



STELLENRYCK ENVIRONMENTAL SOLUTIONS

# ENVIRONMENTAL MANAGEMENT PLAN



**PREPARED FOR:**

***SA LIME (PEDDIE)***

***P O BOX 12665***

***CENTRAHILL***

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***6006***

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## CONTENTS

Personal Particulars of the Applicant .....	4
Land Description / Information .....	5
Regional Setting.....	5
Surface Infrastructure .....	7
Mine .....	7
Presence of servitudes.....	8
Existing land uses that impact on the environment in/outside the proposed mining area .....	8
Name of the river catchment in which the quarry is situated. ....	9
Zoning .....	10
Project Description .....	10
Mineral Deposit & Mine Product.....	10
Estimate reserves.....	10
Prospecting/Alternative.....	11
Mining methodology .....	11
Technical- and Financial Competency .....	19
Environmental competency .....	20
Regional Climate .....	20
Rainfall.....	21
Temperature .....	22
Wind Regimes.....	22
Pre-Mining Environment, Environmental Impact Assessment & Management Plan .....	23
Environmental Impact Assessment .....	23
Topography .....	25
Geology .....	28
Soils .....	30
Land Use and Land Capability.....	40
Flora.....	43
Fauna.....	50
Water.....	55

Surface Water .....	55
Groundwater .....	57
Air Quality.....	60
Noise.....	64
Waste Generation and Management.....	67
Building rubble.....	67
Industrial waste .....	67
Domestic waste .....	67
Mine Residue .....	68
Sewage system .....	68
Hydrocarbons .....	68
Salvage Yard / Scrap Metal .....	69
Visual Impact and Aesthetic Acceptability .....	72
Transport Impact.....	76
Socio -Economic Impact .....	80
Sites and structures of archaeological and cultural interest .....	82
Public Participation .....	82
Conclusion .....	83
Financial Provision .....	83
Undertaking: Impact Assessment .....	85
Monitoring and Performance Assessment .....	85
Inspections and monitoring.....	85
Compliance Reporting / Submission of Information .....	85
Rehabilitation Schedule.....	87
General .....	87
Closure Objectives .....	87
Aftercare.....	88
Post Closure Maintenance .....	88
Post Closure Aesthetic Acceptability .....	88
Legal Provisions .....	89
Undertaking .....	91

Approval ..... 91

Appendix A: Mine Map ..... 92

Appendix B: Interested and Affected Party Consultation ..... 93

Appendix C: Financial and Technical..... 158

Appendix D: Archaeology Report..... 162

APPLICANT AND SURFACE OWNER

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SA Lime (Peddie) Pty Ltd  
P O Box 12665  
Centrahill  
Port Elizabeth  
6006

MINE MANAGER

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P O Box 12665  
Centrahill  
Port Elizabeth  
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Cell: 082 881 1119

email: [henke@salime.biz](mailto:henke@salime.biz)

TITLE DEED DESCRIPTION

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Portion 17 of the farm Lombards Post 289, Bathurst - T 026030/10

Remainder of the farm Lombards Post 289, Bathurst - T13081/95

SURFACE OWNERS

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Portion 17 of the farm Lombards Post 289: The Trustees of Woodlands Property Trust (IT 196/2009);

Remainder of the farm Lombards Post 289: P.N. Keeton (ID 5101205013080)

## REGIONAL SETTING

The proposed quarry is situated in the magisterial district of Bathurst and is under control of the Indlambe Municipality. The quarry is situated approximately 14.5m north-east of Kenton-on-sea and 400m north-east of one of the landowners, Mr Keeton's residence and 3km north-west from the other landowner, Mr Skirk. There is a power line that is not situated on the mining site, but runs about 80m north-east from the site. There are no telephone lines at the site. The gravel road is 150m east from the proposed mining site and will provide access to the site. This gravel road links up with the Southwell DR01969 gravel road about 500m north-east of the site, which will be used to gain access to the market. The site is situated in a rural area surrounded by farms.

