

BBT CONTRACTOR'S CONSULTANT

QUARRY ON PORTION 2 OF THE FARM WITTEKLIP NO 32 RD

CLOSURE REPORT

1. INTRODUCTION

Chameleon Environmental was commissioned by BBT Contractor's Consultant to conduct the environmental studies pertaining to the Quarry on Portion 2 of the farm Witteklip No 32 RD. The landowner is the Soldaatkop Estates represented by Mr Geoff Kingwill.

2. DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

The EAP that prepared this report is Dr J Bothma from Chameleon Environmental. The Environmental Assessment Practitioner (EAP) has the appropriate skills and experience to undertake the required studies for the proposed project. Dr Bothma has a PhD in Environmental Management:

- Experience in undertaking environmental studies for linear development projects. The EAP has specific experience in EIAs for National Roads for the South African National Roads Agency Soc Limited and other clients.
- Experience in environmental studies for borrow pits and quarries.
- The EAP is registered as an Environmental Assessment Practitioner with EAPSA with registration number 0082/06.
- Proven ability to timeously produce thorough, readable and informative documents.
- Adequate recording and reporting systems to ensure the preservation of all data gathered.
- A good working knowledge of all relevant and applicable policies, legislation, guidelines, norms and standards.
- The EAP does not have any links to engineering firms, construction companies, or financial institutions, and would be able sign the required declarations of independence to be submitted to the relevant environmental authorities.

Dr Bothma was previously the Environmental Manager for the South African National Roads Agency Soc Limited where she was responsible for the management of the environmental section at the Agency and consequently has gained extensive experience in project management and EIAs for major national road projects.

Dr Bothma is a founder member of Chameleon Environmental since August 2006, a specialist environmental consulting company based in Pretoria, South Africa but operates nationwide. The company provides a broad range of environmental consulting services to the public and private sectors. She has:

- » Thirty One (31) years' experience in the environmental field
- » Twenty One (21) years' experience in Project Management

- » Project management of large environmental assessment and environmental management projects.

3. CLOSURE OBJECTIVES

After the utilisation of the quarry, it will be rehabilitated and closed. Proper fencing around the quarry and clearly visible signage indicating a dangerous area will be put into place.

i. Shaping of Quarry

The mining area will be shaped to ensure no stockpiled heaps.

The quarry will not be free draining as the landowner requested the area to be left as a dam for his use after the mining activities have ceased. However, the slopes will not be left as steep slopes to keep the area safe for humans and animals.

ii. Closure Measures

After the mining contract of the quarry has ceased, the area that was mined will be rehabilitated. The following will be undertaken:

- a. Removal of mobile equipment and all scrap material;
- b. No stockpiled material is to be retained on site. Waste will not be permitted to be deposited in the excavations. All rocks and coarse material removed from the excavation must be removed from site together with the tailings.
- c. Removal of crushing- and screening plant as well as the concrete footings and the primary ramp retaining wall;
- d. Removal of all containers used as offices, workshops and stores. 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, if any, shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface;
- e. Clean-up of any fuel or lubricant spillage;
- f. Ensuring that all stormwater control mechanisms are in place.
- g. Ensuring alien vegetation is removed during and at the end of each contract;
- h. Ensuring that the access road is maintained and properly rehabilitated;
- i. Waste or bitumen will not be permitted to be deposited in the excavations. Rocks and coarse material removed from the excavation must be dumped into the excavation simultaneously with the tailings.
- j. Vegetative growth on the slopes is usually not possible at a quarry.
- k. Any permanent structures and facilities including brick-built personnel amenities , soak-aways, workshop aprons and workshop floors, gas stores and any electrical supply from the grid need to be removed and the area rehabilitated.
- l. Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record.
- m. The area will be fenced.
- o. The area will be reverted back to the landowner.

4. MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE CLOSURE PLAN AND REPORTING THEREON

The source activities and impacts requiring monitoring programmes during closure for the mining at both borrow pits were identified as the following:

Table 1: Source activities and impacts requiring monitoring programmes

PHASE	SOURCE ACTIVITY	IMPACT REQUIRING MONITORING PROGRAMMES
DECOMMISSIONING PHASE	Sloping and Landscaping during rehabilitation	<ul style="list-style-type: none">• Soil erosion• Health and safety risk posed by unsloped areas• Dust nuisance caused during sloping and landscaping activities• Noise nuisance caused during sloping and landscaping activities• Contamination of site due to hydrocarbons• Emissions from heavy vehicles
	Replacing the topsoil and revegetating the disturbed area	<ul style="list-style-type: none">• Loss of reinstated topsoil due to absence of vegetation• Infestation of the area with weed and invader plants

4.1 Functional requirements for monitoring

Please see Appendix J of the BAR report.

