

and Fourie Safaris Game Farm. Some 20% already transformed for cultivation, urban development or plantations. Erosion is very low to moderate.

Important Taxa:

Small Tree: *Acacia natalitia* (d).

Tall Shrub: *Tephrosia capensis*.

Low Shrubs: *Anthospermum rigidum* subsp. *pumilum*, *Chrysocoma ciliata*, *Felicia muricata*.

Graminoids: *Eragrostis plana* (d), *Heteropogon contortus* (d), *Hyparrhenia hirta* (d), *Sporobolus africanus* (d), *Themeda triandra* (d), *Aristida junciformis* subsp. *junciformis*, *Bulbostylis humilis*, *Cynodon dactylon*, *Digitaria diagonalis*, *D. eriantha* subsp. *eriantha*, *Elionurus muticus*, *Eragrostis capensis*, *E. chloromelas*, *E. curvula*, *Kyllinga alata*, *Microchloa caffra*, *Paspalum dilatatum*, *Schoenoxiphium sparteum*.

Herbs: *Centella asiatica*, *Commelina africana*, *Gazania linearis*, *Gerbera ambigua*, *Helichrysum miconiifolium*, *H. nudifolium* var. *pilosellum*, *H. rugulosum*, *Senecio retrorsus*, *Spermacoce natalensis*, *Wahlenbergia stellarioides*, *Zornia capensis*.

Geophytic Herbs: *Hypoxis argentea*, *Moraea polystachya*, *Pellaea calomeanos*.

- ✓ Considering the locality of red data species provided below, it is clear that one of these species could possibly found in the study area but considering the degraded status of the area it is anticipated that the potential occurrence of the identified plant would be extremely low and the impact of mining on vegetation of the area is very low.

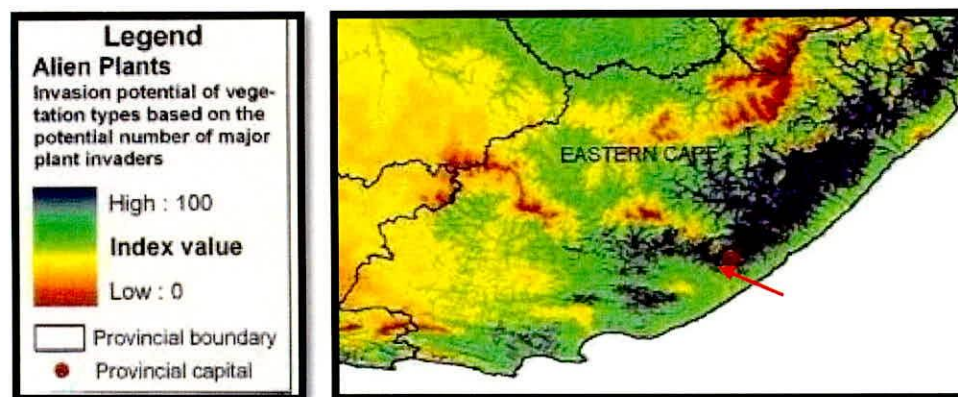
As previously indicated the mine area hosts totally degraded grassland cover and it is therefore the opinion that the proposed development will not affect the future existence of the mentioned veld type or the ecological integrity of the area *per se* and that a negligible, temporary impact will be experienced.

It is only the land further north-west and south-west that displays reasonably intact Buffels Thicket with a medium-high conservation value, but the mine will not affect this vegetation due to the distances involved.

Table 3: Red List species endemic to narrow ranges within the Amalole District.

Taxon	Distribution	Status 1	Status 2
<i>Acrodenia kwanaensis</i> L. Williams	Coastal area near Kwarane	K	VU D2
<i>Alephoea multisepta</i> B.L. Burt	Golka's kop	NE	Ex
<i>Aloe reynoldsii</i> Letty	Distribution unclear	V	NE
<i>Aspidoglossum nanaganii</i> (Schltr.) Kupicha	Coastal area near Chalumna R.	V	VU D2
<i>Bauhinia bowkeri</i> Harv.	Restricted to Bultfontein Umhala areas	R	NE
<i>Bergeranthus albomarginatus</i> A.P. Dold ined.	Seymour	NE	VU D2
<i>Bergeranthus Anthebergensis</i> L. Bolus	Tanka to Elliot King Williams Town	K	Rare EN B1ab(i,ii,v)
<i>Brachystelma cafferum</i> (Schltr.) N.E.Br.		I)
<i>Brachystelma franklae</i> N.E.Br. subsp. <i>grandiflorum</i> A.P. East London Dold & Bruyns		NE	VU D2
<i>Brachystelma schoenlandianum</i> Schltr.	Uitenhage	I	Ex
<i>Bulbine frutescens</i> (L.) Willd. var. <i>chalumnaensis</i> Ba[...] ined.	Chalumna	NE	VU D2
<i>Cassipourea nanaganii</i> (Schinz) Aiton	Kompa area	R	CR A4acd
<i>Ceropegia radicans</i> Schltr. subsp. <i>radicans</i>	Kompa area	R	VU D2
<i>Ceropegia radicans</i> Schltr. subsp. <i>smithii</i> (N.R. Hend.) R.A. Dyer	Kariera River Bridge	NA	VU D2
<i>Cotyledon orbiculata</i> L. var. <i>nanaganii</i> (Schönland & Baker f.) Toelken	Kel River	R	NT
<i>Crassula planifolia</i> Schönland	Kentani	V	NE
<i>Cyrtanthus smithiae</i> Walt ex Harv.	Fort Brown only	R	NT
<i>Cyrtanthus suaveolens</i> Schönland	Pirle	K	EN B1ab(i,ii,iii)
<i>Ectotripteris alpina</i> N.E.Br.	Amalole	I	VU D2
<i>Encephalartos cycadifolius</i> (Jacq.) Lehm.	Winterberg	V	LC (Rare)
<i>Encephalartos biederer-guilelmi</i> Lehm.	Cathcart	V	NT
<i>Encephalartos princeps</i> R.A. Dyer	Kel River	V	VU A4acd; C1
<i>Encephalartos trispinosus</i> (Hook.) R.A. Dyer	Fish River	V	VU A4acd; C1
<i>Euphorbia meoformis</i> Aiton subsp. <i>meoformis</i> forma <i>magna</i>	Peddie	NE	VU D2
<i>Euryops ciliatus</i> B. Nord.	Kalberg	I	VU D2
<i>Euryops gracilipes</i> B. Nord.	Fish River Valley	K	VU D2
<i>Helichrysum isolepis</i> Bolus	Winterberg	K	LC (Rare)
<i>Indigofera acanthocladia</i> Dinter	Hogsback	K	NE
<i>Isotes wormaldii</i> Sim	Peddie	E	CR D1
<i>Lotononis holosericea</i> (E. Mey.) B.-E. van Wyk	Hogsback	I	NE
<i>Lotononis trichodes</i> (E. Mey.) B.-E. van Wyk	Kalberg	K	VU D2
<i>Alchorungia galpinii</i> (Baden) Baden	Naihoon Dam	E	EN A3c

Soils in this area are susceptible to infestation due to the limited depth of the topsoil, which provide the opportunity of these invaders to flourish. The re-vegetation process needs to be conducted and controlled properly otherwise rehabilitated areas could be subjected to infestation, which would jeopardize the sustainability of the project and land capability at closure. Should this approach not be followed, the objective of re-establishing a grass cover will not be reached and the proposed activity could then be rated as unsustainable. This scenario must be prevented. According to land classification the invasion potential of the land concerned is rated medium-high and disturbed land should be treated with utmost care. Species such as *Acacia longifolia*, *Acacia mearnsii* (Black Wattle), *Acacia saligna* (Port Jackson) is identified as a major risk.



The study area constitute a vocal point in the landscape but currently display low visual character due to the degraded state of the vegetation in the area. In the process of establishing the mine the Savanna vegetation cover will be removed and visual quality will be further reduced. Considering the above the area will therefore be able to absorb some additional disturbance. At closure, the good soil structure will assist the rehabilitation process provided that it is all topsoil is conserved.

From the above analysis it is clear that this vegetation type can withstand some loss of natural areas through development. Taking into consideration that a very small, already degraded are will be affected and that this could be reinstated at cessation of mining activities, the impact is rated of low significance.

Impact on flora

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Local	2	Site Specific	1	Site Specific	1
Duration	Medium Term	2	Medium Term	2	Short Term	1
Intensity	Low	2	Low	2	Low	2
Probability	Definite	4	Definite	4	Probable	2
Status	Negative		Negative		Positive	
Confidence	High		High		High	
Significance	Low-Moderate	24	Low	20	Very Low	8

Remedial measures

It will be possible to restore the secondary grassland vegetation over the short term once mining activities have ceased on the property. A positive factor is that the affected area is abutted on two sides by tracts of similar Savanna vegetation that could act as a seed bank for newly rehabilitated areas. The success of the re-vegetation process will however, depend on a post closure maintenance and alien eradication programme being followed.

- Mining activities will be restricted to the proposed mine area.
- No indigenous vegetation outside the mine area will be removed.
- Vehicles will not traverse virgin land outside the mine area.
- A phased re-vegetation programme as discussed under 'mine development' will be followed to ensure timeous rehabilitation of disturbed areas in order to increase control over the process and to limit irrigation required.
- During operations and at closure topsoil berms and disturbed areas will respectively be re-vegetated with a grass cover by seeding with:

Eragrostis curvula/capensis
Digitaria natalensis/eriantha

Themeda trianda

Sporobolus africanus

- These grasses are all natural to the area. Seeding would take place in the spring from September to February at an application rate of 3-5kg/ha of each species mentioned. Seed will be broadcasted by hand and areas will be raked over to cover seed and protect it from birds feeding in the area. Seeding must be done during the rain periods since irrigation would not be possible. Seeding, germination and surface cover will be monitored on a continuous basis. This vegetation cover would require the minimum maintenance and will within a short time improve the visual appearance of the site. Maintenance will be carried out until the area is fully vegetated.
- The following plants will be introduced to the northwestern and south-western faces to reduce visual impact.

Trees: *Acacia natalitia*, *Olea europeae* & Available *Rhus* species

For every tree a hole (0,75 x 0,75 x 0,75m) must be prepared by digging out the soil, and filling it with a 50:50 mixture of good topsoil and compost and very light application of 2:3:2. Before the hole is refilled with the soil mixture it must be watered well. Once planted, the trees must be watered well and be repeated at least every week for 2 months. Specimens of at least 1m high must be used.

- Water for irrigation of trees will be obtained from the Municipal reticulation system. Watering will be done on an ad hoc basis for a limited period until the plants have established properly – two to three months. It would not pose a negative impact on water availability within the reticulation system due to the small amounts required (± 5 cubic meter at a time).
- Once the mine area has been vegetated, a continuous alien control programme will be implemented by pulling any seedlings on a monthly basis. Specific attention will be directed to *Acacia mearnsii*, *Acacia longifolia*, *Acacia saligna* (Port Jackson) *Solanum* species and *Rucus communis*. No alien tree will be left until it reaches seed bearing age.
- Once an area is vegetated, no traffic will be permitted in such area.
- Veld fires will be prevented and will only be permitted on bare soil within a designated appliance. One fire extinguisher will be made available within the excavator cabin and one truck or if applicable, the container office.
- Should re-vegetation be exceptionally slow due to dry conditions the seeded area will be monitored and if needed reseeded the following growing season.

FAUNA

Animals play an important role in maintaining ecosystem functioning for example pollination, spreading of seeds, removing of insects, forming part of a specific food chain, trimming of vegetation and therefore determining penetrability of vegetation and generation of manure which naturally upgrades soils.

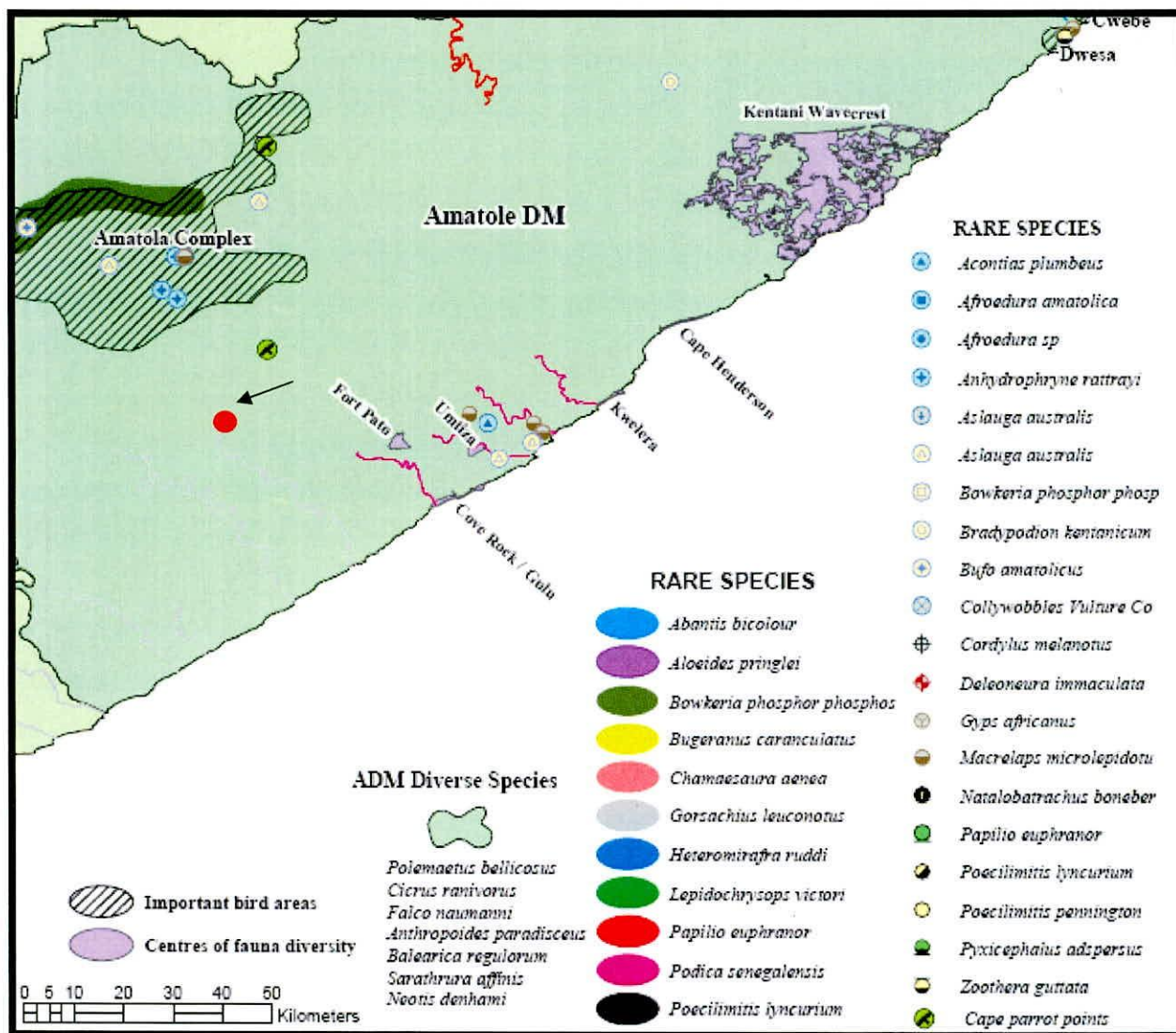
The study area has been subject to pastoralism and human activities historically resulting in extremely low animal sightings in the area. The close proximity to residential areas naturally led to extensive hunting practices and further contributed to the impact on animal numbers and species diversity. Considering the poor forage and nesting ability that the study area offers render the site almost ecologically sterile and the batching plant should therefore not pose a detrimental impact on animals in the area, especially considering that mining is already taking place onsite.

