as soon as possible during and after mining. Fence area off to ensure that no person can enter without permission. Ensure that the rehabilitation plan is compiled and executed. Keep incidence register on killings and disturbances.	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
The animal life habitat must be restored after decommissioning. Success will be measured against the extent to which the animals return to the area.	

Environmental Component	Wildlife
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
Make game catching, traps, snares, poaching and any other unnecessary disturbance of animals a disciplinary offence. All staff must undergo basic environmental awareness lecture during induction training. Machine operators and drivers to undergo appropriate level of environmental impact training to ensure they understand their impact on the environment. Ensure all staff working on the opencast section undergo basic lecture during induction phase. Introduce the actions as listed above into disciplinary code as offence.	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
The post-closure phase must be suitable for further restoration of the newly man-made animal habitat. The area must be stable and acceptable for the return of animal- and plant life.	

Environmental Component	Surface Water (quality)
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
<b>Change in surface water quality:</b> Storm water control measures must be implemented to divert clean water away from the active mining site and keep contaminated water contained. Water control structures must be well designed and constructed to ensure a minimum down wash of topsoil. Vegetation disturbance must be as little as possible. The MWP must be strictly adhered to. Re-vegetation to be done as quickly as possible. Final re-vegetation to be done as per rehabilitation plan.	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
The post closure water run-off may in no circumstance impact negatively on the water quality.	

Environmental Component	Surface Water (quantity)
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
<b>Change in surface water quantity:</b> Once the area is rehabilitated the surface run-off will be restored and normal clean water run-off will end-up in the drainage system. Once the area is rehabilitated the normal surface run-off drainage will be restored according to rehabilitation plan. The disturbed surface area must be rehabilitated to ensure some normal drainage. Minimal run-off should end-up in trenches. Final rehabilitation will be done according to the final rehabilitation plans after approval by the Department of Mineral Resources.	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
Ultimately rehabilitation of the disturbed mining site and the construction of run-off control structures in a planned and phased manner would ensure normal drainage and stability of rehabilitated site.	

Environmental Component	Ground Water (quality)
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
<b>Reduction of groundwater quality:</b> Storm water control measures must be implemented to divert clean water away from the site and keep (silt) contaminated water contained. Vehicles to be inspected to ensure no oil and hydraulic fluid leaks occur. All oil spills on soil to be removed and bio-remediate immediately. No servicing of vehicles must occur except at the workshops. Training w.r.t pollution hazards and their impact on the environment must be given as part of induction training.	

Storage of fuel and oil should be done according to best practices, within a bunded area and in containers of which the integrity is sound. The mining processes will not introduce any harmful or toxic substances and the most likely sources of pollution to the groundwater system would be associated with the infrastructure and / or workshop area. The most likely contaminants is therefore nitrate and bacteria (from sewage / pit latrines), as well as hydrocarbons (from vehicle accidents, diesel storage and the workshop area).  
An incidence register for this purpose must be kept.  
Drip trays must be available and used where emergency repairs is done.  
All waste must be stored according to best practices and disposed at an authorized waste disposal facility.

**EMP Performance Assessment & Monitoring Reporting**

To be included in EMP/EIA.

**Closure Objective**

Post water quality need to indicate a positive trend/improvement.

Environmental Component	Ground Water (quantity)
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
<p><b>Reduction of groundwater quantity, lowering of groundwater level:</b> Water levels in the boreholes that are used for mining activities should be recorded monthly. Water volumes should be recorded continuously to ensure compliance with the water use authorization for abstraction.</p>	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
Post water quality need to indicate a positive trend/improvement.	

Environmental Component	Air Quality
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
<p><b>Dust:</b> The mining method will serve as mitigation measure because mining will limit dust to the active mining area (area where the excavator and the trucks are operating). The screening plant will have limited dust Daily spraying of roads with water. Inspection should be done on a daily basis. If new roads are constructed, in coordination with surface owner, dust pollution must be mitigated by means of spraying the roads with water.</p>	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
Dust count must be the same as before mining. Rehabilitation of the mining site would ensure that no dust is generated from exposed surfaces.	

Environmental Component	Noise
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
<p>Ensure the required silencers are placed on all engines and compressors. No mitigation to reverse hooters is allowed due to safety standards. Inspection of vehicles and machinery to ensure silencers are fitted. As the screen will be fed with only clay and no gravel there will be no excessive noise. Ensure that a complaints register is created, managed and maintained. Vehicles and earthmoving equipment should be equipped with the necessary silencers and regularly maintained in a good working condition.</p>	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
No noise attributed to mining will be generated from the site after closure anymore. During decommissioning and closure phase some earth moving equipment and trucks would be utilized for rehabilitation.	

Environmental Component	Archaeological and Cultural Sites
<b>Environmental Management/Mitigation Measures/Action Plans/Commitments</b>	
<p>No graves were identified on site. All grave yard needs to be avoided if found However, the potential occurrence of unmarked graves or subsurface finds not recorded during this survey can never be excluded, so it is advised that SAHRA and a qualified archaeologist are informed immediately if archaeological objects are uncovered.</p>	
<b>EMP Performance Assessment &amp; Monitoring Reporting</b>	
To be included in EMP/EIA.	
<b>Closure Objective</b>	
No site of archaeological importance should be disturbed or damaged until the necessary permit from SAHRA has been issued.	

Environmental Component	Sensitive Landscapes
Environmental Management/Mitigation Measures/Action Plans/Commitments	
None	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	

Environmental Component	Visual Aspects
Environmental Management/Mitigation Measures/Action Plans/Commitments	
Visual impact would be addressed by means of; * re-vegetation of disturbed areas with grasses; * removal of any temporary building, scrap, domestic waste, etc. that would otherwise contribute to a negative visual impact. Concurrent rehabilitation should be done simultaneously as mining activities progress.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
No residual visual impacts will remain after closure. The terrain should blend in with the surrounding landscape.	