4.2 Roles and responsibilities

Please see Appendix J of the BAR report.

4.3 Time frames for monitoring

Please see Appendix J of the BAR report.

5. MEASURES TO REHABILITATE THE ENVIRONMENT

The measures to rehabilitate the environment affected by any listed activity were determined in table 2.

Table 2: Measures to rehabilitate the environment affected by the undertaking of any listed activity

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<p>E.g. For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>E.g. For mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, beams, roads, pipelines, power lines, conveyors, etc...etc... etc.)</p>	<p>(of operation in which activity will take place.</p> <p>State; Planning and design, Pre-Construction’ Construction, Operational, Rehabilitation, Closure, Post Closure).</p>	<p>(volumes, tonnages and hectares or m²)</p>	<p>(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)</p>	<p>(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)</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:- ..</p> <p>Upon cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>
Vegetation stripping	Construction,	4.73 ha	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for 	<p>SANS noise control legislation</p> <p>Dust standards</p> <p>Safety standards</p> <p>Approved EMPr</p>	<p>The measures in the Environmental Management Programme must be implemented during the construction and operational phases for the quarry.</p>

ACTIVITIES E.g. For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. For mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, beams, roads, pipelines, power lines, conveyors, etc...etc... etc.)	PHASE (of operation in which activity will take place. State; Planning and design, Pre- Construction' Construction, Operational, Rehabilitation, Closure, Post Closure).	SIZE AND SCALE of disturbance (volumes, tonnages and hectares or m²)	MITIGATION MEASURES (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:- .. Upon cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			uncovering of graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles		
Stripping and stockpiling of topsoil, subsoil, vegetative material and spoil	Construction	4.73 ha	- Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion	SANS noise control legislation Dust standards Safety standards Approved EMPr	The measures in the Environmental Management Programme must be implemented during the construction and operational phases for the quarry.

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			<ul style="list-style-type: none"> - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering of graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles 		
Blasting	Operational	4.73 ha	<ul style="list-style-type: none"> - Control through dust suppression - Control through noise control measures 	Approved EMPr	The measures in the Environmental Management Programme must be implemented during the

ACTIVITIES E.g. For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. For mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, beams, roads, pipelines, power lines, conveyors, etc...etc... etc.)	PHASE (of operation in which activity will take place. State; Planning and design, Pre- Construction' Construction, Operational, Rehabilitation, Closure, Post Closure).	SIZE AND SCALE of disturbance (volumes, tonnages and hectares or m²)	MITIGATION MEASURES (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:- .. Upon cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			<ul style="list-style-type: none"> - Control measures to lower impacts on terrestrial ecology - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles 		construction and operational phases for the quarry.
Excavations	Operational	4.73 ha	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower 	SANS noise control legislation Dust standards Safety standards	The measures in the Environmental Management Programme must be implemented during the construction and operational phases for the quarry.

ACTIVITIES E.g. For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. For mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, beams, roads, pipelines, power lines, conveyors, etc...etc... etc.)	PHASE (of operation in which activity will take place. State; Planning and design, Pre- Construction' Construction, Operational, Rehabilitation, Closure, Post Closure).	SIZE AND SCALE of disturbance (volumes, tonnages and hectares or m²)	MITIGATION MEASURES (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDERDS (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, therefore state either:- .. Upon cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering of graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles	Approved EMPr	
Crushing	Operational	4.73 ha	Control through dust suppression - Control through noise	SANS noise control legislation	The measures in the Environmental Management Programme must be

ACTIVITIES E.g. For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. For mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, beams, roads, pipelines, power lines, conveyors, etc...etc... etc.)	PHASE (of operation in which activity will take place. State; Planning and design, Pre- Construction’ Construction, Operational, Rehabilitation, Closure, Post Closure).	SIZE AND SCALE of disturbance (volumes, tonnages and hectares or m²)	MITIGATION MEASURES (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:- .. Upon cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			control measures - Control measures to lower impacts on terrestrial ecology - Control measures for hydrocarbon spillage	Dust standards Safety standards Approved EMPr	implemented during the construction and operational phases for the quarry.
Stockpiling and transporting of gravel material	Operational	4.73 ha	- Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion	SANS noise control legislation Dust standards Safety standards Approved EMPr	The measures in the Environmental Management Programme must be implemented during the construction and operational phases for the quarry.