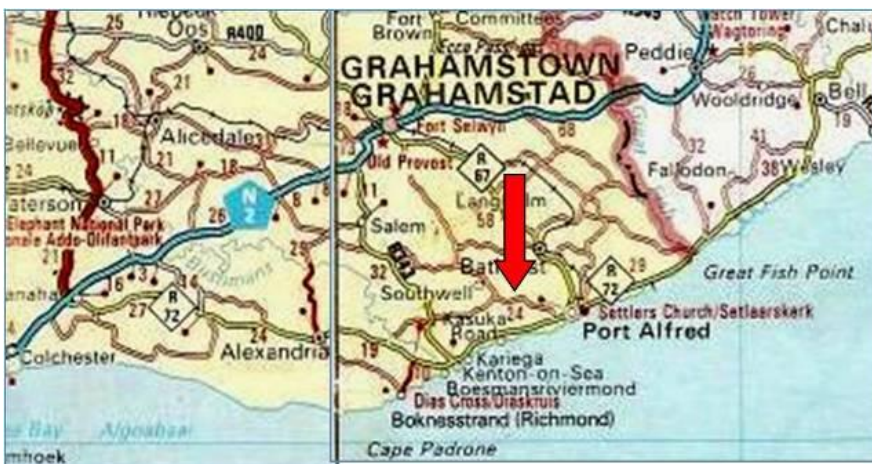
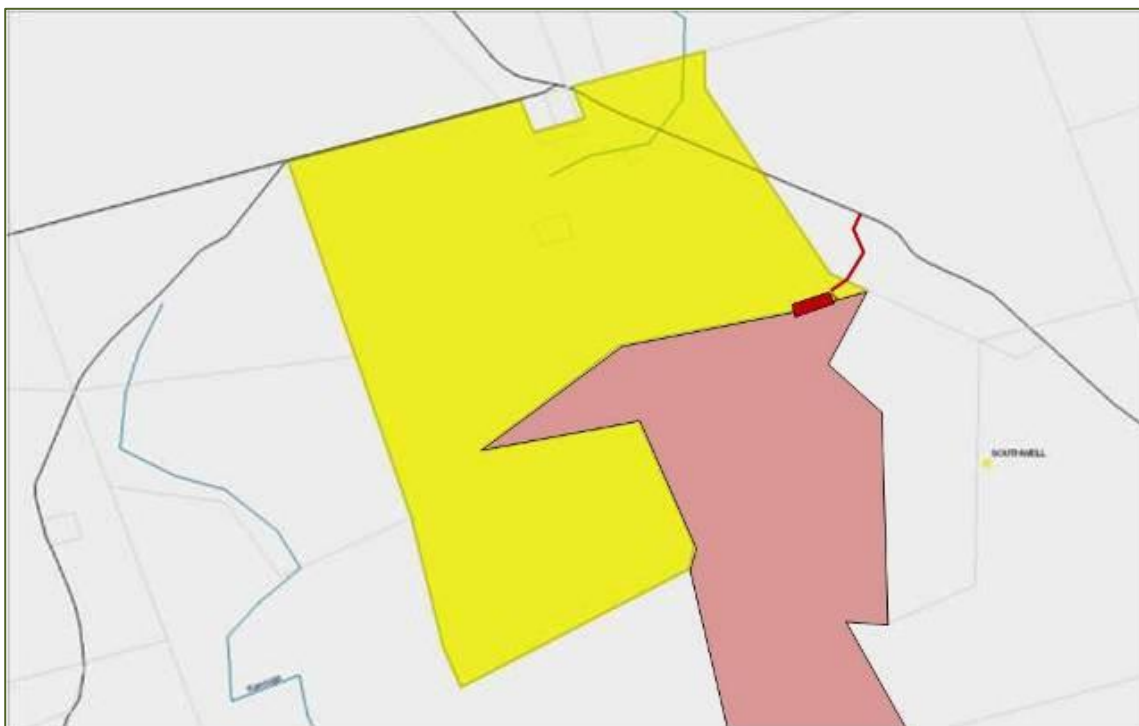


Figure 1: Locality map



**Figure 2: Locality of mine area in relation to property boundaries, roads and rivers**

### SURROUNDING AREAS

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The surrounding area to the mining site is farm land. Immediately south to the site an area of about 1.5Ha was mined without authorisation. This area that was previously mined illegally was not rehabilitated and was left as an open mining scar, with steep inclines and little vegetation cover.

At the site there are no overheads on the mining site, but about 80m north-east from the site and Eskom servitude is situated providing a power link to the abandoned crusher, used previously during mining. The rest of the surrounding areas were cleared to establish grazing units and crop production units. The grazing units have thick grass cover and are in a good condition, likewise at the proposed quarry area.