The surrounding areas but specifically to the immediate north-east, east and south-east has a very low potential to serve as ecological niche due to developments that took place in these areas and because the site

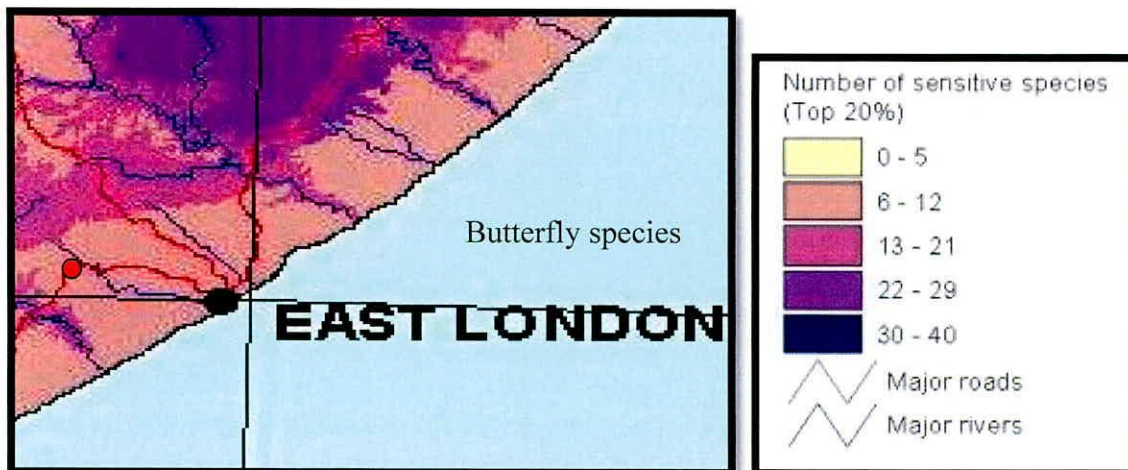
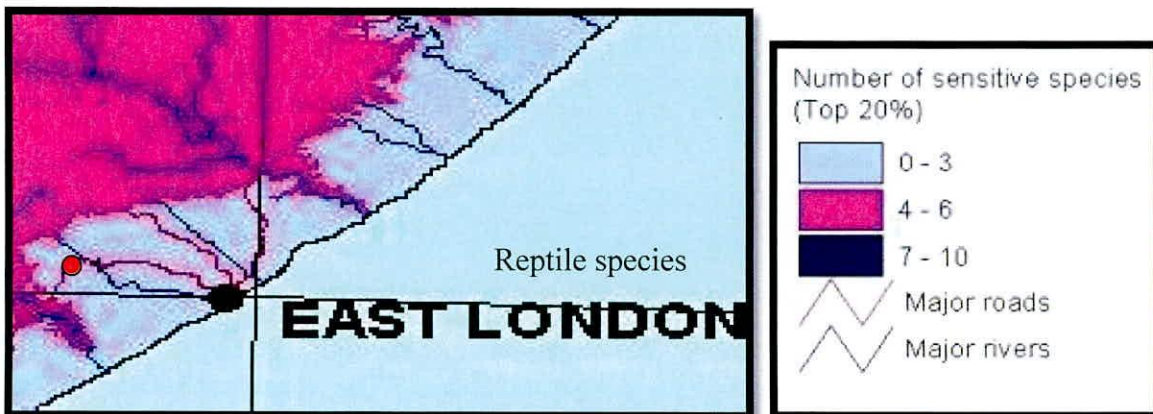
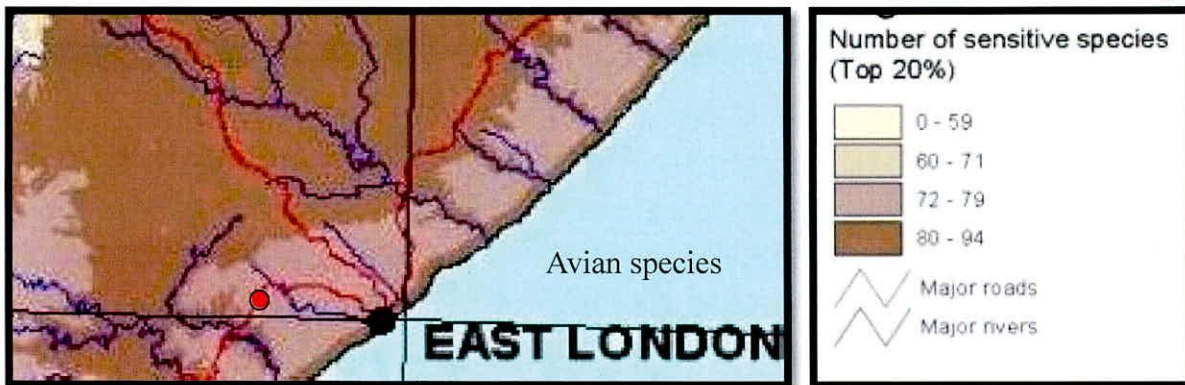
is surrounded by residential developments. Further to the north-west and south-west the status of the vegetation improves gradually until it turns into Buffels Thicket disposing of a much higher species diversity, nesting and forage potential and thus ecological functioning and represents therefore a more important niche for fauna. This niche will not be affected by the proposed dolerite mining.

On the day that the site visit was conducted no animals, except for a few bird species were observed and it is anticipated that anthropogenic pressures drove them from the area. This does not mean the surrounding area is indeed sterile and one can expect lower animal forms to prevail in the area. Considering the faunal status of the immediate surrounding area the removal of the vegetation from the mine area will have a very low impact on faunal occurrences onsite.

In terms of the Amatola Conservation Plan no species of importance should occur in this area.



In terms of the broad EMPAT assessment, the site has a low faunal importance as depicted in the relevant maps, except for avian species. The sensitivity of the site for avian fauna will not be applicable to the mining site due to its low ecological quality and close proximity to residential areas and industrial activities.



Based on the absence of visible animal species at the time of the site visits and sensitivity maps, no formal faunal study was conducted.

Since the site does not constitute a definite corridor for animal movement (see chapter on sensitive areas), migration patterns of animals will not be detrimentally affected.

Noise generated by mining operations will cause all remaining animals to vacate the area around the site on a temporary basis. The noise generated on the site will be from a limited number of people and from one loader and a few trucks. Noise levels will not be excessive and it is anticipated to range between 55 and 65 decibels at the site's boundaries. Most of the noises would be low-pitched and would have a lesser impact on animals than what high-pitched noises would have. Audio systems of animals are much more sensitive to the latter. Subject to that remaining animals are not disturbed/hunted by the workforce, animals onsite should grow accustomed to increased noise levels and would eventually return to the surrounding niche areas during quieter times or when disturbed areas are adequately rehabilitated. Considering that mining is already taking place below and to the north-east of the proposed site no additional impact is anticipated.

Indiscriminate hunting/trapping/poaching could be a potential problem, especially considering the proximity of the Buffels Ticket to the north-west and south-west and the necessary discipline and monitoring has to be enforced. Lolo & Lolo will take responsibility for any animal that is proved to be killed by the workforce and strict control measures as well as applicable disciplinary measures should be imposed if any animal is poached offsite.

Limited hydrocarbon spillages anticipated would not detrimentally affect any fauna on site and as such potential spills will not reach areas outside the mining area the impact is rated zero. It remains, however essential that safe and responsible handling of any hydrocarbons be applied. The offsite storage of hydrocarbons and servicing of vehicles will further contribute to a negligible impact on fauna. Since movement of vehicles will be restricted to the mine area no impact is anticipated in this regard. As the site is not located close to surface water no impact on aquatic animals will be applicable.

Rehabilitating the mine area during the closure phase will reinstate the original vegetation cover and in doing so the improved ecological niche will ensure the re-colonization of the area. The impact at closure is rated to be of neutral significance.

Mining would be restricted to the smallest area possible and the slow extraction rate would provide adequate time for migration of any animals remaining on site to be sustained in similar adjoining habitats. In addition, noise generated by vehicles and the excavator will cause most animals to vacate the site on a temporary basis.

In conclusion, removal of the vegetation in the study area will not result in the extinction of any specie or decrease in species numbers and the impact on the faunal diversity of the site is rated insignificant. Mining will be restricted to a limited area and the slow extraction rate would provide adequate time for migration of any animals remaining on site to be sustained in similar, adjoining habitats. Noise generated by vehicles will cause some animals to vacate the site during the day and return during the night and over the weekends when the impacts imposed are minimal. Rehabilitating the quarry site would provide for a similar ecological niche and the opportunity for animals to re-colonize the area at closure.

The positive economic impact of the proposed operation will definitely outweigh the negative impact on fauna of the area, provided that the prescribed rehabilitation proposals are followed.

Impact on Fauna

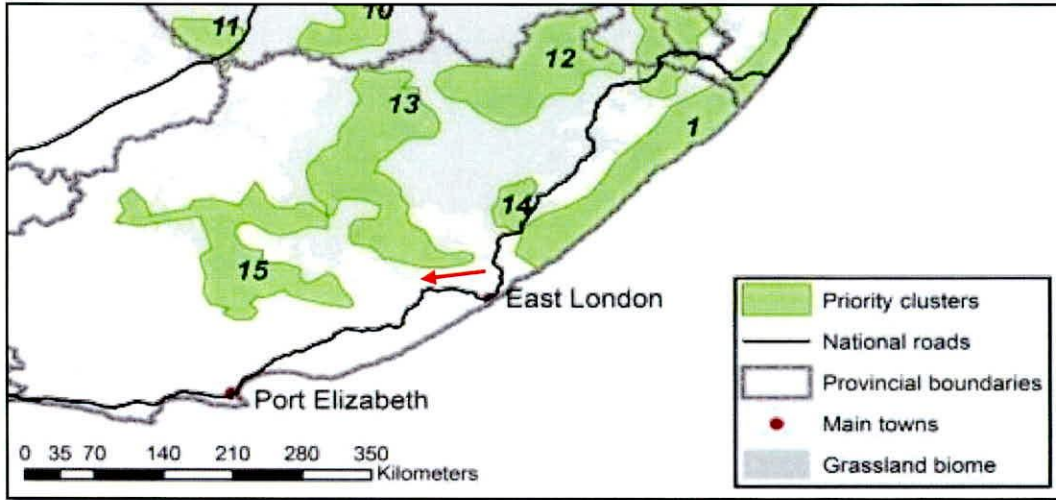
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Extent	Local	2	Site Specific	1	Site Specific	1
Duration	Medium Term	2	Medium Term	2	Short Term	1
Intensity	Low	2	Low	2	Very Low	1
Probability	Likely	3	Probable	2	Unlikely	1
Status	Negative		Negative		Positive	
Confidence	High		High		High	
Significance	Low	18	Very Low	10	Insignificant	3

Remedial measures to be implemented are:

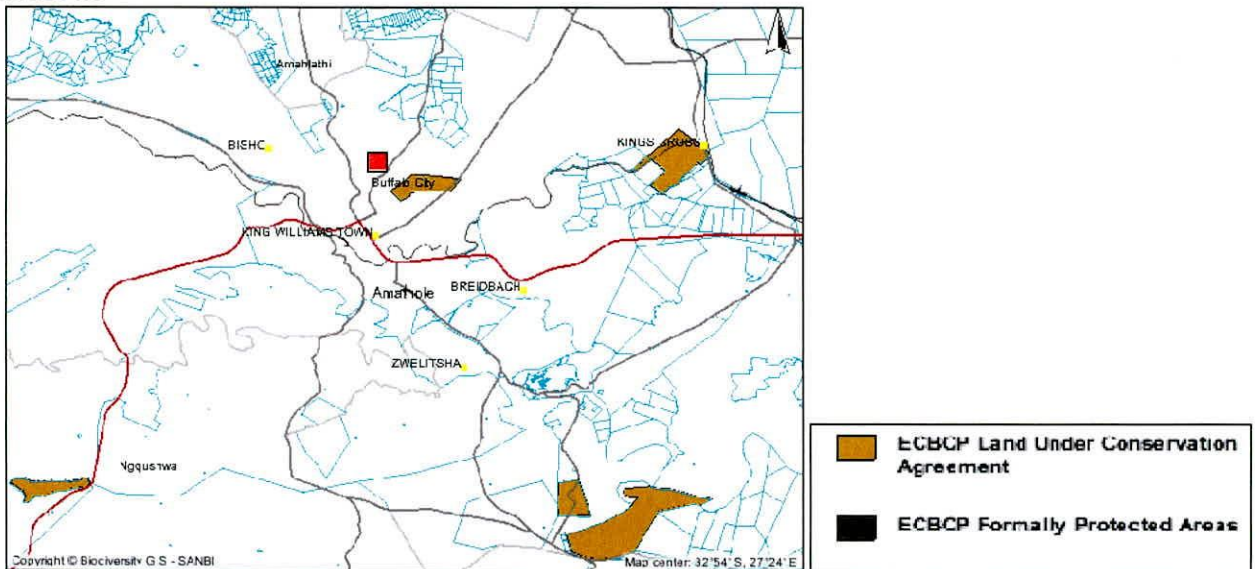
- Vehicles will not display fuel, oil or lubricants leaks and will be maintained to an acceptable standard offsite.
- Any fuel spills will be cleaned up immediately and the contaminated soil removed to an approved waste facility.
- Handling of hydrocarbons will be in accordance with all applicable legislation to prevent pollution incidents.
- Movement of vehicles will be restricted to the authorized mine area.
- No animals entering or settling in the mine area will be disturbed, trapped or killed and this requirement will be included in the environmental awareness programme, which has to be discussed with workers on an annual basis and presented by the applicant or any competent environmentalist.
- No hunting or snaring would be allowed outside or inside the mine area and the applicant will implement a severe penalty system for people transgressing this requirement. In addition, the owner or manager will remove any of the staff caught interfering with wildlife from the site immediately. The surrounding area will be inspected for snares.
- All animals found on working areas where they may be injured, will be relocated to areas outside the mine area.
- Nesting sites will be temporarily excluded from the mine area or carefully be relocated.
- The quarry area will be developed in phases and clearing of vegetation will be restricted to the minimum area required for optimal extraction of sand and stone.
- Areas to be cleared will be swept by a competent/responsible person before vegetation is removed. Relocate any herpetofauna and slow moving animals to areas outside the mining areas.
- Disturbed areas will be properly rehabilitated as per the process outlined in the re-vegetation programme.
- No vegetation outside the mine areas will be removed and spread of alien vegetation will be prevented.
- Veld fires will be prevented by only allowing cooking fires in designated areas in appropriate appliances as discussed elsewhere. The applicant will take full responsibility for any financial losses that prove to be the result of negligence in this regard.
- Mining area will be clearly demarcated and areas outside of it will be out of bounds.
- Production faces will be profiled properly to ensure that it does not pose any danger to animals and to facilitate proper re-vegetation.
- Mining will not impact on any surface water area.
- No pesticides or poisons will be used onsite.
- Noise generation will be curbed by servicing and maintaining mining equipment effectively.

ENVIRONMENTAL SENSITIVITY

In terms of the Eastern Cape Biodiversity Conservation Plan there are no formally or informally protected areas in close proximity to the site and it also fall outside the grassland priority area. The Local King William's Town Nature Reserve is located a few hundred meters to the south-east but will not be affected.



ECBCP



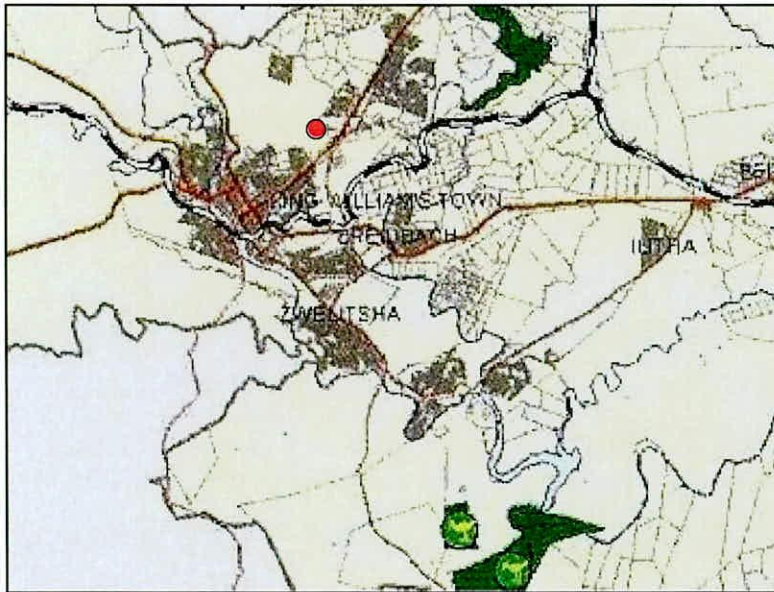
As discussed under previous headings neither the study area nor the immediate surrounds represent a sensitive environment as area has been extensively disturbed. It is acknowledge that the watercourse and Buffels Thicket to the distant south-west and north-west represent a more sensitive area, but it is located more than one kilometer away and due to the distance involved, neither vegetation nor animals in this area will be affected.

In terms of various plans captured in the Amatola IDP the site is neither located in close proximity to any designated or proposed protected area nor in close proximity to any nature reserve or proposed nature reserve/conservancy area. However, the site is located within a few kilometres from the sensitive Amatola Complex, but will not be affected.

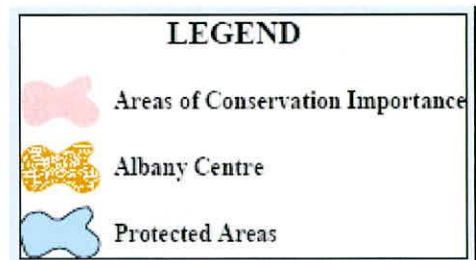
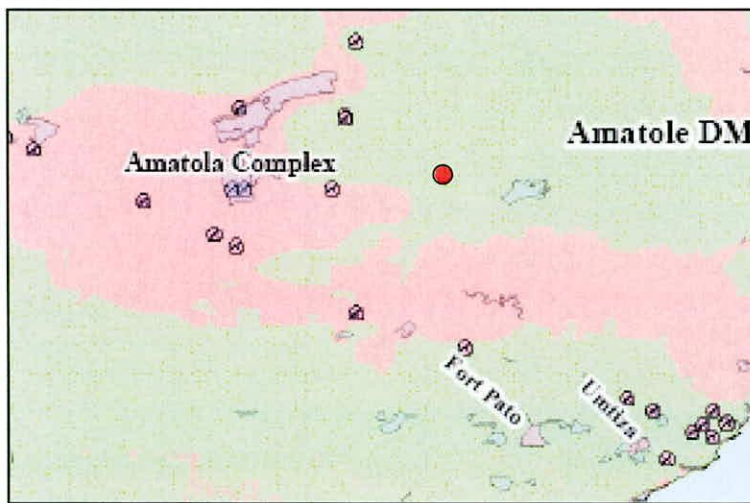
In terms of the STEP programme, there is no protected area in close proximity to the site, however a protected area is located approximately 1km to the north-east but would not be affected by plant operations. The

batching site is also located outside the proposed STEP Corridor that represents a system of natural pathway for plants, which if safeguarded, will ensure their current as well as future existence. Based on the study areas ecological status the system can withstand loss of natural areas through development.

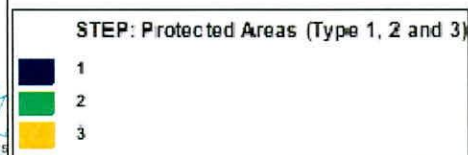
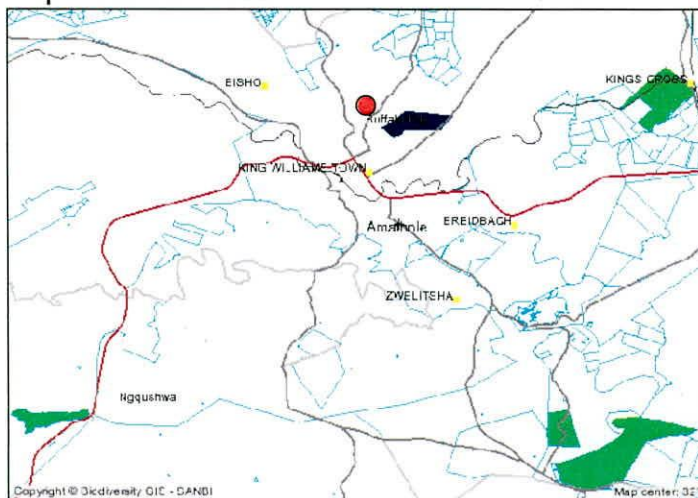
Amatola IDP



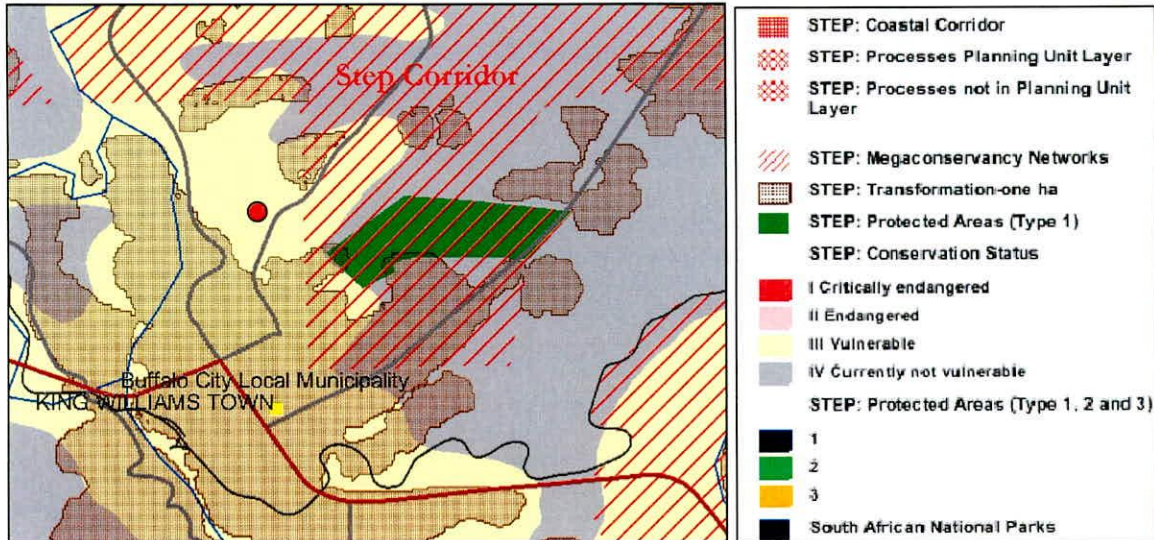
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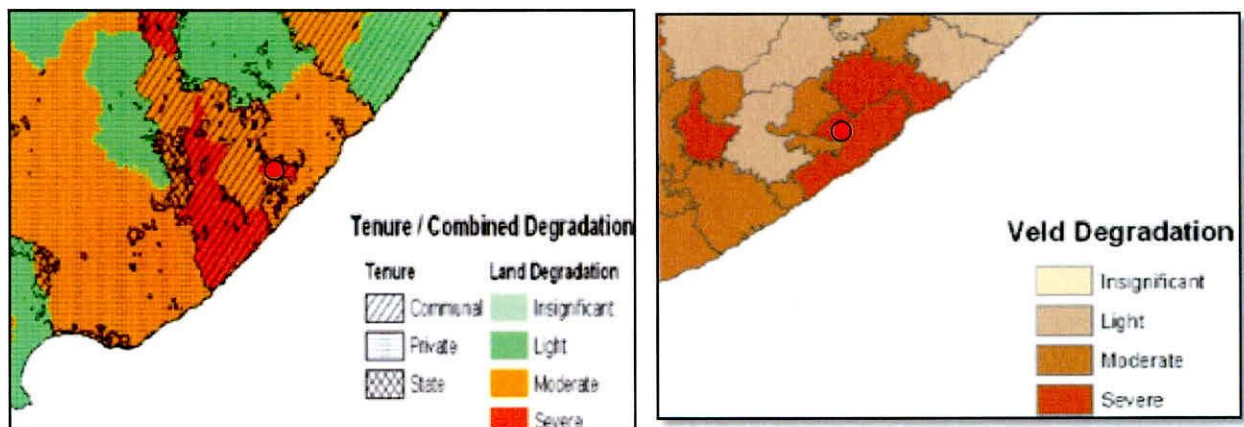
Step Protected Areas



STEP Corridor



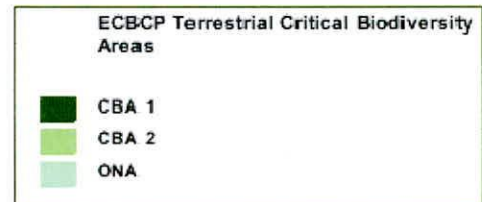
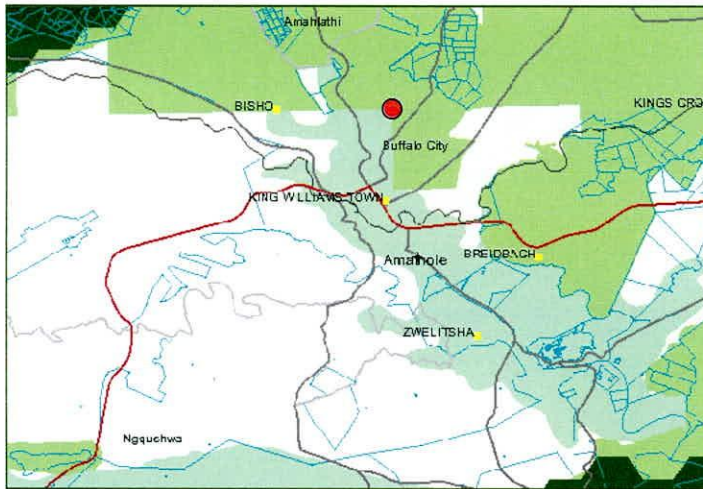
The degraded status of the veld in this area is supported by the Eastern Cape State of the Environment Report.