Environmental Component	Socio-Economics
Environmental Management/Mitigation Measures/Action Plans/Commitments	
There will be a very small increase in Socio – economic activity at local level, because of the size of this mining activity.	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
The economic development must deliver a multiplier effect that will contribute to the local economy long after closure.	

Environmental Component	Interested and Affected Parties
Environmental Management/Mitigation Measures/Action Plans/Commitments	
Access control should always be a priority. Active mining site should be fenced off and also any deep water holes. if any problem should arise, meetings will be held with the landowners and affected parties to consult them on certain matters like permission to mine and pollution. No mining should be conducted under or near Eskom power line (10 m distance should be kept) (Permission of Inspector of Mines should be obtained.)	
EMP Performance Assessment & Monitoring Reporting	
To be included in EMP/EIA.	
Closure Objective	
Not to be an economic, social or environmental liability to the local community or the state now or in the future. The company will ensure that the interest of all interested and affected parties will be considered.	

**(ix) Motivation where no alternative sites were considered.**

The clay resource is directly available that can be mined with standard opencast mining method/technology utilizing an excavator and a dump truck. The clay is situated in the 5 ha demarcated area up to a depth of 2 - 3 meters. The site is selected in such a way that it would not impact on the agriculture water surface run-off course (area excluded from mining site). The site is selected in such a way that normal agricultural production will still continue on the rest of the farm. This is a straight forward operation with very low impacts on an already disturbed environment. The operation will create 6 permanent jobs.

**(x) Statement motivating the alternative development location within the overall site.** (Provide a statement motivating the final site layout that is proposed)

The mining operation will not be a static operation, the mobile plant will move as mining progresses. The feasibility of mining the Aeolian material from an environmental, social and economic perspective also plays a role. See section (ix).

i) **FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE (IN RESPECT OF THE FINAL SITE LAYOUT PLAN) THROUGH THE LIFE OF THE ACTIVITY** (Including (i) a description of all

environmental issues and risks that are identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

**Table 10: Technical & Management Action Plans**

	IMPACTS	CUMULATIVE IMPACTS			
<b>1. GEOLOGY</b>					
Nature of the impact	Geology (Aeolian clay deposits will be destroyed during the opencast prospecting operation. During operation which will be for the next 2 years, the mineral resource (clay up to 3 m) will be mined.				
Extent	Site	Activity causing the impact			
Duration	Permanent	Opencast mining of clay and screening of the clay. Therefore the original geology will be totally destroyed.			
Probability	Definite				
Significance	High				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
		X			

ASPECT	IMPACTS	CUMULATIVE IMPACTS			
<b>2. TOPOGRAPHY</b>					
Nature of the impact	<p>* <b>Change in landform :</b></p> <p>* The mining site is situated on; level plains some relief.</p> <p>* <b>Disturbance of the surface drainage:</b></p> <p>The mining of clay will result in the application area to be lowered by 2 - 3 m and the sides sloped to blend in with the surrounding disturbed area.</p> <p>Mining activities will be concentrated as indicated on <b>Appendix 1a</b> on the application area (approximately 3 m depth).</p> <p>Normal surface drainage will be disturbed at a given point.</p> <p>Run-off if any will be diverted away from the specific site.</p>				
Extent	Site	Activity causing the impact			
Duration	Very long to Permanent	Mining of clay trough excavations, etc.			
Probability	Definite				
Significance	High				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
		X	X	X	

<b>3. SOIL</b>	IMPACTS	CUMULATIVE IMPACTS			
Nature of the impact	The surface area is characterized by various soil depths. Any construction of infrastructure should be preceded by the removal of all available topsoil.				
Extent	Site	Activity causing the impact			
Duration	Long	In the process of removing topsoil the soil layers are mixed and the structure may be disturbed.			
Probability	High				
Significance	Moderate				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X			

<b>3. SOIL</b>	IMPACTS	CUMULATIVE IMPACTS			
Nature of the impact	The establishment, construction, operation and eventually rehabilitation (demolition) of listed structures such as the stockpiles and plant area, cause compaction of soil. All mining activities will be concentrated on the application area where the mining of clay will take place. The active mining surface area (alienated) would be restricted within the ±0.5 ha at any given time (in relation to area of application of the mining permit of 5 ha) for the next 2 years.				
Extent	Site	Activity causing the impact			
Duration	Long	Mining within the application boundaries			
Probability	High				
Significance	Moderate				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>3. SOIL</b>					
Nature of the impact	Soil erosion: Due to the fact that certain surface areas would become compacted and this would lead to lesser infiltration of rainwater and more run-offs that could cause erosion on bare disturbed surfaces. Erosion would always be possible until such time a vegetation cover is provided during rehabilitation phase.				
Extent	Site				Activity causing the impact
Duration	Very short				When removing topsoil during site preparation, little storm water control structures are in place. If a severe storm hits the area, it may lead to erosion on site. Topsoil stockpiles may be prone to erosion due to lack of vegetation cover. Water control structures may fail or severe rainstorms may cause excessive run-off. Surface compaction due to activities taking place.
Probability	Very low				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>3. SOIL</b>					
Nature of the impact	Potential of soil contamination.				None.
Extent	Site				Activity causing the impact
Duration	Long				Vehicle/equipment breakages and oil/lubricant /diesel spills may contaminate soil.
Probability	Moderate				
Significance	Moderate				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
		X	X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>3. SOIL</b>					
Nature of the impact	Loss of soil structure				None
Extent	Site				Activity causing the impact
Duration	Long				In the process of removing topsoil the soil layers are mixed and the structure may be disturbed.
Probability	High				
Significance	Moderate				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	x	X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>3. SOIL</b>					
Nature of the impact	Loss of soil fertility				None
Extent	Site				Activity causing the impact
Duration	Short				The mixing of soil during site preparation, compaction and potential pollution (spillages form oil etc.) all may cause this situation.
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
		X	X		