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
<p>E.g. For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>E.g. For mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, beams, roads, pipelines, power lines, conveyors, etc...etc... etc.)</p>	<p>(of operation in which activity will take place.</p> <p>State; Planning and design, Pre-Construction, Construction, Operational, Rehabilitation, Closure, Post Closure).</p>	<p>(volumes, tonnages and hectares or m²)</p>	<p>(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)</p>	<p>(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)</p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:- ..</p> <p>Upon cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>
			<ul style="list-style-type: none"> - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering of graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles 		
Sloping and Landscaping	Decommissioning and closure phases	4.73 ha	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to prevent soil erosion 	<p>SANS noise control legislation</p> <p>Dust standards</p>	Upon cessation of mining activities. Progressive rehabilitation to be implemented

ACTIVITIES E.g. For prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. For mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, beams, roads, pipelines, power lines, conveyors, etc...etc... etc.)	PHASE (of operation in which activity will take place. State; Planning and design, Pre- Construction' Construction, Operational, Rehabilitation, Closure, Post Closure).	SIZE AND SCALE of disturbance (volumes, tonnages and hectares or m²)	MITIGATION MEASURES (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDERDS (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, therefore state either:- .. Upon cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			<ul style="list-style-type: none"> - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering of graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles 	Safety standards Approved EMPr	

6. AVOIDANCE, MANAGEMENT AND MITIGATION MEASURES

The avoidance, management and mitigation measures that will be taken to address the possible environmental impacts resulting from the undertaking of the activity was determined in table 3.

Table 3: Avoidance, management and mitigation measures

Activities	Potential impact	Aspects Affected	Phase	Mitigation type	Standards to be achieved
Sloping and Landscaping	<ul style="list-style-type: none"> - Dust - Soil Erosion - Noise - Visual - Terrestrial Ecology - Hydrocarbon spillage - Emissions from heavy vehicles 	<ul style="list-style-type: none"> - Workers - Travelling public - Fauna and flora 	Decommissioning and closure	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for hydrocarbon spillage - Control measures 	<ul style="list-style-type: none"> - No dust nuisance or complaints from landowners or public - No soil erosion and complaints from landowners - Noise levels shall be kept to a minimum. The working hours shall be limited to between 07:00 hrs and 18:00 hrs on weekdays, and 07:00 hrs and 16:00 hrs on Saturdays, or as per contract documentation.

Activities	Potential impact	Aspects Affected	Phase	Mitigation type	Standards to be achieved
				<p>to lower emissions from heavy vehicles</p> <ul style="list-style-type: none"> - Control measures for removal of alien vegetation 	<ul style="list-style-type: none"> - Earth berms should be placed to the side of the road to obscure the mining activities from the travelling public, if possible. - Impact to the terrestrial ecology low. Mitigation measures as per specialist study - Spillage contained - Low emissions - No alien vegetation at borrow areas

7. DESCRIPTION OF MANNER TO MODIFY, REMEDY, CONTROL OR STOP ANY ACTION, ACTIVITY OR PROCESS WHICH CAUSES POLLUTION OR ENVIRONMENTAL DEGRADATION DURING CLOSURE

7.1 Impact Management Measures

The following impact management measures will be implemented by BBT Contractor's Consultant to prevent or remedy any possible pollution or degradation of the environment:

a. Possible dust and air pollution

- Dust will be suppressed through a watering management programme, especially during windy conditions.
- Dust generated will be carefully monitored by the OHS&E and should be suppressed by means of water regularly.
- Access roads will be watered regularly, especially in the dry winter months and in periods of high wind.
- Vegetation will not be unnecessary stripped.
- Domestic fires will be prohibited on site.
- Heavy vehicle will be serviced regularly to ensure emission control.