About 160m south-east of the site a neighbour is residing. About 130m north-east of the site another neighbour resides. Mr Keeton's house, one of the landowners, is about 400m south-west from the site.

### MINE

There is an existing access to the limestone deposit; the gravel road is 150m east from the proposed mining site and links up with the Southwell DR01969 gravel road, about 500m north-east of the site. The existing road is of average to poor standard and is also used by other farmers and will experience an additional impact on structural integrity and the applicant will have to contribute to the maintenance of this road.

The proposed site is divided over two properties, which is separated with a boundary fence. The southern half of the propose site is situated on Mr. Keeton's farm and the northern section is situated on Mr. Stirk's farm. The site is also situated on a grazing unit which has further been divided into camps and is fenced with a gate that secures the site and camps. If water is required for rehabilitation purposes it will be drawn from one of the landowners boreholes, but prior agreement and compensation must first be reached with the landowner. No labour accommodation or campsite will be established on site.



No offices will be built and a chemical toilet will be brought to site, which will be used by workers at the mine area to prevent the surrounds being used for ablutions. There is a current abandoned crushing plant north-east from the site that may be used for crushing.

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#### PRESENCE OF SERVITUDES

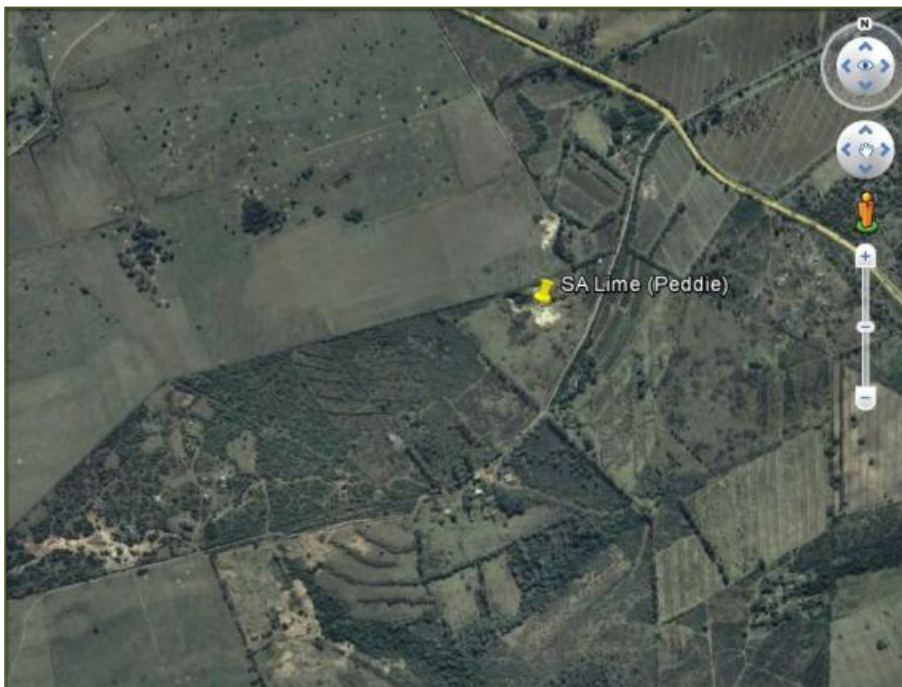
There is a trig beacon/height marker situated on the site. An Eskom power line is not situated onsite, but runs about 80m north-east from the site, providing a power link to the abandon crushing plant. There are no telephone lines at the site and the gravel road is 150m east from the proposed mining site.

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#### EXISTING LAND USES THAT IMPACT ON THE ENVIRONMENT IN/OUTSIDE THE PROPOSED MINING AREA

- Transformation of land through bush clearing to establish grazing units, causing medium loss of terrestrial ecological integrity.
- Spread of invasive vegetation.
- Transformation of land through illegal limestone mining, causing medium-low loss of terrestrial ecological integrity.

Most of the areas immediately surrounding the mine site are transformed due to activities listed above. As the picture below indicates, vast areas have been cleared to establish grazing units (northern sections and the immediate surrounding area of the mine). Also note the crop lands east of the mining site and the fairly intact bush area to the west of the site.



**Figure 3: Surrounding area of mining site**

The area west of the site has not been cleared for establishing grazing units and some of the original vegetation is still intact, however alien species and thorn trees also occurs.

Through the proposed mining process, the applicant will ensure that the affected land is rehabilitated properly and restored to a properly grazing functional unit. The mine area will be limited to 1,5 Ha.