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>4. LAND CAPABILITY</b>					
Nature of the impact	<b>Temporary loss of land capability to support grazing.</b> The area adjacent to the application area was mined and rehabilitated thus this application area was used for grazing. This area is the main focus area. The small area (5 ha) where the active mining activities occur (excavations, plant area and stock piles) will thus be temporary alienated, until the area is rehabilitated. All excavations would be rehabilitated by sloping the sides to at least 14 degrees in order to sustain proper vegetation.				
Extent	Site				Activity causing the impact
Duration	Long				Site preparation for mining site The land capability of the active mining area will be totally destroyed for the 2 year period.
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X	X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>5. LAND USE</b>					
Nature of the impact	Currently the land is used for grazing for cattle farming. The rehabilitated area will blend in with the surrounding area and put back to agricultural use. All excavations would be rehabilitated as part of the mining process during which				

	excavations will be sloped.				
Extent	Site				Activity causing the impact
Duration	Long to permanent				Mining site
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>6. VEGETATION</b>					
Nature of the impact	Vegetation clearance, disturbance and trampling. Destruction of habitats for vegetation. Due to a disturbed ecosystem, bare ground and spreading of exotics can follow.				
Extent	Site				Activity causing the impact
Duration	Long				The site preparation of the mining site and the active mining site. Due to a disturbed ecosystem, bare ground and invasion of exotics could further spread. The vegetation needs to be cleared to remove the topsoil.
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>6. VEGETATION</b>					
Nature of the impact	Habitat change, loss of species, spread of alien and invasive species.				
Extent	Site				Activity causing the impact
Duration	Permanent				The change in the current habitat will be mitigated during final rehabilitation.
Probability	High				
Significance	Moderate				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>7. WILDLIFE</b>					
Nature of the impact	Wildlife or wildlife habitat destruction /change / disturbance.				None
Extent	Site				Activity causing the impact
Duration	Medium				The flora which normally serves as habitat for animals would be destroyed during site preparation. The increase in activity will temporarily scare other animals. The area will serve as a new habitat after rehabilitation.
Probability	High				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>7. WILDLIFE</b>					
Nature of the impact	Restoration of habitat.				None
Extent	Site				Activity causing the impact
Duration	Short				As rehabilitation progresses the habitat of certain species will be restored/created (Closure objective) Animals will probably only move back when human movement is limited.
Probability	Low				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
			X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>8. SURFACE WATER</b>					
Nature of the impact	Increased silt load. Clearing topsoil for footprint areas can increase infiltration rates of water to the groundwater system and decrease buffering capacity of soils to absorb contaminants from spills on surface. This can increase the risk of contamination of the groundwater system (increases aquifer vulnerability).				
Extent	Local				Activity causing the impact
Duration	Short				The clearance of vegetation and the traffic on access roads will all contribute to an increase in the silt load on the mining area.
Probability	Moderate				
Significance	Low				



Phase responsible for the impact	Construction	Operational	Decommissioning	Closure
	X	X		

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>8. SURFACE WATER</b>					
Nature of the impact	<p>Change in surface water quality.</p> <p>Spillages from vehicles and also surface water run-off that is not adequately diverted away from the active excavations could end-up in the excavations creating problems regarding water quality and hindering the mining process.</p> <p>Surface run-off from active mining site (stockpile dumps) if not adequately contained on site could end-up in the adjacent undisturbed natural veld.</p> <p>If the natural surface run-off is not adequately diverted in the case of the dry-water course area, mining sections it could become silted-up.</p> <p>As this area is very small only 5 hectares the impact of surface water will be very low</p>				
Extent	Local				Activity causing the impact
Duration	Short				"Dirty / Clean" water systems at mining site may impact on the quality of the surface water. The water should be contained in the surface runoff control measures provided therefore.
Probability	Moderate				
Significance	Very Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>9. GROUND WATER</b>					
Nature of the impact	<p>Reduction of groundwater quality</p> <p>Mining activities are not likely to impact on local ground-water quality. The transport of the clay can cause various types of spills (domestic waste, chemical latrines, hydrocarbons) which can infiltrate and contaminate of the groundwater system.</p>				
Extent	Site				Activity causing the impact
Duration	Long				Mining related activities
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
		X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>9. GROUND WATER</b>					
Nature of the impact	<p>In the screening and crushing water will only be used for dust suppression. A small amount of 2000lit/day will be abstracted from a borehole at the farm for dust suppression on the roads</p>				
Extent	Site				Activity causing the impact
Duration	Short				Mining operation.
Probability	Moderate				
Significance	low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
		X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>10. AIR QUALITY</b>					
Nature of the impact	<p>Dust will be generated during the mining operation (loading with an excavator on to a dump truck and transportation to the clients on gravel/dirt/farm roads.</p>				
Extent	Site				Activity causing the impact
Duration	Short				Initial construction work with regard to clearing the area that involves earth moving equipment. During the operational, dust will be generated as indicated as part of the mining activities.
Probability	Moderate				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>11. NOISE POLLUTION</b>					
Nature of the impact	Noise will be generated during the mining operation excavating with an excavator of the clay and loading with and front end loader on to a dump truck and transportation away from the site. The mine itself is located in a rural landscape. The impact would be of more importance regarding the direct worker environment that should adhere to the requirements in terms of the Mine Health and Safety Act.				
Extent	Local				Activity causing the impact
Duration	short				Earth moving equipment and vehicles (trucks).
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X	X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>12. ARCHAEOLOGICAL AND CULTURAL SITES</b>					
Nature of the impact	The terrain is not archaeologically vulnerable as it was previously disturbed. It is unlikely that the proposed development will result in any significant archaeological impact at the site. There no graves within the application area or within 500m radius.				
Extent	N/A				Activity causing the impact
Duration	N/A				No impact
Probability	N/A				
Significance	None				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>13. SENSITIVE LANDSCAPE</b>					
Nature of the impact	No sensitive landscapes identified.				
Extent	Not applicable				Activity causing the impact
Duration	Not applicable				
Probability	Not applicable				
Significance	Not applicable				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>14. VISUAL ASPECTS</b>					
Nature of the impact	Mining will not be visible to the neighbours living there. The operation will not be visible from the any public road.				
Extent	Site				Activity causing the impact
Duration	Short				Mining operation.
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X			