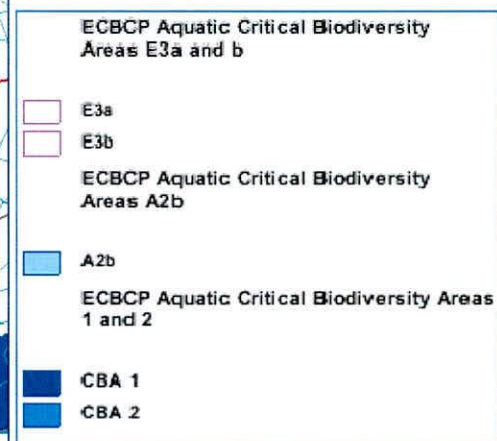
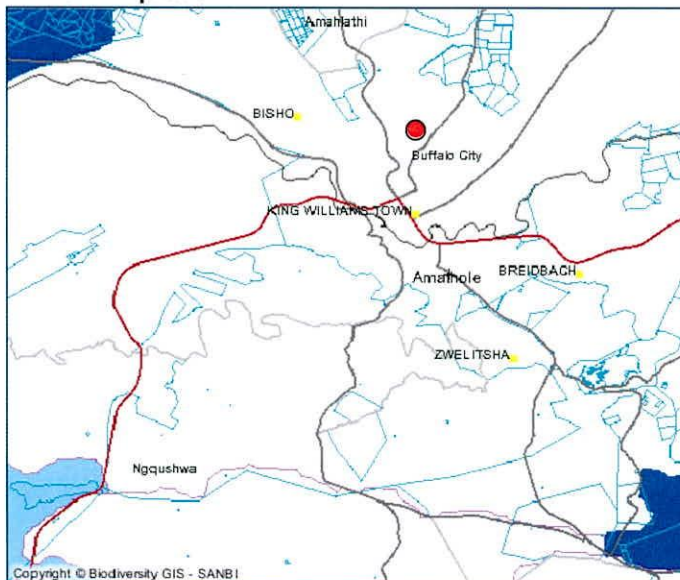
As discussed under previous heading, neither the study area nor the immediate surrounds represent a sensitive environment as a large portion of the study area has previously been disturbed and the grassland transformed. The same applies to most of the abutting areas as discussed under the chapter on vegetation.

In terms of the Eastern Cape Biodiversity Conservation Plan, the proposed study area is neither located in a sensitive terrestrial, nor in an aquatic sensitive area and the proposed development may therefore proceed.

ECBCP: Terrestrial



ECBCP: Aquatic



Considering the environmental status of the quarry area and immediate surrounds, as well as the distance to protected areas, the impact on sensitive environments is rated insignificant and no mitigation measures are required other than completely rehabilitating the quarry to accommodate the objectives of STEP in terms of maintaining corridors.

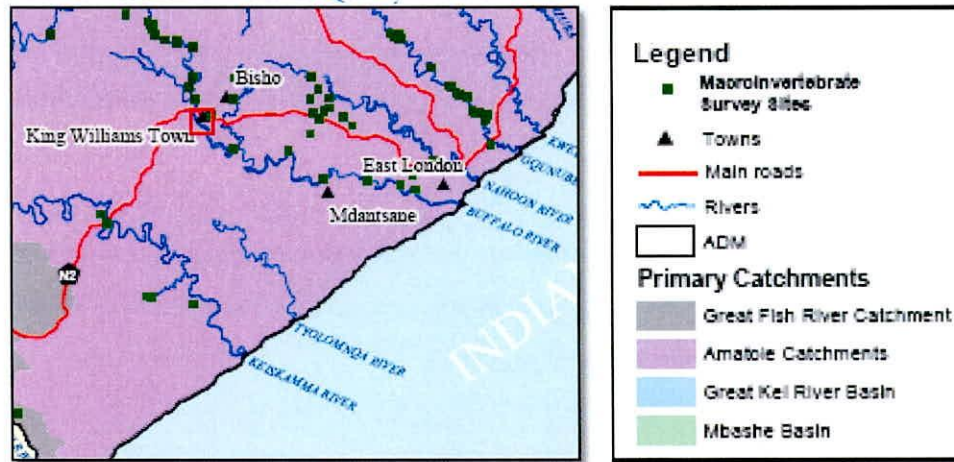
Mitigation measures

As discussed in other chapters of this report.

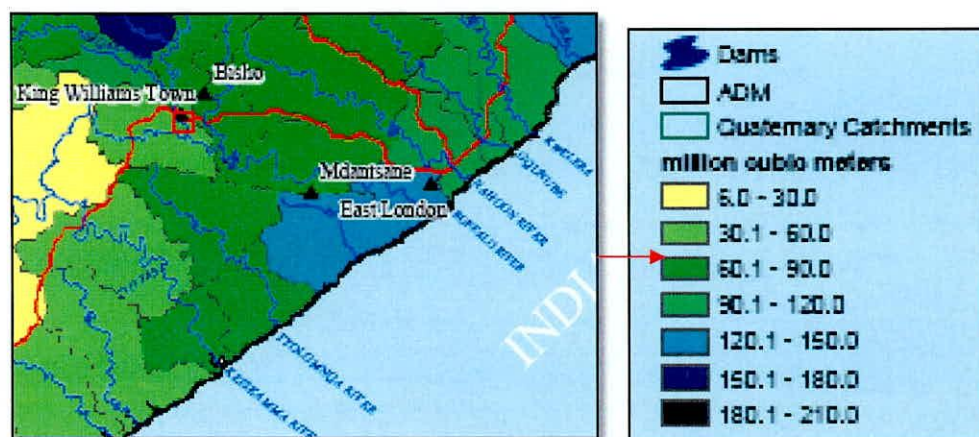
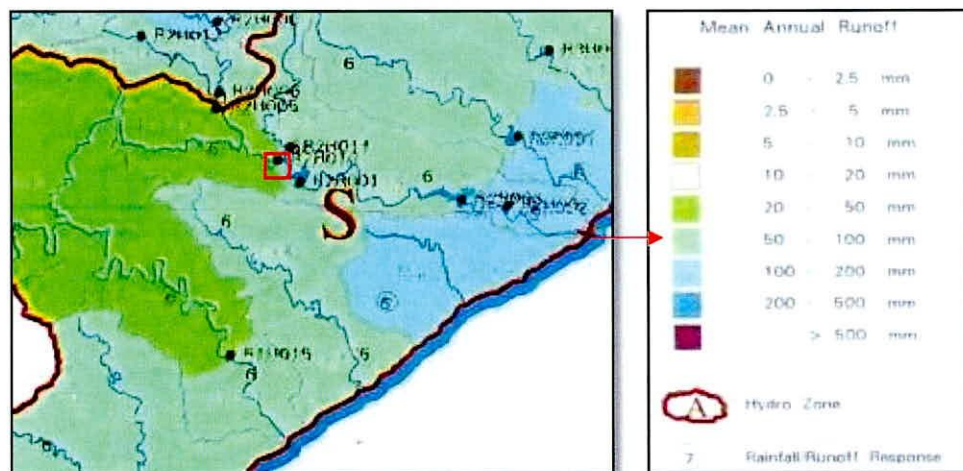
SURFACE & GROUNDWATER

SURFACE WATER

The site is located in quaternary sub-catchment R20B within the Amatola Catchment area and is administered under the Water Management Area: Kei to Keiskamma.



According to hydrology maps, the area falls within Hydro Zone K and Rainfall Zone R2A with an annual precipitation of 500-600mm. The area falls experience an annual evaporation of approximately 1400mm with a MAP-MAR response of 6. The moderate rainfall that the area receives would assist re-vegetation processes during the summer periods and irrigation of re-vegetated areas might not necessary occasionally. Mean annual runoff in the map area is approximately 50mm (60 mil.m³) indicating good infiltration and positive water balances during the rain periods.



The study area originally was drained by means of overland surface flow towards the east and south-east and then to a dry watercourse that empties in the Buffalo River. In order to prevent white water to mix with grey water within the mine area, a diversion berm will be positioned above the excavation directing the runoff to a

well vegetated area. Runoff from the mine area will still be directed to the south-west where any potential silt will be filtered out by lush vegetation hence drainage patterns will not be significantly altered. Within the mine area the reduced B-horizon will reduce infiltration potential and increased runoff volumes can be expected from the quarry but will be absorbed by the vegetation to the south-west. Considering the relative small quarry area and the influence of the diversion berm runoff volumes will be low and would be easily handled by the natural environment. This scenario can be observed below the existing excavation, which is at less three times the extent of the proposed mine area.

There are no dams or weirs in the immediate vicinity of the mine therefore no surface water abstraction is taking place.

Water quality of the study area will be slightly affected due to increased sediment load and increased surface flow due to reduced infiltration and absorption capacity of the denuded area. It will not pose any threat to water quality of streams and Buffalo River since silt will be filtered out by the grassland located between the quarry and watercourse. The distance to the Buffalo River will also preclude any impact on the river system. During high rainfall cycles, silt load towards the river will be negligible comparing to silt transport from upstream areas. Once re-vegetated during the closure phase the amount of silt released from the affected areas will decrease as the surface cover increases. The proposed phase development and rehabilitation will also assist in this regard.

Potentially runoff could also be contaminated with hydrocarbons but this impact is rated very low considering the magnitude of the concern and the operational procedures in place regarding servicing, maintenance and hydrocarbon storage

Sewage

The toilet system will result in limited soil and potentially perched aquifer coliform contamination but the distance to any surface as well as the limited numbers of people onsite will simply preclude any significant impact to be imposed. To the north-east and east a number of people are making use of similar ablution facilities and their impact would be more significant than that of the Lolo & Lolo concern.

Hydrocarbons

Limited quantities of spilled hydrocarbons can cause the pollution of large quantities of surface water due to the hazardous contents thereof which could affect aquatic life negatively. No bulk fuel storage facilities will be housed onsite and servicing of vehicles would be performed off site at the workshops of the contractor or at any nearby garage. Emergency repairs onsite could lead to marginal contamination of surface water but the limited amount of vehicles as well as the use of appropriate receptacles such as drip pans will cause this impact to be negligible. In the event of a spill the necessary mitigating measures will be implemented.

Waste

Since no processing plant will be housed on site, no contaminated or toxic wastewater will be generated hence no treatment facilities for this purpose are needed. Very limited amounts of household or industrial waste would be generated and therefore management facilities would be restricted to one waste bin at the quarry area and a negligible impact is anticipated.

Water Consumption

Potable water used onsite will be minimal. If it is required to irrigate the quarry area to allay dust during extreme dry periods and windy periods, this *ad hoc* consumption will not exceed 5-10m³ per day and will be obtained from KWT reticulation system. During calmer periods no dust suppression will be required. The same scenario will be applicable during the re-vegetation phase and at closure.

As no water is abstracted from surface sources no impact is applicable.

Haul Road

The haul road could be a source of silt contaminated runoff, but it will be controlled by means of cross, mitre and side drains. Polluted water will be diverted to the surrounding grassland which will effectively filter out the silt. Currently the road is erosion free and this impact is rated insignificant.

Stockpiles and Production Faces

Topsoil stockpiles can be a source of silt, which could increase the turbidity of runoff. Topsoil stockpiles will be positioned below the cut-off berm and on the side of the quarry, which will prevent clean runoff to erode the topsoil an increase silt load thereof. Silt laden runoff from the topsoil stockpiles will be captured in the excavation and eventually filtered out by vegetation further to the south-east. It will have no impact on clean runoff. Silt from the small stockpile positioned in the quarry will be filtered out similarly by the vegetation below. Due to previous mining and the position of the haul road the construction of a silt dam is not possible but the good infiltration rate provided for by the soils in the area will effectively take care of runoff. Since heavy rain events can occur at any time, stockpile volumes will be restricted to the minimum that is required for optimal sales as determined by market demand within the quarry perimeter.

Based on the 1) mitigation measures provided for reducing the silt load of water emanating from the study area as well as extensive, well vegetated buffer zone towards the water course, the impact on surface water quality is rated of very low significance during operations and insignificant after closure as the area will be re-vegetated to a proper grass stand.

Impact on surface water quality and quantity

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Local	2	Site Specific	1	Site Specific	1
Duration	Long Term	3	Medium Term	2	Short Term	1
Intensity	Low-Medium	3	Low	2	Very Low	1
Probability	Probable	2	Probable	2	Unlikely	1
Status	Negative		Negative		Neutral	
Confidence	Medium		High		High	
Significance	Low	16	Very Low	10	Insignificant	3

GROUNDWATER

The main groundwater aquifer in this area is restricted to the sandstones at depth. This aquifer is also protected by the semi-aquiclude (impervious clay layer) formed by the Karoo Formations. It should be born in mind that the Karoo sediments is not water bearing rocks and can merely be described as a limited perched aquifer with low water quality.

The area does not fall within any Water Control Area meaning that the aquifer at depth is not a protected water source and water can still be freely used, should it be necessary. An average groundwater supply of between 4 and 6 million cubic meters per annum is available in this quaternary catchment.

Due to low permeability of the mudstones and the thickness thereof, perched aquifers will not readily developed but some limited reserves may be concentrating in sandy lenses in the clay layer, but does not constitute a viable reserve. Groundwater will concentrate mainly at the contact with the fractured sandstone at depth. Neither perched nor main aquifer will be affected by mining operations. Post closure field capacity of soils may be affected due to the reduction in retention capacity but constitute a low impact if all the topsoil is remained. This impact will impose a less negative impact as the rock weathers over time. Due to the reduce infiltration rates it could potentially reduce recharge and groundwater availability but since dolerite does not contribute towards groundwater recharge the impact is rated insignificant.

Due to the high permeability of the weathered dolerite and the thickness thereof, perched aquifers will develop through infiltration and downward percolation of water, especially at the contact zone with the mother material. This aquifer will be affected since the retention capacity will be substantially reduced and will result in increased surface flow on the quarry floor instead of subsurface retention. In terms of quantity it will not be affected, except for the portion lost through evaporation since borehole abstraction is not anticipated. Since this aquifer is not commercially used, the impact is rated insignificant.