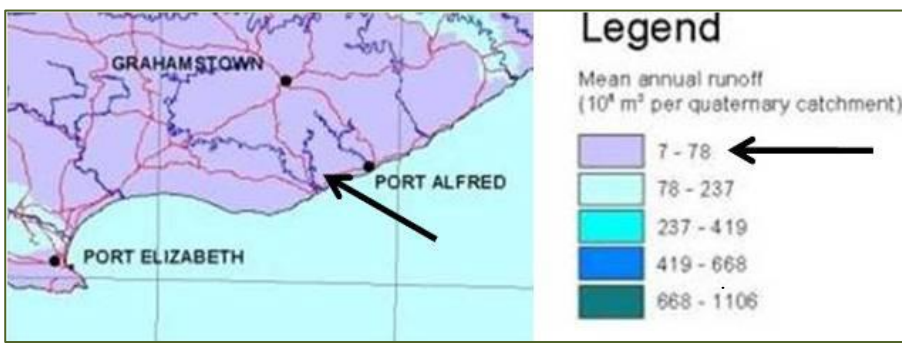
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NAME OF THE RIVER CATCHMENT IN WHICH THE QUARRY IS SITUATED.

The development site falls within the Bushmans River catchment.



**Figure 4: Bushmans River Catchment area**



**Figure 5: Catchment runoff**

The Bushmans River catchment area receives between  $7-78 \times 10^5 \text{ m}^2$  mean annual runoff.

## ZONING

Current zoning is agriculture and since mining is seen to be a temporary change of land use, no application for change of land use in terms of LUPO is required. In this regard, the repealed Minerals Act 50 of 1991 and the current MPRDA 28 of 2002 has replaced the provisions of the Physical Planning Act.

## PROJECT DESCRIPTION

The proposed quarry will be a private concern licensed by the Department of Mineral Resources. Material would be extracted by means of excavator to a depth of approximately 3-10m. Mining will commence as per mine development plan and will be executed in 3 phases. Material will be crushed and carted to markets.

## MINERAL DEPOSIT & MINE PRODUCT

Limestone

## ESTIMATE RESERVES

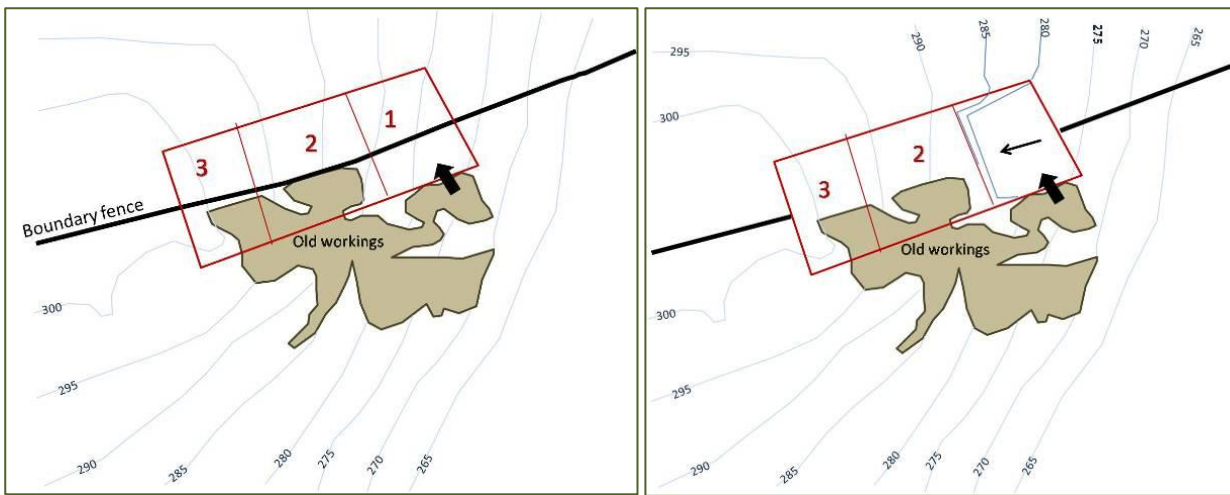
The potential of 50 000 – 100 000 cubic meters of limestone would be extracted with an average production rate of approximately between 2500 - 4500 cubic meters (loose) per month, over a period of approximately 22 months.