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>15. SOCIO ECONOMICS</b>					
Nature of the impact	Increase in Socio – economic activity at local level. The project in itself would ensure that approximately 6 workers would be assured of a job for some time. Job creation plays a major role in increasing the economic wellbeing of employees and their dependants in the Bethlehem district.				The increase in socio-economic activity will add to the current growth and development in Bethlehem already created by industry and mining.
Extent	Local				Activity causing the impact
Duration	Short				Additional employment opportunities created.
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
	X	X	X	X	

ASPECT	IMPACTS				CUMULATIVE IMPACTS
<b>15. SOCIO ECONOMICS</b>					
Nature of the impact	The main impact on the landowners is visual impact and the small area of 5 ha that will not be available for agricultural activities at any given time for 2 years.				The economic benefits in terms of investment and the delivery of services in the North-West Province will get an additional benefit from the project.
Extent	Regional				Activity causing the impact
Duration	Short				Mining of clay.
Probability	High				
Significance	Low				
Phase responsible for the impact	Construction	Operational	Decommissioning	Closure	
		X	X	X	

**J) ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK**

(This section of the report must consider all the known, typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered interested and affected parties).

**Table 11: Identified Potentially Significant Impacts & Risks**

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc.... etc.... etc.	POTENTIAL IMPACT (Including the potential impacts for cumulative impacts)  (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)	ASPECTS AFFECTED	PHASE In which impact is anticipated	SIGNIFICANCE If not mitigated	MITIGATION TYPE (modify, remedy, control, or stop) Through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, reclamation, alternative activity etc. etc.)	SIGNIFICANCE If mitigated
Excavations for clay.	1.1 Removal of the clay up to 3 m. Disturbance of 0.3 hectare at any given time.  1.2 Change in landform. The entire mining area will be lowered by 3 m and normal surface drainage will be disturbed at this specific point. The pit will not be backfilled.	Geology & soil  Topography	Operational  Operational and closure	High -  Moderate -	The bulk of the material mined will be sold. The impact will be mitigated by sloping the sides and stabilizing the soil to prevent erosion  The pit will not be backfilled. The sides will be sloped and top soiled and vegetated. A surface water cut-off trench should be put in place around the active mining site in order to prevent surface run-off water on the mining site. Rehabilitation of the new sloped landscape in such a way that it would blend in with the surrounding landscape.	Low +  Moderate +
	1.3 Stripping of all available topsoil and stockpiled. Stockpile and plant area of 0.2 hectares at any given time.  1.4 Soil erosion: Due to the fact that certain surface areas would become devoid of any vegetation cover and compacted this would lead to lesser infiltration of rain water and more run-off that could cause erosion on bare disturbed areas and side slopes	Soil  Soil	Construction and Operational  Construction	Low -  Low-	Any area on the mining area where disturbance will take place the top soil must be removed and stockpiled for rehabilitation purposes in a demarcated area.  To take preventive steps against erosion. Implement and maintain cut-off trenches and berms around the mining area to prevent water entering that can cause erosion. Concurrent rehabilitation and re-vegetation of mined areas must happen as soon as the particular area is mined out. Rehabilitated areas must be inspected and managed in such a way that any signs of erosion can be mitigated immediately.	Low +  Low +
	1.5. Land capability and land use. Loss of land to support grazing.	Land capability & Land use	Operational and closure	Low-	As this is only a very small area of 5 hectares, the impact is not so big. As the sides will be sloped and vegetated the rehabilitated area must be treated as sensitive when grazed as overgrazing can trigger erosion and infiltration of declares weeds.	
	1.6 Generation of dust by excavating, screening and vehicle movement	Air quality	Operational	Low -	The mining method will serve as mitigation measure because it will limit dust to the active mining area, where the excavator and trucks operating. Daily spraying of the roads with water.	

**K) SUMMARY OF SPECIALIST REPORTS.**

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form)

**Table 12: Specialist Reports**

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT <small>(Mark with an X where applicable)</small>	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Ecological, Biodiversity and Wetlands Heritage study	No special conditions only normal mitigation measures. See Appendix 4 No special conditions		

## l) Environmental impact statement

### (i) Summary of the key findings of the environmental impact assessment;

The small scale clay mining operation on an existing disturbed area is definitely going to have a very small impact on an already disturbed environment.

The main impact relates to topography, geology, soil, vegetation, and returning of land use and capability back to agriculture

The clay resource will be mined over a period of 5 years.

The existing land-use is wilderness land.

This is a small operation and for the next 5 years only a small portion of the farm will be temporarily alienated.