Taking the limited extent of the operation into consideration as well as the limited infiltration of sediment, hydrocarbons and solvents into the soil, the primary aquifer will not be affected due to the depth thereof as well as the restrictive influence of the mudstones to groundwater recharge. There would also be limited waste volumes onsite and no hydrocarbon storage on the property.

Groundwater quality

Sewage facilities

The proposed pit toilet may cause an increase in coliform levels of perched aquifers, but not the main aquifer located in the sandstones at depth. Soils and sub-soils have a high adsorption capacity and will contain any pollution plume, but will also display high microbial activity, which will expedite the breakdown of sewage. The intermediate internal drainage of soils will also tend to restrict vertical percolation of contaminants to some extent. It needs to be taken into account that the effluent stream would not exceed 0,1m³ per month. Dolerite is not a water bearing strata and only poses a secondary or perched aquifer and is generally not used for human consumption. The impact of this facility would be considerable less than the impact of sewage systems at industrial sites opposite the gravel road to the east.

Hydrocarbons

No hydrocarbon storage or draining would take place within the plant area therefore a negligible impact is anticipated. The mentioned properties of the clayey soils will also prevent downward percolation which will further tend to reduce the significance of the potential impact on groundwater. Vehicles will also not be cleaned onsite. It should also be recognized that hydrocarbons are biodegradable and small spills will be remedied naturally.

Waste

The plant area will generate very little waste that could affect groundwater quality. The waste stream will be restricted to household waste, which will be deposited in 200L drums fitted with a proper lid. When filled, it will be emptied at the nearest approved waste in KWT. 'Industrial waste' will be restricted to very limited scrap

metal, tires and machine parts, which will not be stored onsite and disposed of at a registered recycling facility. Considering the above, no treatment facilities are required for the site. The impact is rated negligible.

Water consumption.

No groundwater will be abstracted hence no impact is applicable.

Impact on ground water quality and reserves

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Site Specific	1	Site Specific	1	Site Specific	1
Duration	Short Term	1	Short Term	1	Short Term	1
Intensity	Low	2	Very Low	1	Negligible	0
Probability	Likely	3	Probable	2	Unlikely	1
Status	Negative		Negative		Negative	
Confidence	Medium		High		High	
Significance	Very Low	12	Very Low	6	Insignificant	2

Remedial measures to be implemented are:

- The toilet will be maintained to Municipal regulations.
- No storage of hydrocarbons will take place onsite.
- Plant operations will be restricted to the proposed footprint.
- Silt transport during periods of extreme precipitation will be curbed by means of a berm upslope of the north-western production face diverting clean runoff towards the veld as described in the chapter on soil.
- If the limited impact on silt transport predicted by this assessment is found to be incorrect, a silt control dam will be constructed on the south-western side of the mine area and should be able to control runoff effectively. The sides thereof must be profiled properly and it must be provided with a designed spillway.
- The mentioned silt in the dam must be cleaned out on a regular basis and water must be utilized for dust suppression or irrigation to always maintain the holding capacity thereof.
- At closure disturbed areas will be vegetated through natural re-vegetation and seeding to establish a grass cover as per the rehabilitation plan.
- No foreign or unapproved material/substance will be dumped or stored within the footprint of the mining area.
- No stockpile of any nature will be placed outside the mine area, in the flow path of runoff or near any drainage line.
- Vehicles will not use alternative roads or damage vegetation outside the approved plant boundary.
- Waste will be contained in receptacles stationed at appropriate areas within the plant area and be removed from the quarry area on a weekly basis or whenever necessary. No household or industrial waste will be burnt or buried on the site.
- Refuelling of vehicles will be done offsite or if it needs to be done onsite it will be done with appropriate mechanism to prevent any spills.
- If needed, only emergency repairs will be done onsite but then on over appropriate drip pans.
- Vehicles/equipment shall be maintained to a high standard and shall not display any major leaks.
- Any contaminated spares, oil filters and gaskets will be placed in a suitable receptacle and immediately removed from the property to an approved waste facility.
- If spills do occur, the affected soil will be removed to an approved waste site. Super absorbing material such as Peatsorb or Spillsorb or alternatively sawdust will be kept onsite and used to contain larger spills.
- In case of large, critical spills the Departments of Water Affairs & DEDEA will be informed immediately for assistance and advice and a competent company, conversant with bio-remediation will be appointed immediately to address the possible impacts of such spill. All costs would be for the account of Lolo & Lolo.

- Management will not entertain hydrocarbon spills on site and where necessary, financial penalties would be imposed on workers in cases of negligence.
- No hydrocarbons or hydrocarbon-contaminated material/parts will respectively be drained in the soil or buried on the property.
- All dysfunctional equipment and vehicles will be immediately removed from site.
- The applicant accepts the principle of 'polluter pays'.

AIR QUALITY

The air quality of the immediate surroundings is medium to good due to its rural status but the gravel roads will during windy periods and high traffic volumes cause a low-moderate decrease in air quality in close proximity to the roads involved. In addition, an increase in smoke generated by household fires of workers residing to the south-east could also decrease the air quality on an intermittent but limited basis. Since the area is still zoned agricultural it would cause tolerable ambient levels to be higher than those for residential areas. It would on the other hand not exempt LoLo & Lolo to implement the required measures to keep the mining area as dust free as possible.

Smoke/emissions

Potential sources of smoke could be cooking fires. The former will be limited one per day and since no camp will be established night time fires will be eliminated. No waste would be burned on site but be transported offsite to a waste facility. Waste receptacles need to be emptied and cleaned regularly to prevent odours developing.

Vehicular emissions on site would be very low due to the low density of vehicles (only one excavator/loader and few haul trucks) in the mining area and the impact can be rated as insignificant comparing to the impact imposed by traffic on the abutting gravel road.

No chemical processes will occur on site and no chemical emission will take place. The impact of smoke/emissions/odours on air quality is rated insignificant. Due to the low concentrations involved it would have a negligible impact on human health and aesthetics of the area.

Dust

The amount of dust generated in a denuded area is directly linked to the type of subsoil that is exposed, mechanical processes involved, traffic volumes, wind speed and soil moisture content.

The weathered dolerite subsoil of the floor has a low clay content, which will generate very limited amounts of dust during extraction.

Removed topsoil berms could be a source of dust during the first few months but once vegetated, which will take place quickly due to the fertility of the soil, the berms will no longer produce dust. Spreading of topsoil during the re-vegetation phase will also result in the loose soil to become prone to wind erosion but considering the good structure and nature of the topsoil, wind erosion should not increase dust levels significantly. If needed, consideration should be given to the irrigation of such areas. Once seeded, the dust impact from such areas would abate very soon.

Dust particles from the topsoil stockpiles will be coarse and not easily dispersed and any airborne particles will mostly be deposited within 100m from the site and considering the distance of more than 1km from residential areas the impact imposed by the proposed mining area is rated insignificant. The impact might be slightly

higher during adverse wind conditions and if the cumulative impact is taking into consideration the impact is rated of low significance since negligible amounts of dust may be dispersed further to reach possibly the first line of residences of Reservoir Hill. It needs to be pointed out that the gravel road currently has a much more significant impact on airborne dust volumes and town residences where it enters town than what the mine would have. There are no residences to the north-west that will be affected by the eastern component of the wind rose.

In terms of SABS and NEMA guidelines, dust fallout of 300 to 600mg/m/day is moderate and acceptable over the short term in residential areas. Considering the nature of operations onsite and the proposed mitigation measures that will be implemented the increase in anticipated dust count will, as an absolute maximum not exceed 50 mg/m² per day within 100m from the site, which is acceptable in terms of legislation.

Should dust volumes generated onsite exceed that predicted by this assessment the mining area will be dampened down during adverse climatic conditions by means of installing a sprinkler system.

Increased dust generated by the haul road might represent the most prominent dust impact but since the road is used frequently by a large number of private and Lafarge mine vehicles per day the cumulative impact will be marginally higher with limited impact since there are no residences along the road that will be affected.

Since there are no people in close proximity of the site, the limited dust generated would not contribute to any increase in acute allergies for dust. With any rain, dew, or mist, which frequents the area, the dust liberated into the air will decline drastically. Under normal circumstance respirable dust counts are very low due to the very low silica content of the substrate. Since material is not processed respirable dust counts would not be required.

The impact of the limited amount of dust on photosynthetic activity of plants will be negligible as the road has a much more extensive impact on vegetation in the area, without affecting biomass accumulation. Dust generated by the abutting mining has no impact on the vegetation in the area.

The overall impact on air quality is rated as insignificant (calm days) to low (windy days) considering the small-scale operation involved and the limited amount of people that might be affected. At closure, the disturbed area would be rehabilitated and would cause air quality to revert back to original levels.

Impact on air quality

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Local	2	Local	2	Site Specific	1
Duration	Medium Term	2	Medium Term	2	Short Term	1
Intensity	Low	1	Low	1	Negligible	0,5
Probability	Likely	2	Unlikely	1	Unlikely	1
Status	Negative		Negative		Negative	
Confidence	Moderate		High		High	
Significance	Low-Medium	10	Low	5	Very Low	2,5

Remedial measures to be implemented

- Vehicles to be maintained properly and fitted with standard exhaust systems and will not be left idling unnecessary.
- Cooking fires will be limited to what is absolutely necessary.
- No chemicals that could produce odours will be stored or disposed off on site.
- Waste will not be burnt on site. Waste will be reduced as much as possible and retained in proper receptacles placed within the plant area and removed regularly to the KWT Municipal waste facility to

prevent odours from occurring. When necessary waste receptacles will be disinfected and/or treated with lime.

- Topsoil will be reintroduced to disturbed areas at closure, seeded and irrigated after placement.
- The toilet shall be disinfected regularly.
- During periods of high winds and liberation of excessive dust volumes, disturbed mine areas will be watered down by means of a sprinkler system. Equipment for this purpose must be obtained as soon as possible.
- Topsoil and material stockpiles generated in the quarry area will be kept as small as possible and the former will be seeded after removal.
- Handling of material during periods of high wind action will be avoided as far as possible if it leads to unacceptable dust generation. Should irrigation be ineffective during such adverse climatic conditions, mining operations shall cease.
- Speed of vehicles will be restricted to 60km/h on gravel roads.
- At closure no stockpiles will be retained in the mining area that could result in a source of dust.

NOISE

The impact of noise levels generated by development activities is determined by the time of day, the consistency thereof, distance to people, whether it is a low or high-pitched noise and whether associated processes are taking place. Noise levels are more intense in the morning and evening than during the rest of the day and are more irritating if it is high pitched. The more continuous the noise is, the higher the impact. In terms of SABS standards noise levels for rural residential areas are 45dB during the day, 40dB in the early evening and 35 at night. Noise impact is rated against the following: 1) The average person will be able to just detect a noise increase of 2dB, 2) An increase in noise levels between 2-5 will result in no or sporadic complaints from communities whilst an increase between 5-10dB will result in widespread complaints, 3) An intruding noise is defined by National Noise Regulations as disturbing if it causes the ambient noise levels at the border of the property from which it emanates to increase with 7dB, 4) An average person will perceive such an increase in the ambient noise levels as a doubling of noise levels and very strong response will be expected from communities/residents.

The semi-rural setting of the area will cause the ambient noise levels to be around 45dB and any major increase in noise would therefore be observed immediately. Traffic on the gravel road, ad hoc activities on abutting properties and blasting & crushing at Lafarge will intermittently increase noise levels to approximately 55-65B.

In order not to cause any unacceptable disturbances, noise level at the road side should be kept below 55-60 decibels during the day, which would be well within reach of the activities/vehicles that occur/operate onsite and considering the distance of more than 200m to the road. The loader and trucks will be the sources of significant noise but within 200m from the mine area (road), noise levels will abate too approximately 50-55dB. Noise levels at none of the farm labourers residing to the south-east or at Reservoir Hill residential area will be raised at all.

Seeing that no campsite will be established onsite, no noise would be generated at night that could become a nuisance. Working hours will on average be from 7.30am to 5.00pm on weekdays, which would coincide with the daily activities of the inhabitants and with those of other industrial concerns in the surrounding area. As a rule no mining will take place over the weekend but should demand dictate, operations will be ceased at 13:00h on Saturdays. No operations will take place on a Sunday or public Holiday.

Adverse conditions such as low cloud cover or strong winds blowing towards recipients could potentially increase noise levels between 3 & 7dB, but considering the distance to receptors, noise levels will still be below around 45dB and the impact is rated of low significance.

Trucks on the haul road will cause noise disturbances of approximately 55-65dB within 30m from the road, but would be similar to the existing impact experienced along the road. The period that the impact is experienced will be slightly more continuous. Since there are no residences along the road the impact is still rated low. In order to reduce this impact vehicle speed and use of exhaust brakes must be limited where possible.

Management of this impact during the day could be achieved via an environmental awareness programme informing operators of machinery of the remedial measures to be implemented. In addition, staff and contractors would be sensitized not to engage in unnecessary hooting, shouting and flapping of tailgates during operational hours.

Noise Impact

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Local	2	Local	2	N/A	0
Duration	Short Term	1	Short Term	1	N/A	0
Intensity	Low	2	Very Low	1	N/A	0
Probability	Likely	3	Probable	2	N/A	0
Status	Negative		Negative		N/A	
Confidence	High		High		N/A	
Significance	Low	15	Very Low	8	N/A	0

Remedial measures to be implemented

- Vehicles and plant will be fitted with standard exhaust systems and be regularly serviced.
- Unnecessary hooting, shouting and flapping of tailgates will be prohibited.
- Unnecessary idling of vehicles will be discouraged.
- Travelling speed on the gravel haul road will be restricted to 60km/h and use of exhaust brakes be limited.
- Normal working hours will apply. No mining will be done on holidays or Sundays.
- Workforce and contractors will be properly managed in terms of noise generation and be informed on acceptable behaviour.
- Protective ear devices will be provided to all operators of machinery/vehicles generating noise above 60dB at source.