b. Soil Erosion

- Topsoil, if any, will be removed over the whole mining area and stored in a perimeter berm. The height of the topsoil berm will not exceed 3m.
- The topsoil berm will be inspected for erosion daily.
- Minimal amounts of topsoil shall be lost due to erosion, either by wind or water. This can be facilitated through the grassing of topsoil stockpiles, where needed.
- Condition of soil in walk or drive areas should be checked daily for erosion.
- Access road condition will be checked daily.
- If erosion is noted at walk and drive areas, access road or topsoil berms, the erosion channel will be fixed by placing cut vegetation, sandbags or rocks within the erosion channel and the cause of the erosion will be mitigated through the creation of runoff channels.

c. Possible Noise Pollution

- The working hours shall be limited to between 07:00 hrs and 18:00 hrs on weekdays, and 07:00 hrs and 17:00 hrs on Saturdays, or as per contract documentation.
- Vehicles must be driven at a moderate speed (50 kph) on private roads.
- Noise generated from the trucks that transport the material and the excavator that is used to mine the material shall only be carried out during normal working hours.
- Extended working hours will be in accordance with contract documentation.
- BBT Contractor's Consultant shall be obligated to maintain vehicles used at the mining area in a good condition;
- BBT Contractor's Consultant will be obliged to ensure that all personnel on site apply occupational health and safety requirements with respect to hearing protection.

d. Possible Visual impact

- Concurrent rehabilitation of the mining area will take place.
- All unused material would be levelled to ensure that the mining area blends back into the existing landscape fabric.
- No stockpiled material is to be retained on site.
- The mining area will be shaped to ensure no stockpiled heaps and that the area blends in with the existing landscape.
- All stockpiled topsoil and vegetative material will be spread over the bottom of the mining area to ensure proper seed bed for the re-establishment of vegetative growth. Placing a berm of topsoil along the perimeter of the mining site to obscure the visual impact of the excavation.
- Re-vegetation of the mining area after mining operation has ceased.
- The access gravel road to the quarry will be rehabilitated and the quarry will be fenced following the mining of the area.

e. Aquatic and Terrestrial Ecology

Construction & Operation Phase

- During the construction phase all temporary laydown areas, ablution facilities, site offices, etc. must only be within the larger demarcated study site (quarry site area), or within laydown areas that might be established by the proposed wind turbine project, for which the quarry material is specifically required.
- During the initial Construction Phase / site establishment phase existing access roads must be used as far as possible. These roads need to be maintained and rehabilitated on completion of this phase. Especially those roads that will not be further used. Establishment and use of access roads may be connected with the wind turbine project, which is totally acceptable.
- Ensure small footprint during construction phase.
- There is a small seasonal drainage line approximately 100m north of the northern boundary of the proposed quarry site. A buffer zone (no-go zone) of 50m from the main drainage channel is recommended. The channel has no riparian zone therefore the buffer measurement is acceptable as recommended. This buffer zone (no-go zone) must be well demarcated and maintained during the operational phase of the quarry. .
- All excess materials brought onto site for construction to be removed after construction / site establishment.

Operational Phase

- No site offices, parking areas, ablution facilities, etc. may be set up outside of the demarcated quarry area.
- All access roads to the site must be maintained at all times. Many of these roads are gravel / sand public roads used by surrounding farmers and landowners. During the entire operational phase / life of the quarry these roads must be maintained and dust-suppression must be used.
- Perimeter fences to be routinely monitored and maintained. Assurances need to be in place that local livestock (mainly sheep) as well as wild animals will not be able to enter the mining site.

- An Erosion Plan to be implemented and monitored during construction phase and operational phases of the project. Even though the erosion potential is low.
- All hazardous materials must be stored appropriately to prevent these contaminants from entering the soils and natural environment. The surrounding areas are grazing lands for sheep.
- Under no circumstances may farm livestock as well as wild animals be interfered with.
- All standard quarry mining operation procedures and regulations to be implemented. The mitigating measures recommended here are additional and do not replace any others.

Quarry Closure (Rehabilitation)

- Rehabilitation plan for quarry closure must be compiled prior to termination of mining operations and assurances must be given that it will be implemented.
- The rehabilitation will have a positive impact on the site and area, although it will not be able to restore the area back to its original state.

f. Possible Impact on Uncovered Heritage, Palaeontological or Archaeological site

- If an artefact or grave on-site is uncovered, work in the immediate vicinity shall be stopped immediately and it should immediately be reported to a heritage consultant so that an investigation and evaluation of the finds can be made. The Contractor shall take reasonable precautions to prevent any person from removing or damaging any such article.
- The South African Heritage Resources Agency (SAHRA) shall be contacted such that an archaeological/heritage resources consultant can be appointed to record the site and excavate if necessary. Work may only resume once clearance is given in writing by the archaeologist/heritage resources consultant.