The conservation of topsoil is of utmost importance and therefore in order to ensure a sustainable land use again on the 5 ha, the top at least 30 cm topsoil where available need to be removed prior to mining of the underlying clay (up to 3 m depth). This will be used again as growth medium during the rehabilitation phase of the quarry. Topsoil will be stored in berm walls on the border of the quarry in order to divert any surface run-off during a rainfall event.

Other environmental impacts relates to the day to day operation that could easily be managed, such as dust and noise.

### (ii) Final Site Map

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

Attach as **Appendix 1a**.

### (iii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

The site is selected on the existing washing plant and disturbed area.

Although this is a small clay mining operation it would also add to the increased economic activity within the farming and exiting mining community around Bethlehem. Jobs for 6 permanent labourers will be created.

The positive overall impacts on the area are expected to be temporary and can be mitigated to a large extent if the recommendations of the EMP are adhered to e.g. rehabilitation.

No concerns have been raised as yet by any I & AP.

The specific occurrence of the clay deposit dictates the selection of the specific mining site.

## m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

The main closure objective of Ellenzo Construction and Supplies CC is to rehabilitate the entire mining site in such a way to ensure that the new man-made topographical landscape would blend in with the surrounding landscape, not pose a safety hazard to humans and animals, while at the same time allow for alternative land uses. Establish a self-sustaining and stable vegetation cover in order to mitigate the visual impact, to control erosion and to create some habitat for animals. The rehabilitated environment also needs to be aesthetically acceptable according to the principle of BPEO. The applicant will ensure that the Operation/Sites are:

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

**n) Aspects for Inclusion as Conditions of Authorisation.**

Any aspects which must be made conditions of the Environmental Authorisation

All the impacts identified can be mitigated and no sensitive area to be avoided was noted. There are thus no aspects that need any special conditions in the Environmental authorization.

**o) Description of Any Assumptions, Uncertainties and Gaps in Knowledge.**

(Which relate to the assessment and mitigation measures proposed)

The site was visited and the mining activities discussed with the applicant in order to make sure that all the impacts can be identified and was rated. The mitigation of the impacts and rehabilitation of the mining areas were also discussed. It is hereby confirmed that there were and are no uncertainties or gaps in knowledge related to the assessment of the mitigation measures proposed.

**p) Reasoned Opinion As To Whether The Proposed Activity Should Or Should Not Be Authorised****(i) Reasons why the activity should be authorized or not.**

This activity will have only low and very low impacts and no significant impacts were identified. No concerns were raised by the interested parties. The landowner did give his consent. These mining activities will have no significant impacts on them or their surrounding environment. The landowner will be able to use the land for grazing again after the mining area was rehabilitated. There are thus no reasons why this mining activity should not be authorized.

**(ii) Conditions that must be included in the authorisation**

As described under n) there are no additional conditions.

**q) Period for which the environmental authorisation is required.**

24 months for initial permit period and another 36 months for the renewal periods, thus 60 months in total.

**r) Undertaking**

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report.

The undertaking will be part of the EMPR.

**s) Financial Provision**

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.

**R78 693.00 for rehabilitation.** See quantum attached as **Appendix 3.**

**(i) Explain how the aforesaid amount was derived.**

The amount was determined through the quantum tables provided by DMR.

**(ii) Confirm that this amount can be provided for from operating expenditure**

(Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

Yes it is hereby confirmed that the amount will be provided from operating expenditure

**t) Specific Information required by the competent Authority****(i) Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the EIA report must include the:-****1. Impact on the socio-economic conditions of any directly affected person.**

(Provide the results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix .

The applicant is also the landowner. No other person will be directly affected by this activity.

## 2. Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act

(Provide the results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(v) and (vi) of that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein.)

This activity will have no impact on archaeological structures.

### u) Other matters required in terms of sections 24(4)(a) and (b) of the Act.

(The EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as **Appendix 4**.)

NONE



## PART B

### ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

#### 1. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.

##### A) DETAILS OF THE EAP

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

The EAP Mr. Daan Erasmus has a National Diploma in Agriculture Resource Utilization and a Baccalaureus Technologiae degree in Agricultural Extension, see **Figure 1**, in **Part A**.

##### B) DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

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

Yes see **Part A**.

###### The mineral

Ellenzo intends to mine for Clay (general) situated on a portion of the farm Losklip 793, Bethlehem district, and 5 hectares in total. The clay will be used in different facets of the brickmaking industry.

###### The extend

The clay is situated on this demarcated area on average 2 - 3 meters deep. The identified and demarcated which are 5 hectares in total includes the entire mining area of 2.5 ha will be used for mining and 2.5 ha for the stockpiling. The clay reserve on this 5 hectares is estimated at 93 750 tons.

###### Mining method

The above area will be mined through opencast excavations where the clay will be removed with an excavator onto a stockpile and loaded by a frond end loader on the trucks for transporting to the clients. The clay from the stockpile is transported at an average rate of 100 tons a day to the clients or as needed. The total estimated reserve of clay is 93 750 tons taken at a production rate of 2000 tons a month it will take 46 months to work this reserve. The clay which is 2.5 m thick and the relatively low production rate of this operation make this 2.5 hectare to be worked sustainable over a period of four years.

Equipment to be used includes:

- ✓ 1 x Frond end loader;
- ✓ 1 x Excavator;
- ✓ 1 x truck
- ✓ 3 x Permanent labourers and one manager will used in this operation.

The total cost of the operation is taken at R 34/ton and the total material moved monthly at 2500tons. The total monthly mining cost is then R 86 166 .00 and the total monthly income is on average R 133 500.00. This operation can thus be economical viable.

###### The grade

The total estimated reserve of clay is 108 000 tons taken at a production rate of 2500 tons a month it will take **43 months** to work this reserve.