WASTE GENERATION AND MANAGEMENT

Building rubble

No construction activities will take place and therefore no building residue (cement & bricks), corrugated plate off-cuts, pipes, ceramic waste or PVC residue would be generated. There will be no permanent office or workshop infrastructure erected in the mine area. A single stage screen might be used to remove dolerite boulders, if any. At closure all mobile infrastructure will be removed.

No impacts on soils, water, vegetation, air quality and humans are anticipated.

Industrial waste

Very little industrial waste will be generated and will be restricted to potentially the odd tire casing, pieces of dysfunctional equipment, used filters, etc, which will be removed from the property on a weekly basis. No impacts on soils, water quality, vegetation, air quality and humans are anticipated.

Domestic waste

The waste stream will mainly consist of domestic waste (food, bottles, plastic bags, paper, clothing, rags, etc) and will be small and deposited in the containers provided for this purpose. Refuse bins will be clearly marked and placed at the entrance to the mining area to encourage workers to use them. Poor control over domestic waste handling could lead to littering the site and dispersed plastics could lead to livestock mortality and reduced visuals. Due to the limited number of people (1-3) anticipated on site, the limited waste stream will have negligible impacts on soils, water quality, vegetation, air quality and humans.

Mine residue

The geology of the area restricts the type of residue to pebbles, small stones, boulders and root mass. The former will be returned to the excavation and be covered with weathered dolerite and topsoil whilst the latter will be stockpiled and worked into the topsoil as organic matter. Since no chemical processes, mineral processing or washing plant is required on site, no chemical/mineral waste or effluent will be generated. Any removed alien trees will be chopped for firewood. Seed-bearing branches must be removed to a waste site or be burned within the pit and covered with adequate subsoil to prevent them from germinating.

The cumulative impact on soils, water quality, stream flow, vegetation, and aesthetics is rated of very low significance.

Sewage system

The sewage system will consist of a pit toilet located amongst the trees to the south-east of the mine area. Due to the limited number of people on site, the effluent stream will be limited to less than 0,1m³ per month and a limited impact in the form of increased coliform counts will be applicable. The pit toilet will be properly maintained and relocated on a six monthly basis to avoid saturation of soils. The lower 35% of the pit will be filled with stone to provide for aeration and breakdown of waste. The toilet cover will be maintained to a proper standard and will regularly be disinfected to prevent accumulation of unwelcome insects and generation of odours. Since the site is not used for crop production or located close to surface, groundwater or humans, a negligible impact is anticipated on soils, groundwater, surface water, air and humans.

Hydrocarbons

No hydrocarbon storage will take place onsite. Servicing of equipment and vehicles would be done off site at the contractors maintenance facilities or at appropriate facilities in East London, therefore minute amounts of hydrocarbon waste such as used oil, lubricants and hydrocarbon-contaminated filters will be generated. Emergency repairs will be done over appropriate drip trays and hydrocarbons will be drained with funnels into appropriate containers. In this process minor spills may occur which will affect soil properties to a limited depth, but will be remedied naturally or with application of fertilizers and the impact is rated of very low significance. Any used hydrocarbons generated during emergency repairs will be removed from site immediately and receptacles for this purpose would be kept in the cabin of the loader/excavator/trucks on a permanent basis. The potential impact on surface or groundwater is insignificant due to the distance and depth thereof respectively.

Since no water is available onsite, no wash bay or oil trap will be constructed as vehicles will be washed off site and all hydrocarbon spills will be contained within large drip pans during emergency repairs.

Salvage yard / Scrap metal

Since the site will not host any quarry plant, there is no need for fitting of spare parts and therefore the amount of scrap metal generated will be very limited and thus no salvage yard will be required. All unusable equipment/machinery parts will be disposed of on a weekly basis at an appropriate recycling facility. The impact on soils, water quality and aesthetics are rated negligible to very low.

At closure, all scrap metal and dysfunctional equipment that might be located onsite, will be sold to a commercial scrap yard. No post closure impact is anticipated.

Impact of waste on environment

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Local	2	Site Specific	1	Site Specific	1
Duration	Short Term	1	Short Term	1	Short Term	1
Intensity	Low	2	Very Low	1	Negligible	0
Probability	Probably	2	Unlikely	1	Unlikely	1
Status	Negative		Negative		Negative	
Confidence	Medium		High		High	
Significance	Very Low	10	Insignificant	3	Insignificant	2

Remedial measures to be implemented

- The pit toilet will be positioned at least 100m away from any stream and will be constructed and maintained according to Municipal Regulations. It will be relocated every six months to prevent saturation of soils and reduce the impact on any potential perched groundwater resources. Previous pits will be filled in, subsoil compacted and topsoil and vegetation reinstated.
- Strict controls will be enforced to ensure that the surrounds are not used as ablution and this aspect will be included in the environmental awareness programme.
- Domestic waste generated ancillary to the mining process will be deposited in containers with scavenger proof lids placed within the quarry. Filled bins will be removed from site to the nearest waste site on a weekly basis and will not be dumped in the veld. Containers will be clearly marked to ensure that they are used for the right purpose. Management will provide clear management guidelines and this aspect will be included in the environmental awareness programme.
- Waste will not be burnt or buried on site.
- Staff will be equipped to distinguish between domestic waste and industrial waste, as well as the handling thereof.
- Pebbles/stones will be returned to the quarry floor and will be used in the profiling of the production faces and will be used to cover weathered dolerite and topsoil.
- No day to day repairs or servicing of vehicles or equipment will take place on site.
- No hydrocarbons will be drained into the soil.
- All hydrocarbon-contaminated material, including soil, will be disposed of at a waste facility and the affected area will be bio-remedied by a specialist, in case of any large spills.
- No washing of vehicles will take place on the property.
- The mine area will be maintained and kept neat on a continuous basis.
- Any unusable scrap metal or dysfunctional machinery on the property will be collected and removed to an approved waste facility on a weekly basis and no storage space will be earmarked for this purpose.
- All non-seed bearing vegetation removed will be used during the rehabilitation phase.
- At closure all remaining weathered dolerite stockpiles will be flattened and reintroduced to disturbed quarry areas.

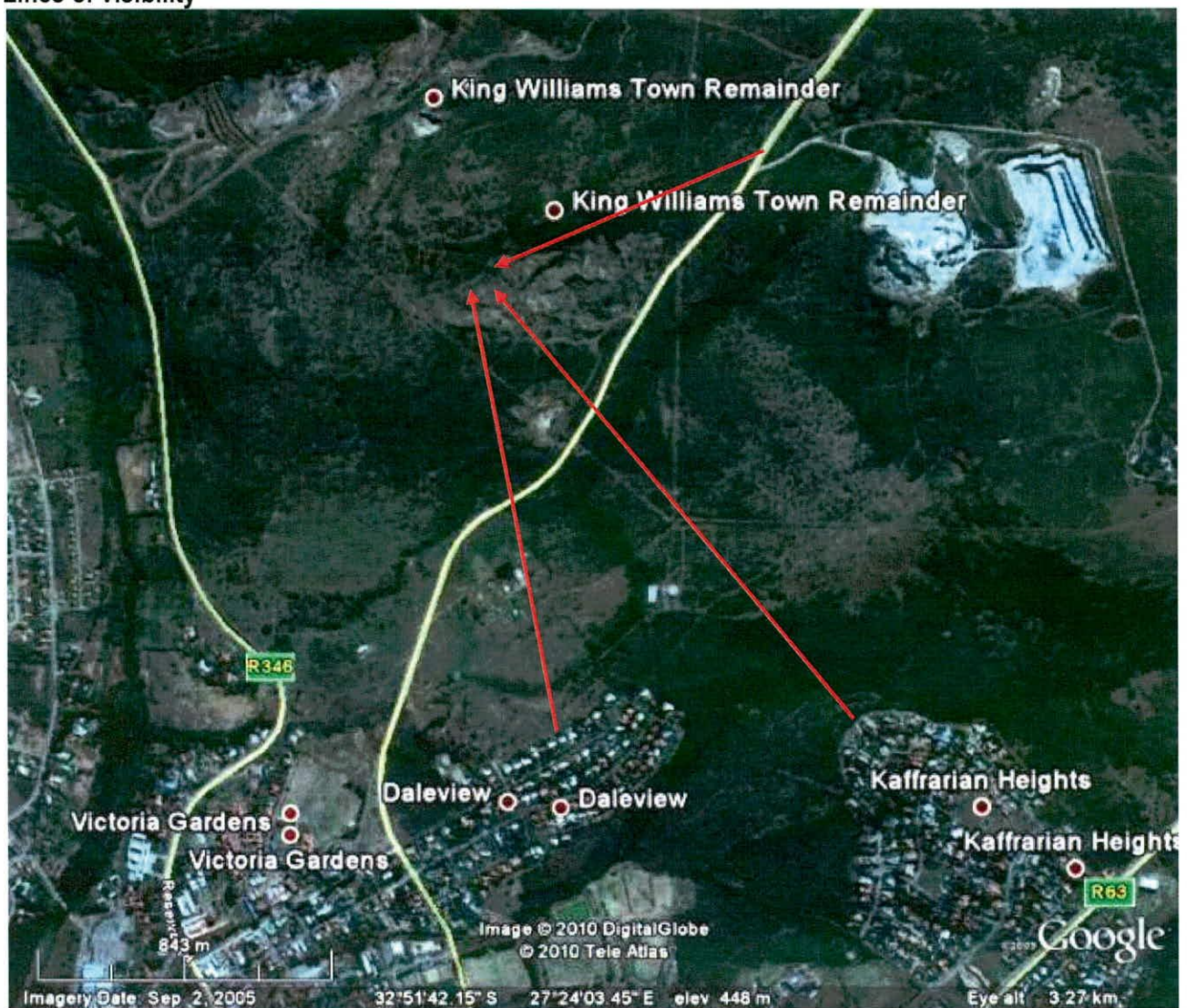
- A general clean up of the property will be done on a weekly basis and before close down at the end of each year.
- The handling of hydrocarbons will be included in an environmental awareness programme to be developed at approval of the EMP.

VISUAL IMPACT AND AESTHETIC ACCEPTABILITY/SETTING

The general landscape to be affected by quarrying can be described as unattractive with very low aesthetic quality because of the high impact of historic and current unauthorized mining by the DRT and Municipality. The mining site *per se* has a low to medium aesthetic quality due to the transformed Savanna type vegetation that it hosts. To the south-west the land displays same Savanna type vegetation that is reasonably intact and has a moderate aesthetic quality. To the east and south the land has been cleared for light industries, residences and pasture areas and dispose of low visual quality. To the immediate north-east and east the land displays poor visual quality due to unrehabilitated mining scars. To the north-west the land displays visuals of moderate quality due to improvement in surface cover and vegetation diversity.

The proposed mining site is located at the western end of a large dolerite hill and causes it to be slightly more visible. However, the elevation difference between the mining area and areas to the immediate east, south and west will cause the mine not to be visible. The mine is only visible from the road tract near Lafarge and residential areas to the south-east due to their elevated locations but the distance of more than 1,2km causes visibility to be very poor. The visual impact of the quarry is therefore rated as of low significance.

Lines of visibility



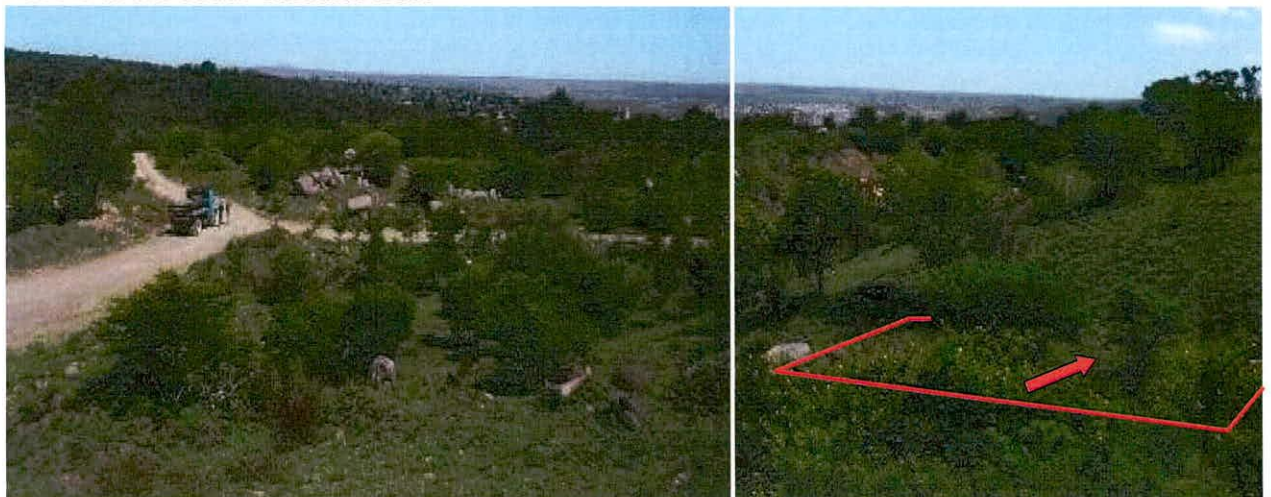
Current onsite visuals of western section of mining area



Current onsite visuals of eastern section of mining area



Visuals to the south-east and west



Visuals to the south-east and east with Lafarge Quarry in background



Visuals over mining area towards south-east with KWT in background



Visuals of current unauthorized mining areas to the north-east of proposed areas





The mine is also not visible from public vantage point. However, the dolerite hill constitutes a high point in the landscape and should therefore be rehabilitated to an adequate standard.

The surrounds does not constitute a tourist destination or vantage point and the development of the quarry will not affect tourism in the area in any way.

Since the concern hosts almost heterogeneous grassland and since it is located on the slope of a hill disturbances will not be absorbed or camouflaged well by the general landscape, as is clearly depicted by the pictorial record of the illegal mining operations. The fact that mining will change the texture (vegetated/smooth to bare/rough) and colour (green to red-brown) of the area, it drastically increase the onsite visuals and aesthetics and must be mitigated through timeous and affective profiling and re-vegetation processes. This impact will be permanent.