g. Possible contamination of site due to hydrocarbons spillage

- All heavy vehicles, excavators and generators used for the mining will be in good working condition.
- A drip tray will be available to place underneath haul vehicles while the vehicles are parked at night.
- Should a vehicle have a break down, it will be serviced immediately. If soil contamination with diesel and oils occurred, the spill will be cleared up promptly. If the spill is small, it will be cleaned with a spill kit. If a major spill occurs where a spill kit is insufficient for clean-up, a specialised company will be used to clean the spill.
- Proper functioning of heavy vehicles will be ensured.

h. Possible establishment and spread of alien vegetation

- Every 3 months casual labour will be employed to circumnavigate the site to hand pull out known alien vegetation that may have established in the disturbed area. Special attention will be given to the perimeter topsoil berm.
- Casual labour will be provided with photographs of the alien vegetation that could establish.

i. Sanitation Facilities

- Chemical toilet facilities shall preferably be used on site. The toilets shall be serviced every second week by a service provider.

j. Safety of sloped areas

The quarry will not be free draining as the landowner requested the area to be left as a dam for his use after the mining activities have ceased. However, the slopes will not be left as steep slopes to keep the area safe for humans and animals.

k. Emissions from heavy vehicles, excavator and generators

- All heavy vehicles, excavators and generators used for the mining will be in good working condition and will be serviced regularly.
- Should a vehicle have a break down, it will be serviced immediately.

l. Unsafe working conditions for employees

- Appropriate safety clothing will be worn at all times i.e. head gear, shoes, ear plugs.

7.2 Compliance with environmental standards

The following standards will be complied with:

- SANS noise control legislation
- Dust standards
- Safety standards
- Approved EMPr

Please refer to table 4 for mitigation type on how to comply with standards.

Table 4: Impact Management Actions

ACTIVITY whether listed or not listed.	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, beams, roads, pipelines, power lines, conveyors, etc...etc... etc.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution etc....etc...)	(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc. E.g. <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.	(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Vegetation stripping	<ul style="list-style-type: none"> - Dust - Soil Erosion - Noise - Visual - Terrestrial Ecology - Uncovering graves or artefacts - Hydrocarbon spillage 	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion 	The measures in the Environmental Management Programme must be implemented during the construction phase for the quarry.	SANS noise control legislation Dust standards Safety standards Approved EMPR

	<ul style="list-style-type: none"> - Emissions from heavy vehicles 	<ul style="list-style-type: none"> - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles - Control measures for removal of alien vegetation 		
Stripping and stockpiling of topsoil	<ul style="list-style-type: none"> - Dust - Soil Erosion - Noise - Visual - Terrestrial Ecology - Uncovering graves or artefacts - Hydrocarbon spillage - Emissions from heavy vehicles 	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles - Control measures for removal of alien vegetation 	The measures in the Environmental Management Programme must be implemented during the construction phase for the quarry.	<p>SANS noise control legislation</p> <p>Dust standards</p> <p>Safety standards</p> <p>Approved EMPR</p>
Blasting	<ul style="list-style-type: none"> - Dust - Soil Erosion - Noise 	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to prevent 	The measures in the Environmental Management Programme must be	<p>SANS noise control legislation</p> <p>Dust standards</p>

		soil erosion - Control through noise control measures	implemented during the operational phase for the quarry.	Safety standards Approved EMPR
Crushing	- Dust - Noise - Hydrocarbon spillage	- Control through dust suppression - Control through noise control measures - Control measures for hydrocarbon spillage - Control measures to lower	The measures in the Environmental Management Programme must be implemented during the operational phase for the quarry.	SANS noise control legislation Dust standards Safety standards Approved EMPR
Excavations	- Dust - Soil Erosion - Noise - Visual - Terrestrial Ecology - Uncovering graves or artefacts - Hydrocarbon spillage - Emissions from heavy vehicles	- Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles - Control measures for removal of alien vegetation	The measures in the Environmental Management Programme must be implemented during the operational phase for the quarry.	Tree permit SANS noise control legislation Dust standards Safety standards Approved EMPR
Stockpiling and transporting of gravel material	- Dust - Soil Erosion	- Control through dust suppression	The measures in the Environmental Management	SANS noise control legislation