##### C) COMPOSITE MAP

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

See **Appendix1(b)**.

## D) DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

### (i) Determination of closure objectives

*(ensure that the closure objectives are informed by the type of environment described)*

The main closure objective of the applicant is to rehabilitate the entire mining site in such a way to ensure that the new man-made topographical landscape would blend in with the surrounding landscape, not pose a safety hazard to humans and animals, while at the same time allow for alternative land uses. Establish a self-sustaining and stable vegetation cover in order to mitigate the visual impact, to control erosion and to create some habitat for animals. The rehabilitated environment also needs to be aesthetically acceptable according to the principle of BPEO. Another main objective is to manage the surface water in such way that an acceptable water standard is achieved when a closure certificate is issued.

As this area was disturbed before there is not top soil available on all the areas but on the non-disturbed area all available top soil will be stripped and stockpiled.

**Ellenzo Construction and Supplies CC** will ensure that the Operation/Sites are:

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

**Ellenzo Construction and Supplies CC** will furthermore:

- ensure that the physical and chemical stability of the rehabilitated site will be such that risk to the environment is not increased by naturally occurring forces to the extent that such increased risk cannot be contended with by the installed measures;
- subscribe to the optimal exploitation and utilization of South Africa's mineral resources (Clay);
- ensure that the mining site is closed efficiently and cost effectively.
- ensure that the operation is not abandoned but closed in accordance with the relevant requirements;
- ensure that the interest of all interested and affected parties will be considered;
- ensure that the all-relevant legislation regarding mine closure will be adhered to, and all relevant application procedures followed.

### (ii) Volumes and rate of water use required for the operation

2000 litres a day will be used for dust suppression from an existing borehole.

### (iii) Has a water use licence been applied for?

Will be submitted

**(iv) Impacts to be mitigated in their respective phases**

**Table 13: Measures to rehabilitate the environment affected by the undertaking of any listed activity**

ACTIVITIES (E.g. For prospecting - drill site, site camp, utilization facility, accommodation, equipment storage, sample storage, site office, access roads etc., etc., etc. E.g. For mining - excavations blasting, abattoirs, disposal dumps or pits, loading, hauling and transport, water supply dams and boreholes, accommodation, offset solution, zones, waterways processing plant, storm water control, dams, roads, pipelines, power lines, concrete, etc., etc., etc.)	PHASE (of operation in which activity will take place Start, interim and design Pre-Construction, Construction, Operational Rehabilitation, Closure, Post closure)	SIZE AND SCALE of disturbance (volumes, lengths, and hectares or m <sup>2</sup> )	MITIGATION MEASURES (Describe how each of the recommendations in here, will remedy the cause of pollution or degradation and input of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein, will comply with any prescribed environmental management standards or practices that have been identified by competent Authorities)	TIME PERIOD FOR IMPLEMENTATION (Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required with regard to rehabilitation specifically this must take place at the earliest opportunity. With regard to rehabilitation, these activities either: Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or slanted diamond prospecting as the case may be.
1. Excavations	Operational	2500 m <sup>2</sup> a month and 0.3hectares at any stage	Concurrent rehabilitation by sloping the sides of the excavation to be stable/sustainable and covered with topsoil and vegetation. Keep this area as small as possible within the demarcated area. Prevent spillages of fuels by machines Keep this area as small as possible. Prevent spillages of fuels by equipment.	The pits will sloped for stability and providing a base for the replacement of topsoil.	As part of concurrent rehabilitation.
2. Clay Stockpile area	Operational	0.1 hectares at any stage	Immediate cleaning of spillages	Immediate cleaning of spillages	Concurrent with mining
3. Washing/Screening of clay	Operational	0.1 hectares at any stage	Immediate cleaning of spillages	Immediate cleaning of spillages	Concurrent with the mining

### E) IMPACT MANAGEMENT OUTCOMES

(A description of impact management outcomes. Identifying the standard of impact management required for the aspects contemplated in paragraph)

ACTIVITY (Whether listed or not listed)  (E.g. Excavations, blasting, stockpiles, discard dumps or berms, loading, hauling and transport, Water supply/dams and forebays, accommodation offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, campsites etc., etc., etc.)	POTENTIAL IMPACT  (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc., etc.,...)	ASPECTS AFFECTED	PHASE  (In which impact is anticipated  (e.g. Contractor, commissioning, operational, Decommissioning, closure, post-closure)	MITIGATION TYPE  (Specify remedy, control, or step  e.g. Noise control measures, storm water control, dust control, rehabilitation design, measures, blasting controls, avoidance, relocation, alternative activities, etc., E.g. P. Control through alternative method Control through noise control Remedy through management and monitoring Remedy through rehabilitation.	STANDARD TO BE ACHIEVED  (Imped avoided, noise levels, dust levels, rehabilitation standards, and see objectives)  etc.
1. Excavations for clay	1.1 Removal of the clay up to 3m	Geology & soil	Operational	The bulk of the material removed will be sloped. The impact will be mitigated by sloping the sides of the excavation and stabilizing the soil to prevent soil erosion.	Stable slopes that can sustain erosion without excessive erosion.
	1.2 Change in landform. The entire mining area will be lowered by 2 - 3m and normal surface drainage will be disturbed at this specific point. The pit will be properly sloped.	Topography	Operational and closure	The side of pit will be sloped and the soil stabilized to prevent erosion. A surface water cut-off trench should be put in place around the active mining site in order to prevent surface water on the mining site. Rehabilitation of the new sloped landscape in such a way that it would blend in with the surrounding landscape.	Gentle stable slopes.
	1.3 Stripping of all available topsoil and stockpiled	Soil	Construction and operational	The top soil must be removed before any disturbance take place. The top soil must be removed and stockpile in a demarcated area for rehabilitation purposes.	Enough topsoil for rehabilitation to ensure sustainable vegetation.
	1.4 Soil erosion due to the fact that certain surface areas would become devoid of any vegetation cover and compacted. This would lead to lesser infiltration of rain water and more run-off that could cause erosion on bare disturbed areas and side slopes.	Soil	Construction and operational	To take preventive steps against erosion. Implement and maintain cut-off trenches and or berms around the mining area to prevent water entering that can cause excessive erosion.	No excessive erosion that cannot be stabilized.
	1.5 Loss of Land capability & land use.	Land capability & land use	Operational and closure	As this is only a very small area of 5 hectares, the impact is low. As the sides will be sloped and vegetated, the rehabilitated area must be treated as sensitive when grazed as overgrazing can trigger erosion and infiltration of declared weeds.	Sustainable rehabilitated area.
	1.6 Generation of dust by excavating and vehicle movement	Air quality	Operational	The generation of dust will only be localized at the mining site. Daily spraying of roads with water	No excessive dust that can be harmful to the environment and humans.