No permanent infrastructure will be erected in the mining area. A single stage screen and container office could possibly be established onsite, but these will be positioned at the eastern side of the excavation, reducing any temporary impact effectively. This visual impact is rated insignificant.

Visibility from the air would be high but the significance of the impact will be reduced to low since the site is not close to any airport and at this chainage aircraft flying inland or to the coast would have reached heights that will extensively reduce visual impact. It nevertheless remains important that a phased rehabilitation approach should be followed to ensure that the minimum area is disturbed at any given time and that progressive rehabilitation takes place.

Stockpiles within the quarry would be low and not readily protrude above the original level of the land and will only equal one days' demand. Due to the unrehabilitated quarry areas located to the north-east the cumulative visual impact will increase moderately but distances and topographical screening will cause this impact to be reduced to some extent. Small amounts of dust on the internal haul road will be experienced, resulting in only a limited visual dust plume to hang in the air above the road for short periods. The mining operation *per se* will liberate insignificant dust volumes into the air due to the nature of the mineral and this visual impact is rated of very low significance.

Based on the above assessment the visual impact during mining is rated of moderate (negative) significance, whilst the post closure impact is rated of low-moderate (positive) significance, mostly because of the cumulative impact.

Visual Impact

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Local	2	Site Specific	1	Site Specific	1
Duration	Medium Term	2	Short Term	1	Permanent	4
Intensity	Low	2	Very Low	1	Very Low	1
Probability	Likely	3	Probable	2	Likely	3
Status	Negative		Negative		Positive	
Confidence	Medium		High		High	
Significance	Low	18	Insignificant	6	Low	18

Remedial measures to be implemented are:

- No vegetation clearing will take place outside the proposed mine area with specific reference to the area north-west and south-west of the mine.
- No vehicle movement will be allowed outside the mine boundaries.
- The proposed mine areas will be kept clean and free of litter on a continuous basis. A weekly clean up of the entire site will be done.
- No dumping of waste will be allowed on the property.
- Disturbed areas will be progressively developed and rehabilitated as indicated under 'quarry development'.
- Clearing of vegetation will be restricted to the minimum which is required for optimal mining.
- Mining areas will be re-vegetated to a 40% cover during the first year, 70% at the end of the second year and 80% at end of aftercare period.
- The sides of the quarry will be rounded off through a cut-and-fill action to create a minimum slope of 1:3.
- Cuts will follow curvilinear lines rather than straight geometric lines in order to blend in better with surrounding landscape.
- No erosion of quarry faces will result in any head cuts, gullies or slumping and disturbed areas would be made stable.
- Alien vegetation will be removed on a continuous basis to ensure that established natural vegetation is not outcompeted.
- Dust plumes within the mine area or on the haul road will be eliminated through wetting when required.
- At closure, all disturbed areas would be rehabilitated as per the re-vegetation plan.

TRANSPORT IMPACT

The existing access to Pottinger Street will be used. As there are no residences along this gravel road, no social impact in terms of dust and noise generation is applicable. Line of sight to the north-east and south-west is reasonable and the safety impact is rated of low-moderate significance considering the limited increase in traffic volume (5-10 trips) per day.

The necessary heavy vehicle signage must be erected on both sides of the access to Pottinger Street to sensitize road users on the presence of heavy vehicles on the road. Due to high dust volumes that are generated on the road, the use of flagmen must be considered at the access to increase visibility and reduce the safety impact during periods of high extraction or poor visibility.

The internal gravel road to the quarry has a reasonably good wearing course and therefore do not need to be upgraded in order to reduce dust generation and rutting during wet periods. It will need to be maintained on a regulator basis and this would be responsibility of the applicant. Material for upgrading the road will be obtained from the proposed quarry. Upgrading the road will not impose any environmental impact.

Pottinger Street to King William's Town will be used as haul road to the relevant markets and there are no alternatives available. This road is a single lane road gravel road and is not wide enough for motorists to overtake slow moving haul trucks. It is therefore extremely important that the necessary safety precautions be taken before turning onto this road to prevent hampering traffic flow or causing accidents as this road is extensively used by residents of the rural area to the north-east. Cyclists and pedestrians will experience a slightly higher risk than what is prevalent at this point in time due to the anticipated increase in traffic volume. If the DMR is able to stop the illegal mining on the abutting area, the impact will remain at its current level.

Of importance is that truck drivers must be sensitized on safety procedures and courteous driving and these actions must be extended to any contractor working on site. Since the applicant has been involved with quarrying for some time, it should be in a position to enforce the conditions of the EMP on employees of contractors in order to reduce the safety impact. Contractors to be used dispose of personnel that are well acquainted with transport regulations and quarry operations and drivers would be reasonably skilled in the above regard which should reduce the road safety impact.

Pottinger Road is a major service road to the mentioned rural areas as well as to Lafarge and has been constructed to carry heavy vehicles. The surface of this road is in poor to average condition and display in some areas minor potholes, corrugated areas and edge breaking/subsidence. Cautious driving is therefore a requirement. If loaded correctly, haul trucks should not extensively affect the structural integrity of the road surface. The impact on the road is rated of low significance considering the low contribution of the quarry to the overall freight that will be hauled on this road. The upgrading and maintenance of this road resort under the DRE for the East London region. It remains essential that adequate liaison between the applicant and the DRE will be established in terms of the repair of any section of the road which has been affected by the quarry operation and which could pose a threat to the public. However, it should be recognized that both fuel and license fees include a levy for the repair/upgrading of roads.

In summary, safety risks for motorist, cyclists and pedestrians would increase with the establishment of the quarry and it will impose a low-moderate impact on the structural integrity of the road. Road safety is important to the public and truck drivers must receive the necessary training in this regard and must be sensitized towards displaying proper road etiquette.

Transport Impact

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	District	3	District	3	Local	2
Duration	Medium Term	2	Medium Term	2	Short Term	1
Intensity	Low-Moderate	3	Low	2	Very Low	1
Probability	Likely	3	Likely	3	Probable	2
Status	Negative		Negative		Negative	
Confidence	Medium		High		High	
Significance	Low-Moderate	24	Low	21	Very Low	8

Remedial measures to be implemented are:

- All vehicles will be properly maintained in accordance with Eastern Cape Roads Act 3 of 2003.
- All drivers will display the necessary road etiquette and dispose over applicable drivers licenses which will be included in the environmental awareness programme.

- Vehicles accessing Pottinger Street will come to a complete stop before accessing the road and any transgressions in this regard will be heavily penalized through a disciplinary process. All vehicles visiting the quarry shall be road worthy and will be included in the agreement with any contractor. Overloading will not be permitted. Speeding will be prohibited and drivers will be penalized should it be proved that this requirement has been contravened. All contractors will sign a letter of agreement to this effect.
- Hauling of material will only commence at 07:30 and cease at 17:30
- During periods of poor visibility or adverse climatic conditions, flagmen will be used at the access.
- The appropriate signage (W107 & W108 –1,2m size) will be erected on both sides, 150m from the access to Pottinger Street. Lights of vehicles shall be turned on when carting material, especially during periods of poor visibility.
- The District Roads Engineer will be consulted on the maintenance of the access.
- The internal gravel haul road will be maintained to an acceptable standard with weathered dolerite to prevent rutting and maintain safety standards. This road will be protected by mitre drains and where applicable, side drains.

SOCIO -ECONOMIC IMPACT

Weathered Dolerite/Sabunga, as filling and road construction material is currently in high demand in King William's Town due to various large Government and Municipal projects taking place in the city and surrounding rural areas and the establishment of the quarry will therefore be able to contribute to growth of the mentioned areas. Improvement of infrastructure is a priority area of Government and the quarry would be able to support this initiative. Currently there is no legal weathered dolerite quarries in King William's Town and establishing the concern will also tend to reduce illegal mining, which currently results in major environmental degradation in abutting areas.

The quarry will result in at least three job opportunities and must therefore be seen as a low but positive social impact. Establishing the concern will also result in establishing certain downstream employment in the building/construction industry, but will also positively impact on the financial security of Lolo & Lolo CC. Since the applicant will enter into a surface use agreement with the landowner, the Municipality will also benefit from the mining venture and would be able to direct these funds to appropriate Municipal projects.

The establishment of the concern will have no impact on agricultural activities as the site is not dedicated towards crop production or stock farming. As it is the intention to rehabilitate the site as mining progresses, the land capability will be restored for future grazing purposes and therefore no permanent impact will be recorded if the principles of the EMP are recorded. Due to the distances to abutting residences and low dust and noise levels associated with this type of operation, the concern will not pose any social impacts.

The site will impose a cumulative visual impact to residential areas located at higher altitude and the 'sense of place' may over the short term be affected substantially by increased onsite visual disturbance and limited dust and noise pollution. However, if the mitigation measures prescribed in the EMP are followed the impact would be largely reduced and of temporary nature.

Due to the distance to other properties, property values will not be affected since the site is surrounded by Municipal land.

Since operational hours will be restricted to daytime, light and noise pollution at night is not a consideration. Based on the above, the overall social-economic impact is rated positive.

Socio-economic Impact

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	District	3	District	3	Local	2
Duration	Short Term	1	Short Term	1	Short Term	1
Intensity	Very Low	1	Low	2	Very Low	1
Probability	Likely	3	Definite	4	Probable	2
Status	Positive		Positive		Negative (loss of income, availability of material and impact on roads)	
Confidence	Medium		High		High	
Significance	Very Low	15	Low-Moderate	24	Very Low	8

Remedial measures

Those discussed under previous headings

SITES AND STRUCTURES OF ARCHAEOLOGICAL AND CULTURAL INTEREST

These sites represent the heritage of communities and are therefore protected in terms of current legislation. In addition all material/buildings older than 60 years are protected. There is no known heritage or cultural sites close to the study area. No areas of social, cultural or historic value were identified onsite and the impact is rated insignificant in this regard. Nevertheless, the operator of the excavator/loader should be briefed regarding this aspect to ensure that he is in a position to identify objects of interest. Considering the doleritic deposit it is not anticipated to find any fossils in the area.

Considering the type of vegetation onsite, it is doubtful whether local communities will use any of it for medicinal purposes and the impact is rated of low significance. However, various people historically inhabited the study area and it is therefore possible that artefacts and sites of archaeological importance could be identified onsite. Although no impact is envisaged, the operators of earthmoving equipment will be informed of the company's obligation in this regard and to inform management when anything of interest is noted on the site. Staff and any contractor performing mining activities will be sensitised on the potential impact and what they should be able to recognise, with emphasis on graves, skeletons or fragments thereof, pottery, stone-age tools (weapons, grindstones, etc), middens and grain storage pits. Dr. Binneman at the Albany Museum in Grahamstown and SAHRA office in East London will immediately be contacted if any object of importance is observed and all operations would be suspended immediately. Any such site will be fenced off.

SES was not appointed to submit a phase 1 HEIA.

PUBLIC PARTICIPATION

The setting of the land concerned is rural and form part of King William's Town Commonage and surrounds display very sparse population density. Current legislation (section 27(5) of the MPRDA) requires that interested and affected parties will be consulted and as part of the public participation process.

Consultation with interested and affected parties

The following consultation process was/will be followed:

- SES was not tasked to conduct the process and the applicant completed it and submitted the outcome thereof to the DMR in terms of section 27(5) of the MPRDA.
- The DMR will consult with the Departments of Water Affairs, Agriculture and Environmental Affairs.
- At closure, the abutting landowners and affected departments will be consulted on the end result of rehabilitation.

Considering the setting of the Lolo & Lolo quarry is the closest residential areas 1,1km from the site, no significant social impact is anticipated.

CONCLUSION: IMPACT ASSESSMENT

The proposed quarry can be developed in a sustainable manner, provided that the following requirements are met:

1. A phased development and rehabilitation approach must be followed and should the applicant not be able to rehabilitate phase 1 effectively at completion of mining phase 2, operations at the quarry must temporarily cease to complete outstanding rehabilitation.
 2. The north-western production face must be benched and protected by means of effective cut-off berm and proper vegetation cover.
 3. The site must be aligned with excavations to the north-east.
 4. The applicant and the Department of Mineral Resources must provide for adequate monitoring and aftercare.
- B. The proposed quarry can meaningfully contribute to the building industry and economic growth of King William's Town and may contribute towards reducing illegal mining on the property. The DMR must immediately ensure that existing illegal operations are stopped and rehabilitation aligned with that of the proposed quarry, failing which the proposed rehabilitation plan would serve no purpose.

Due to the scarcity of legal Sabunga/Weathered Dolerite concerns, pricing is good and will cause the quarry to be financially sustainable, which in turn would provide ample finances for the rehabilitation process.

- C. It is recommended that the applicant be granted the mining permit considering the extensive disturbances already occurring onsite.

UNDERTAKING: IMPACT ASSESSMENT

I, F. Sikolobo on behalf of Lolo & Lolo, declare that the above information in my opinion is true, complete and correct. I undertake to implement the measures at the quarry as described in all sections of this document. I understand that this undertaking is legally binding and that failure to give effect hereto will render me liable for prosecution in terms of Section 98 (b) and 99 (1)(g) of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). I am also aware that the Regional Manager may, at any time but after consultation with myself, make such changes to this plan, as he/she may deem necessary.

Signed on April 2010

.....
Signature of applicant

FINANCIAL PROVISION

The amount calculated is required for the rehabilitation of environmental damage which will be caused by the proposed mining development and makes provision for premature closure and worst-case scenario. This amount reflects the cost, should the Department have to rehabilitate the area disturbed in case of liquidation or abscondence of the holder.

Analysis of rehabilitation costs: Private rates

General

Tendering process & advertisement = **R2,000**

Transport of equipment = **R2,000**

Supervision fees and reporting = **R8,000**

Aftercare – erosion, alien eradication, seeding/planting and monitoring = **R8,000**

Closure documents = **R5,000**

Contingencies = **R8,000**

Sub-Total 1 = R33,000

Mine area

Cut and fill of production faces: 3240m³ @ R11/ m³ = **R35000**

Profiling of quarry floor = **R4,000**

Seeding and fertilising of 1,5ha –@ R2000 per ha = **R3,000**

Removal of waste, scrap metal and redundant equipment etc = **R1000**

Spreading topsoil: 4500 m³ & R8/ m³ = **R36000**

Infill and erosion control if heavy precipitation causes damage to production faces and quarry floor= **R6,000**.