The area south of the proposed site has already been extensively explored by illegal mining. The site provided for a substantial amount of limestone material. These illegal mining activities are indicative of the mining potential of the area and the adequacy/quality of limestone reserves, which in turn proves the economic sustainability of the project. The study area hosts the same quality material that is found on the previously mined area. This information negates the need for prospecting results to motivate the proposed venture.

#### MINING METHODOLOGY

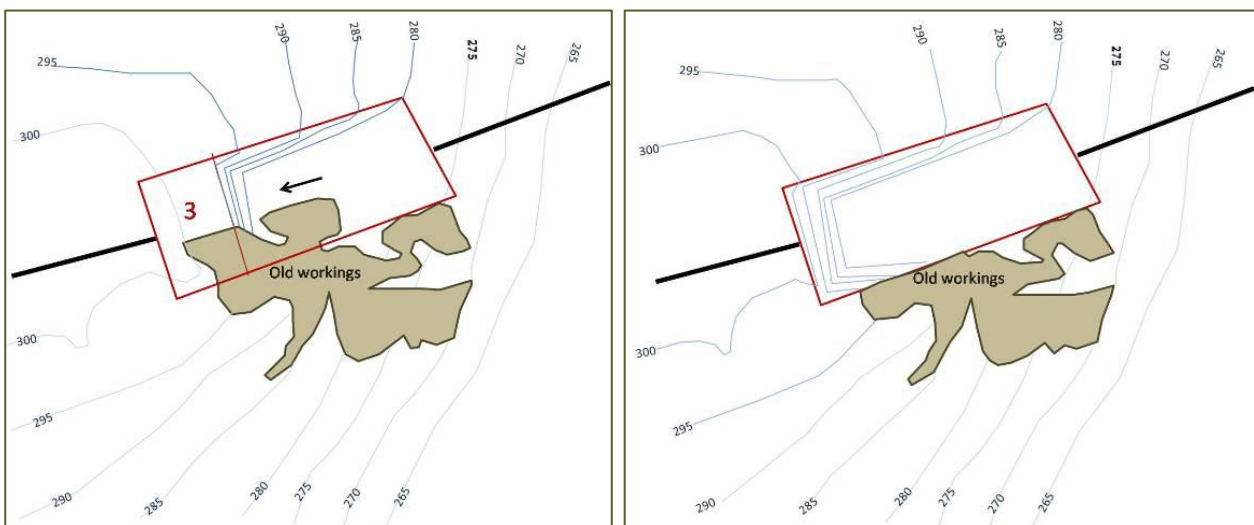
The total mine area comprises 1.5Ha and will be developed using conventional open cast slot mining method and no blasting will be allowed. An excavator will be used for this purpose. Extracted material will be hauled to the bin of the secondary crusher/impactor and reduced to fines and small calcrete chips. This material will be conveyed to the screen and a fines and chip surge pile will be established. From here the material will be loaded with front-end loader on a 5-12 cubic meter truck for dispatch to identified markets.

Mining will be done in three phases as depicted on the mine plan and will overall commence from the east and extended towards the west and north-north-west. Mining would start in phase 1, in a northerly direction gaining access to the site from the existing quarry. Phase 1 will open the excavation by leveling the quarry floor to the 280m contour level and creating a 5m high bench on the western boundary of Phase 1 that will extend towards Phase 2. As phase 2 is developed, two 5m high benches will be developed due to the topography. A silt dam of about 1.5m deep must be established in the south-east corner of phase 1, prior to developing phase 2.



**Figure 6: Mining will commence in Phase 1 initially in a northerly direction, opening the excavation floor and thereafter advancing the quarry face into a westerly direction.**

Phase 2 will entail enlarging the quarry floor to the same level (280m contour level), extending the contours as the mining progress and thus preparing the site for the bench development to follow in phase 3. The final profile shape objective will be to move the contours in the quarry and to establish 3 benches.