	<ul style="list-style-type: none"> - Noise - Visual - Terrestrial Ecology - Uncovering graves or artefacts - Hydrocarbon spillage - Emissions from heavy vehicles 	<ul style="list-style-type: none"> - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower emissions from heavy vehicles - Control measures for removal of alien vegetation 	<p>Programme must be implemented during the operational phase for the quarry.</p>	<p>Dust standards</p> <p>Safety standards</p> <p>Approved EMPR</p>
Sloping and Landscaping	<ul style="list-style-type: none"> - Dust - Soil Erosion - Noise - Visual - Terrestrial Ecology - Uncovering graves or artefacts - Hydrocarbon spillage - Emissions from heavy vehicles 	<ul style="list-style-type: none"> - Control through dust suppression - Control measures to prevent soil erosion - Control through noise control measures - Control measures to lower visual intrusion - Control measures to lower impacts on terrestrial ecology - Control measures for uncovering graves or artefacts - Control measures for hydrocarbon spillage - Control measures to lower 	<p>The measures in the Environmental Management Programme must be implemented during the decommissioning and closure phases for the quarry.</p>	<p>SANS noise control legislation</p> <p>Dust standards</p> <p>Safety standards</p> <p>Approved EMPR</p>

		emissions from heavy vehicles - Control measures for removal of alien vegetation		
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8. TIME PERIODS FOR IMPLEMENTATION

The rehabilitation measures will be implemented as soon as the mining activity has ceased.

Proper monitoring ensures the correct and successful implementation of environmental management measures, to reduce negative impact on environmental conditions.

Monitoring on site should be on a regular basis and be included as a responsibility of the Site Manager.

Monitoring should be focused on on-site conditions during the day-to-day activities and specifically when sub-contractors enter an area for scheduled work or emergency repairs as per the monitoring schedule below.

The following time frames for monitoring and reporting should be implemented:

Table 5: TIME FRAMES FOR MONITORING AND REPORTING

MONITORING ASPECTS	TIME FRAME	REPORTING INTERVALS
Vegetation stripping	Construction phase	<ul style="list-style-type: none">• Daily by OHS&E officer• Monthly by site manager
Dust Nuisance	Construction and Operational phases Decommissioning phases	<ul style="list-style-type: none">• Daily by OHS&E officer• Weekly by site manager
Soil Erosion	Construction and Operational phases Decommissioning phases	<ul style="list-style-type: none">• Daily by OHS&E officer• Monthly by site manager
Noise Nuisance including blasting	Operational phase Decommissioning phase	<ul style="list-style-type: none">• Daily by OHS&E• Weekly by site manager
Visual impact	Construction and Operational phases Decommissioning phases	<ul style="list-style-type: none">• Daily by OHS&E• Monthly by site manager
Terrestrial ecology	Construction and Operational phases	<ul style="list-style-type: none">• Daily by OHS&E• Monthly by site manager
Impact on uncovered heritage aspects	Construction and Operational phases	<ul style="list-style-type: none">• Daily by OHS&E• Weekly by site manager
Contamination of site due to	Construction and Operational phases	<ul style="list-style-type: none">• Daily by OHS&E• Monthly by site manager

MONITORING ASPECTS	TIME FRAME	REPORTING INTERVALS
hydrocarbon spillage	Decommissioning phases	
Infestation of weeds and alien vegetation on topsoil heaps	Construction and Operational phases Decommissioning phases	<ul style="list-style-type: none"> • Daily by OHS&E • Monthly by site manager
Loss of topsoil due to incorrect storm water management	Construction and Operational phases Decommissioning phases	<ul style="list-style-type: none"> • Daily by OHS&E • Monthly by site manager
Contamination of surface or groundwater due to effluent runoff from excavation	Construction and Operational phases	<ul style="list-style-type: none"> • Daily by OHS&E • Monthly by site manager
Unsafe working conditions for employees	Construction and Operational phases	<ul style="list-style-type: none"> • Daily by OHS&E • Daily by site manager
Potential damage to cultural and heritage aspects	Construction and Operational phases	<ul style="list-style-type: none"> • Daily by OHS&E • Monthly by site manager
Degradation of access roads	Construction and Operational phases	<ul style="list-style-type: none"> • Daily by OHS&E • Weekly by site manager
Health and safety risk posed by unsloped areas	Decommissioning	<ul style="list-style-type: none"> • Quarterly by OHS&E
Loss of reinstated topsoil due to absence of vegetation	Decommissioning	<ul style="list-style-type: none"> • Quarterly by OHS&E
Storm water management	Construction and Operational phases Decommissioning phases	<ul style="list-style-type: none"> • Daily by OHS&E • Weekly by site manager
Proper functioning of sanitation systems	Construction and Operational phases	<ul style="list-style-type: none"> • Daily by OHS&E • Weekly by site manager
Vegetation establishment	Decommissioning phase	<ul style="list-style-type: none"> • Daily by OHS&E
Heavy vehicle emissions	Construction and Operational phases Decommissioning phases	<ul style="list-style-type: none"> • Daily by OHS&E • Weekly by site manager