**F) IMPACT MANAGEMENT ACTIONS**

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (c) and (d) will be achieved).

<p><b>ACTIVITY</b> (Whether listed or not listed) (E.g. Excavations, blasting, stockpiles, stacked dumps or dams, Loading, hauling and transport, store supply camps and hostels, accommodation, offices, clinics, stores, workshops, processing plant, storm water control, etc., etc., etc.)</p>	<p><b>POTENTIAL IMPACT</b> (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc., etc., etc.)</p>	<p><b>MITIGATION TYPE</b> (Prevent, remedy, control, or stop) Through (e.g. noise control measures, storm water control, and correct rehabilitation/erosion measures, seeding, sowing, mulch, wooden, alternative activities, etc.) E.g. 1) Modify through alternative method 2) Control through noise control 3) Control through management and monitoring 4) Remedy through stabilization.</p>	<p><b>TIME PERIOD FOR IMPLEMENTATION</b> Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation, specifically this must take place at the earliest opportunity. Upon the cessation of mining backfilling or at least a second period proceeding as the case may be.</p>	<p><b>COMPLIANCE WITH STANDARDS</b> (A description of how each of the environmental objectives in 3.11.5, 3.12, 3.13 and 3.14.2 must be complied with any practical environmental management standards or practices that have been identified by Competent Authorities)</p>
<p>Excavations for clay</p>	<p>1.1 Removal of the clay up to 2 - 3m</p>	<p>The bulk of the material removed will be washed and the puddle back to the excavation. The impact will be mitigated by sloping the excavation and stabilizing the soil to prevent soil erosion.</p>		
	<p>1.2 Change in landform. The entire mining area will be lowered by 2 - 3m and normal surface drainage will be disturbed at this specific point. The pit will be sloped.</p>	<p>The pit will be backfilled and the soil stabilized to prevent erosion. A surface water cut-off trench should be put in place around the active mining site in order to prevent surface water on the mining site. Rehabilitation of the new rehabilitated landscape in such a way that it would blend in with the surrounding landscape.</p>		
	<p>1.3 Stripping of all available topsoil and stockpiled</p>	<p>The top soil must be removed before any disturbance take place. The top soil must be removed and stockpile in a demarcated area for rehabilitation purposes</p>		
	<p>1.4 Soil erosion due to the fact that certain surface areas would become devoid of any vegetation cover and compacted. This would lead to lesser infiltration of rain water and more run-off that could cause erosion on bare disturbed areas and side slopes.</p>	<p>To take preventive steps against erosion. Implement and maintain out-off trenches and or berms around the mining area to prevent water entering that can cause excessive erosion.</p>		
	<p>1.5 Loss of Land capability &amp; land use</p>	<p>As this is only a very small area of 0.5 hectares, the impact is low. As the sides will be sloped and vegetated, the rehabilitated area must be treated as sensitive when grazed as overgrazing can trigger erosion and infiltration of declared weeds.</p>		
	<p>1.6 Generation of dust by excavating and vehicle movement</p>	<p>The generation of dust will only be localized at the mining site. Daily spraying of roads with water</p>		

## G) FINANCIAL PROVISION

### 1. Determination of the amount of Financial Provision

#### (I) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation

The main closure objective of the applicant is to rehabilitate the entire mining site in such a way to ensure that the new man-made topographical landscape would blend in with the surrounding landscape, not pose a safety hazard to humans and animals, while at the same time allow for alternative land uses. Establish a self-sustaining and stable vegetation cover in order to mitigate the visual impact, to control erosion and to create some habitat for animals. The rehabilitated environment also needs to be aesthetically acceptable according to the principle of BPEO. Another main objective is to manage the surface water in such way that an acceptable water standard is achieved when a closure certificate is issued.

**Ellenzo Construction and Supplies CC** will ensure that the Operation/Sites are:

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

**Ellenzo Construction and Supplies CC** will furthermore:

- ensure that the physical and chemical stability of the rehabilitated site will be such that risk to the environment is not increased by naturally occurring forces to the extent that such increased risk cannot be contended with by the installed measures;
- subscribe to the optimal exploitation and utilization of South Africa's mineral resources (CLAY);
- ensure that the mining site is closed efficiently and cost effectively.
- ensure that the operation is not abandoned but closed in accordance with the relevant requirements;
- ensure that the interest of all interested and affected parties will be considered;
- ensure that the all-relevant legislation regarding mine closure will be adhered to, and all relevant application procedures followed.

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

Yes, the disturbance that will take place and the rehabilitation thereof were discussed on the site visit with the landowner.