Stashing oversize material against base of production faces = **R3,000**

Sub-Total 2 = R88000

Total = R121000

The applicant proposes to submit a guarantee to the value of R30 000 to the DMR before approval. It is further proposed that the applicant submit three additional payments of R30 000 every 8 months. Should the applicant rehabilitate each phase concurrently with mining of the ensuing phase, it is proposed that the additional payments are reduced to R15 000 each.

MONITORING AND PERFORMANCE ASSESSMENT

Performance assessments are required in terms of Regulation 55 of the MPRDA 29 of 2002 and the purpose is to ensure that the conditions of the letter of approval and the approved EMP are implemented during the lifecycle of the mine. Assessments are required biannually when low extraction rates and minor environmental risks are applicable. The particular setting of the quarry on a steep hill slope might require an annual assessment, but this decision would rest with DMR in conjunction with the applicant.

Inspections and monitoring

- Regular monitoring of all the environmental management parameters and implementation of measures will take place and the holder of the mining permit shall carry out certain components thereof to ensure that the provisions of this programme are adhered to.
- Ongoing and regular reporting on the progress of implementation of this programme will be done.
- Various compliance areas will be identified with regard to the more important impacts that the operations will have on the environment.
- Inspections and monitoring shall be carried out on a regular basis with specific emphasis on profiling of disturbed areas, re-vegetation progress, prevention of soil erosion and prevention of alien vegetation proliferation.

Compliance reporting / submission of information

- Layout plans will be updated annually or when mining operations change drastically and updated copies will be submitted to the DMR.
- Any environmental emergency/accident will immediately be reported to DMR and where applicable, to DWAF/DEDEA.
- Should the assessment of environmental impacts in future be proved incorrect or should impacts have been unknown when the programme was compiled, then additional assessments shall be carried out and added as an amendment and where applicable, a second opinion will be sought.
- All environmental hazards, unforeseen impacts identified, pollution incidents or environmental failures will immediately be reported to the DMR and other relevant Departments.
- An annual/bi-annual performance assessment will be compiled and submitted to the DMR in April for evaluation and acceptance.
- When extraction is nearing completion, a closure program will be compiled to ensure that rehabilitation will be completed as per the EMP and applicable environmental legislation.
- A final performance assessment report will be submitted at closure, to ensure that all potential impacts are covered, that procedures followed were in line with the conditions of the management plan and that rehabilitation has been completed in accordance to the management plan. Should any major shortcomings be detected, an amendment to the EMP/closure plan will be drafted and submitted for approval by the DMR.

The following site specific monitoring will be executed:

- The mine manager/responsible person shall compile an environmental monitoring checklist of applicable management criteria/conditions and will audit the concern on a monthly basis. It should be in line with environmental matters addressed in the EMP. Poor performance will be discussed with workers and supervisor and time frames will be set for rectifying such shortcomings.
- The mining/rehabilitation activities will regularly be visited by the holder/manager to ensure that mining takes place within approved boundaries, that production faces are profiled and stabilized, vegetated and fertilised and that no erosion or dumping of waste on unauthorised areas are taking place on site.

- That vegetation cover and species diversity are adequate.
- The minimum vegetation is removed ahead of the mining face.
- That alien vegetation is removed.
- That the handling of hydrocarbons is performed according to approved guidelines and that the necessary precautionary measures for spills are adequate.
- General waste is handled correctly and is effectively removed from the property.
- Dust control on the roads and at the quarry is effective to limit air pollution.
- That the mine is clean and tidy.
- Should any remedial measures fail, it will be adapted to suit circumstances or alternatives would be found in conjunction with the officials in affected Departments or with private experts.
- An environmental awareness programme will be introduced to make employees and contractors, if any, aware of EMP requirements.
- Should serious environmental misconduct by workers occur, the specific activity would cease until the problem has been remedied and disciplinary actions and financial penalties, where applicable, will be imposed.
- Storm water control structures are built and maintained according to specification.
- The north-western western slope remains intact at all times
- Benches remain stable and are drained safely.
- The north-eastern side of quarry is aligned with unauthorized mined out areas.

REHABILITATION: TIME FRAMES

Time frames for certain activities were discussed in the document, therefore the following general guidelines will be provided.

Quarry

1. Construction of north-western cut-off berm, if necessary – within 1 month after mining commenced.
2. Profiling of floor, north-western and north-eastern face of phase 1 – continuous with mining of phase 2 and be profiled within 6 months, vegetated within 12 months and fully rehabilitated within 24 months.
3. Profiling of south-eastern and north-eastern faces of phase 2 – continuous with mining of phase 3 and be profiled within 6 months, vegetated within 12 months and fully rehabilitated within 24 months.
4. Profiling of floor, south-eastern and north-western faces of phase 3 within 6 months, vegetated within 12 months and fully rehabilitated within 24 months.
5. Stashing of oversize boulders or sub-standard material, if any, against north-western production faces – monthly
6. Re-vegetation of phase 1 and profiling of phase 2 will be completed before commencement of phase 3. Rehabilitation of the entire area will be completed within 2 year after mining in phase 3 ceased.
7. Construction of contours on the quarry floor, if needed, within one month after mining has been terminated in a particular phase.
8. Remove remaining waste and scrap metal within 2 months after mining has been terminated.
9. Submit a closure plan & risk assessment three months before mining operations are to cease.
10. Aftercare/maintenance – One year after the area has been fully rehabilitated.

General

1. Quarterly eradication of alien vegetation until closure certificate is issued.
2. Light application of fertilizers in February and September for duration of mining, rehabilitation and aftercare phases.
3. Infill planting late in September to early March.

CLOSURE OBJECTIVES

Closure objectives will be based on the following:

1. identify the key objectives for mine closure to guide the project design, development and management of environmental objectives;
 2. provide broad future land use objective(s) for the site; and
 3. provide proposed closure cost
- At closure all stockpiles, infrastructure and equipment will be removed. Residue deposits will be returned to the excavation and will be used to profile the sides of the excavation.
 - All waste will be removed to a registered waste facility and scrap metal will be sold off to a recycling company.
 - Hydrocarbons and contaminated soil, if any, will be safely removed from site.
 - Production faces at the quarry will be profiled to either a 1:2 and 1: 3 slope by cut & fill method with the top edge rounded off to create a flowing landscape.
 - The quarry floor will be profiled and levelled and shall be free draining towards the east. Post mining topography will as far as possible be aligned with the natural topography of the area.
 - Faces will be profiled in such a manner that soft lines are created and sharp corners are prevented in order to blend in the quarry with surrounding fluvial landscape.
 - Safe drainage of the area must be restored.
 - The sides, benches and floor will be provided with topsoil, ripped, fertilised and seeded to ensure that soils are stabilised with at least an 80% vegetation cover at closure.
 - The re-vegetated areas will display adequate species diversity and revert back to a functional grazing unit with appropriate infill planting.
 - Animals must be able to safely return to the site.
 - The internal access road will be retained for use by the landowner, but will be protected against erosion.
 - No erosion of the production faces may take place and the cut-off berm above the north-western face must remain in place and be maintained to an acceptable standard until closure has been obtained. Spill areas shall be protected with the correct anti-erosion structures.
 - The mine will not become a dumping area.
 - Alien vegetation will not degrade existing vegetation or the aesthetics of the area.
 - Surface and ground water quality will be maintained. The floor of the quarry may not be eroded and the necessary erosion control structures must be put in place.
 - The current poor aesthetics must be improved through a dedicated vegetation programme.
 - A sustainable land-use will be achieved within 2 years after rehabilitation has been completed.
 - Abutting landowners will not be subjected to any post closure social impact.

CONTENTS OF CLOSURE PLAN

Closure would be affected by the submission of the following documents to the DMR 60 days before cessation of mining activities.

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

The end-state of the mining area would be consulted with interested and affected parties in terms of Regulation 52(2)(g).

The holder of the permit will be liable for any environmental damage or degradation emanating from its operation, until a closure certificate has been issued in terms of Section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).

AFTERCARE

It is anticipated that the following aftercare will be provided over one year:

- Vegetation cover – reseed bare areas – September to March.
- Stability of production faces, especially western face – Reshape affected areas, compact - May to August - Seeding done from September to March.
- Eradication of alien vegetation – Quarterly.
- Ensure that all silt transport is minimal through maintaining proper surface cover and that clean water is directed around the affected area – Maintain diversion berm to an acceptable standard.

POST CLOSURE MAINTENANCE

It is anticipated that the site will be completely rehabilitated but heavy rain events, veld fires or drought could moderately affect the slope areas or vegetation cover. It is anticipated that post closure maintenance will be restricted to eradication of invasive vegetation, addressing erosion problems, reseeded of such affected areas and addressing face stability. In order to provide the necessary funds for these tasks, the following guarantee needs to be secured:

Eradication of invasive vegetation = R2000 per annum	= R2 000
Addressing erosion/stability problems = R8 000 per annum	= R16000
Re-vegetation and fertilizing of affected areas = R2000 per annum	=R4000

Total = R22 000

POST CLOSURE AESTHETIC ACCEPTABILITY

The quarry area will resemble a rectangular, benched depression at the foot of the south-eastern aspect of a large dolerite hill. The north-western and south-western production faces will be stepped and profiled to blend in with the surrounding landscape. The quarry floor will be almost flat and aligned with the landscape to the east. The post closure landform presented by the vegetated box-cut will, however, be clearly noticeable. Until the vegetation cover has reached maturity. From an aesthetic point of view the landscape will have a slightly poorer aesthetic quality due to the change in landform and almost homogenous vegetation cover. At closure the site will dispose of an acceptable grass cover with limited infill planting to link the mine area with the vegetation community to the west and the aesthetic acceptability would be good, especially considering the fact that the site is not readily visible from most tracts of the gravel road. Soils of the mine area will be stable and erosion free and the north-western slope will remain stable. The area will be turned into a productive grazing unit available future communal grazing.

LEGAL PROVISIONS

Compliance with the provisions of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) and its Regulations does not necessarily guarantee that the holder is in compliance with other Regulations and legislation. Other legislation that will be observed includes, but is not limited to:

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

I, F. Sikolobo on behalf of Stutt Quarries, take cognisance of the following penalties should I transgress any section of the MPRDA or any other Act governing any other activity on the quarry site or any condition of the EMP and will abide thereby.

Section of Act	Penalties for failure to comply with the provisions of the MPRDA 28 of 2004	Penalty in terms of Section 99
5(4)	No person may prospect, mine, or undertake reconnaissance operations or any other activity without an approved EMP, right, permit or permission or without notifying land owner	R 100 000 or two years imprisonment or both
19	Holder of a Prospecting right must: lodge right with Mining Titles Office within 30 days; commence with prospecting within 120 days, comply with terms and conditions of prospecting right, continuously and actively conduct prospecting operations; comply with requirements of approved EMP, pay prospecting fees and royalties	R 100 000 or two years imprisonment or both
20(2)	Holder of prospecting right must obtain Minister's permission to remove any mineral or bulk samples	R 100 000 or two years imprisonment or both
Section of Act	Legislated Activity/ Instruction/ Responsibility or failure to comply	Penalty in terms of Section 99
26(3)	A person who intends to beneficiate any mineral mined in SA outside the borders of SA may only do so after notifying the Minister in writing and after consultation with the Minister.	R 500 000 for each day of contravention
28	Holder of a mining right or permit must keep records of operations and financial records AND must submit to the DG: monthly returns, annual financial report and a report detailing compliance with social & labour plan and charter	R 100 000 or two years imprisonment or both
29	Minister may direct owner of land or holder/applicant of permit/right to submit data or information	R 10 000
38(1)(c)	Holder of permission/permit/right MUST manage environmental impacts according to EMP and as ongoing part of the operations	R 500 000 or ten years imprisonment or both.
42(1)	Residue stockpiles must be managed in prescribed manner on a site demarcated in the EMP	A fine or imprisonment of up to six months or both
42(2)	No person may temporarily or permanently deposit residue on any other site than that demarcated and indicated in the EMP	A fine or imprisonment of up to six months or both
44	When any permit/right/permission lapses, the holder may not remove or demolish buildings, which may not be demolished in	Penalty that may be imposed by Magistrate's

	terms of any other law, which has been identified by the Minister or which is to be retained by agreement with the landowner.	Court for similar offence
92	Authorised persons may enter mining sites and require holder of permit to produce documents/ reports/ or any material deemed necessary for inspection	Penalty as may be imposed for perjury
94	No person may obstruct or hinder an authorised person in the performance of their duties or powers under the Act.	Penalty as may be imposed for perjury
95	Holder of a permit/right may not subject employees to occupational detriment on account of employee disclosing evidence or information to authorised person (official)	Penalty as may be imposed for perjury
All sections	Inaccurate, incorrect or misleading information	A fine or imprisonment of up to six months or both
All sections	Failure to comply with any directive, notice, suspension, order, instruction, or condition issued	A fine or imprisonment of up to six months or both

ACKNOWLEDGEMENTS

Department of Water Affairs – Environmental Data.
 Amatola District Municipality – Amatola Environmental Plan.
 Department of Environmental Affairs and Tourism: National Biodeversity Strategy and Action Plan.
 : EMPAT.

Musina & Rutherfordb – Vegetation analysis.
 SANBI – Environmental data.
 Council for Geoscience

UNDERTAKING

I, F. Sikolobo on behalf of Lolo & Lolo, the undersigned, have studied and understand the contents of this document in its entirety and hereby duly undertake to adhere to the conditions as set out therein, including the conditions of approval as stipulated by the Regional Manager.

Signed in East London on April 2010.

.....
Signature of applicant

APPROVAL

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

Signed at Port Elizabeth on this..... day of.....2010.

.....
**REGIONAL MANAGER
EASTERN CAPE**

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