9. PROCESS FOR MANAGING ENVIRONMENTAL DAMAGE

BBT Contractor's Consultant shall ensure that its employees are adequately trained with regard to the implementation of the EMP, as well as regarding the process for managing environmental damage.

a. Induction Training:

All employees and visitors on site will have an INDUCTION training on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees.

The environmental training should include information on possible environmental risks.

Employees will be adequately trained with regard to the following potential environmental risks:

- The risk of non-conformance with all environmental policies, procedures, plans and systems.
- The risk of not strictly implementing the approved EMP.
- The potential consequences of departure from specified operating procedures.
- The significant environmental impacts, actual or potential, as a result of their work activities.

b. General awareness training and training on dealing with emergency situations:

Employees will be given general awareness training and training on dealing with emergency situations by means of the following:

- Understanding, and importance of, and the reasons why, the environment must be protected.
- Basic awareness and understanding of the key environmental features of the work site and environments.
- The mitigation measures required to be implemented when carrying out their work activities.
- The environmental benefits of improved personal performance.
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures, including emergency preparedness and response requirements.
- What to do in the case of a hydrocarbon spill.
- Who to contact in the case of an emergency.

10. PUBLIC PARTICIPATION PROCESS

A public participation process was undertaken in accordance with the EIA Regulations, 2014, as amended.

The public participation and communication process aims to identify issues in order to maximise the social and environmental benefits, and to minimise the social and environmental costs of the proposed project. Interested and affected parties (I&APs) were consulted and afforded the opportunity to participate. The I&APs were informed and involved in the project from the outset in order to promote participation and transparency.

The aim of this public participation process is to achieve the following broad goals:

- Identification of all key I&aps and stakeholders;
- The active involvement of all I&aps with respect to decision making;
- An exchange of information relevant to the proposed project through Background Information Documents (BID), consultations and newspaper advertisements.
- The development of an understanding with regards to the broader project objectives and goals and knowledge of the project; and
- The identification of issues and concerns with regards to all potential alternatives associated with the proposed development.

The following approach was followed in undertaking the public participation process:

a. Identification of and Consultation with I&APs

The first step in the public participation process was to identify the key I&APs. A list of the registered I&APs is attached as Appendix D of the BAR report.

b. Advertising

In accordance with the EIA Regulations, 2014, as amended an advertisement was placed requesting I&APs to register their interest in the project. An advertisement was placed in the **The Courier of 23 April 2021**. A copy of the advertisement is included in Appendix D of the BAR report.

c. Site Notice

Site notifications in English in A2 format requesting comments or objections were placed on site on 7 April 2021. Photographs of the site notice are included in Appendix I of the BAR report.

d. Notification Letter and Background Information Document

Notification letters about the project, a Background Information Document and locality plans were sent out to the particular Ward Councillor, Government Departments that would be relevant to this project and the affected landowner included. Please see letters in Appendix D of the BAR report.

e. Comments and Response Report

A comments and response report was drafted that included all the issues raised by the Interested and/or Affected Parties as well as the responses to the issues raised. The Comments and Response report is included in Appendix D of the BAR report.

f. Local Authority Involvement

A letter was forwarded to the Beaufort West Local Municipality. The letter is included in Appendix D of the BAR report.

g. Review of Draft Basic Assessment Report

The Draft Basic Assessment Report was made available to the public for review and comment, within an allocated 30-day period.

11. FINANCIAL PROVISION

The rehabilitation cost for the quarry was determined by means of the SARS quantum scales. The quantum for the quarry is calculated at R108,234.00 for the rehabilitation of the quarry.

Please refer to Appendix H for the quantum for the quarry in the BAR.