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

**Rehabilitation:**

The clearing of soil surface areas would be restricted to what is really necessary for the construction of infrastructure/crushing plant. During rehabilitation of these sites, or where vegetation is lacking or compacted, the areas would be ripped or ploughed and levelled in order to re-establish a growth medium and if necessary appropriately fertilised to ensure the regrowth of vegetation and the soil ameliorated based on a fertilizer recommendation (soil sample analysed).

**Rehabilitation of access roads**

- Whenever a mining permit is suspended, cancelled or abandoned or if it lapses and the holder does not wish to renew the permit or right, any access road or portions thereof, constructed by the holder and which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated to the satisfaction of the Regional Manager.
- Any gate or fence erected by the holder which is not required by the landowner/tenant, shall be removed and the situation restored to the pre-prospecting situation.
- Roads shall be ripped or ploughed, and if necessary, appropriately fertilised (based on a soil analysis) to ensure the regrowth of vegetation. Imported road construction materials which may hamper regrowth 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 analysed and any deleterious effects on the soil arising from the mining operation, be corrected and the area be seeded with a seed mix to the Regional Manager's specification.

**Rehabilitation of the surface mining 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 & B) which may not be demolished in terms of any other law;*
- (C) 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*

The quarry surface area shall 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.

**After all the foreign matter has been removed from the mining sites, the side slopes and the quarry floor area will be sloped and levelled and the previously stored topsoil replaced.**

The area shall then be fertilised if necessary (based on a soil analysis). The site shall be seeded with a vegetation seed mix (section C) adapted to reflect the local indigenous flora. Where the site has been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.

Photographs of the site, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.

Rehabilitation of the new topographical landscape in such a way that it would blend in with the surrounding landscape and allow normal (controlled) surface drainage to continue.

Implement water control systems in order to prevent erosion. Seed the area (see C. (below) for recommended seed mixture).

Visual impact would be addressed by means of;

- revegetation (grasses);
- removal of any building, scrap, domestic waste, etc. that would otherwise contribute to a negative visual impact.

#### **Fertilising of Areas to be Rehabilitated**

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the prospecting operation be corrected and the area be seeded with a seed mix to his or her specification.

#### **Seeding of Grass Seed Mixture and planting of Woody Species**

The eventual seed mixture takes into account the availability of seed, different soil situations and the prevailing climatic conditions of the area. The following mixture will be applicable to the borehole prospecting site:

- ✓ *Cenchrusciliaris*
- ✓ *Cynodondactylon*
- ✓ *Digitariaeriantha*
- ✓ *Heteropogoncontortus*
- ✓ *Panicum maximum*

#### **a. Demolition of infrastructure/buildings**

On completion of operations, all buildings, structures or other on the prospecting terrain shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002). There will be no permanent buildings.

#### **b. Invasive and alien control programme**

Develop and implement an invasive and alien control programme to control the spread of weeds and other invasive species. Eradicate exotic weeds and invader species if it invades the terrain. All illegal invader plants and weeds shall be eradicated as required in terms of Regulation 15 & 16 of the Act on Conservation of Agricultural Resources, 1983 (Act no. 43 of 1983) which list the plants.



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

The excavations will be sloped and top soil will be placed back. This site can be rehabilitated.

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

R 78 693.00

**(vi) Confirm that the financial provision will be provided as determined**

The financing for this project will be done from the account Ellenzo Construction and Supplies CC, the applicant himself out of own funds.

The guarantee will be provided in the form of Bank Guarantee after confirmation of the amount.

**(vii) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including**

- vii. Monitoring of Impact Management Actions  
 viii. Monitoring and reporting frequency  
 vx. Responsible persons  
 x. Time period for implementing impact management actions  
 xi. Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Mining site/Soil	Possible spillages of petrochemicals. Stripping of topsoil	Checking for spillages on daily basis. Checking correct stripping and stockpiling of topsoil	Manager and Applicant	Daily checking and reporting with Performance Assessment
Mining site/Topography	Concurrent sloping of excavations.	Checking stability of slope and erosion preventive measures	Manager and applicant	Quarterly
Mining site/Air quality	Dust pollution from mining activities.	Regular wetting of roads and stockpile area where loading take place.	Manager and applicant	Daily
Mining site	Chemical toilet	Make sure that it is used and hygienic.	Manager and Applicant	Weekly.

**H) INDICATE THE FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT/ ENVIRONMENTAL AUDIT REPORT.**

Annually

**I) ENVIRONMENTAL AWARENESS PLAN**

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

Ellenzo Construction and Supplies CC will contract DERA Environmental Consultants to inform the employees after the EMP was approved.

The following guidelines will be used:

- Communication
- Urge
- Leadership
- Teamwork
- Understanding
- Recognition
- Empowerment (CULTURE).

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

The risks will be dealt with by proper management actions as described in 1d.

**J) SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY**

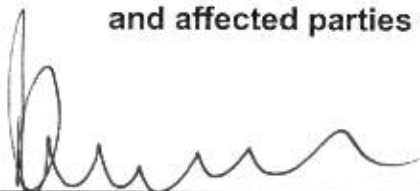
(Among others, confirm that the financial provision will be reviewed annually)

The quantum for rehabilitation liability will be reviewed with the performance assessment on annual basis.

**2. UNDERTAKING**

The EAP herewith confirms

- (i) **The correctness of the information provided in the reports;**
- (ii) **The inclusion of comments and inputs from stakeholders and I&APs;**
- (iii) **The inclusion of inputs and recommendations from the specialist reports where relevant; and**
- (iv) **That the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.**



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Signature of the environmental assessment practitioner:

**DERA Omgewingskonsultante (Pty) Ltd.**

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Name of company:

**08/08/2018**

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Date:

**-END-**