**Figure 7: Phases 2 & 3 development in a westerly direction**

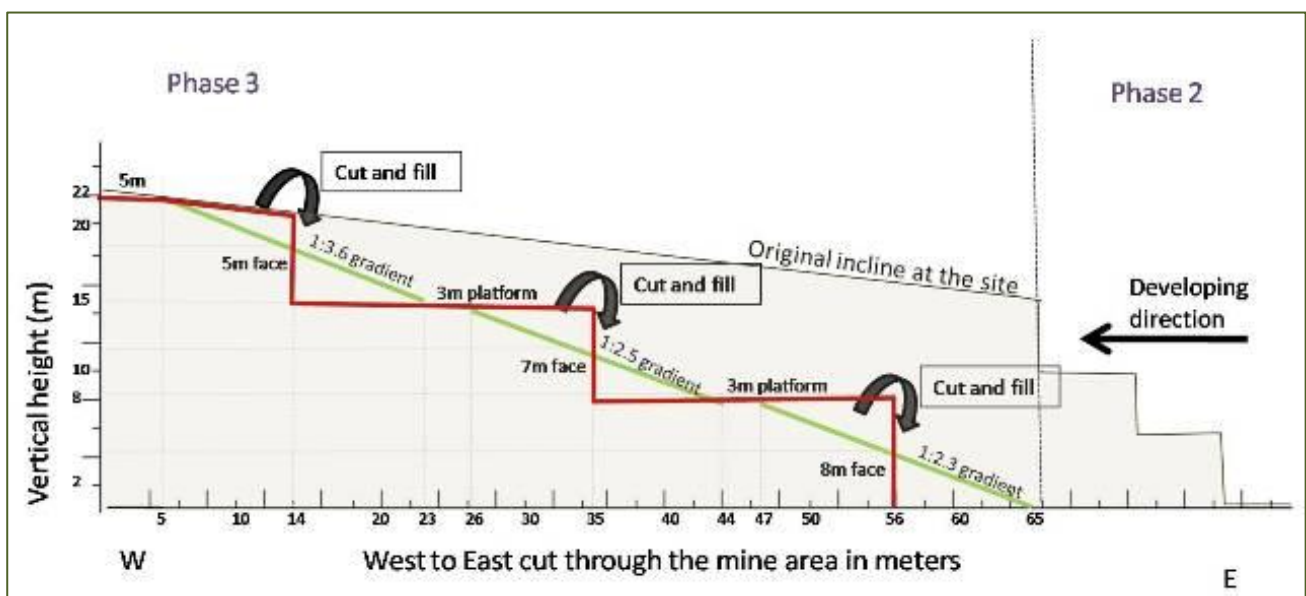


Figure 8: Final bench development will proceed in Phase 3

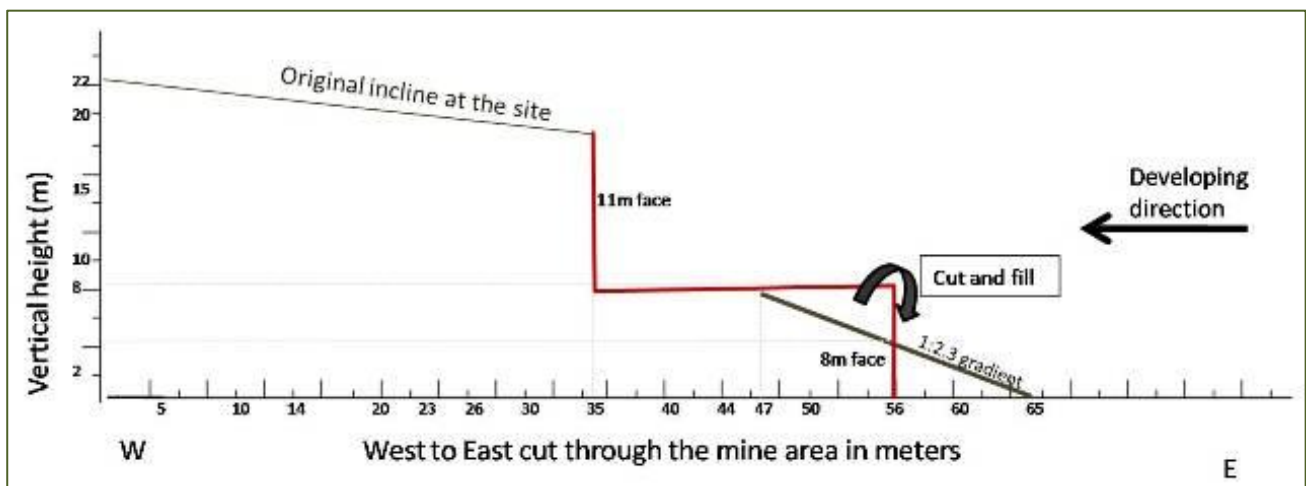
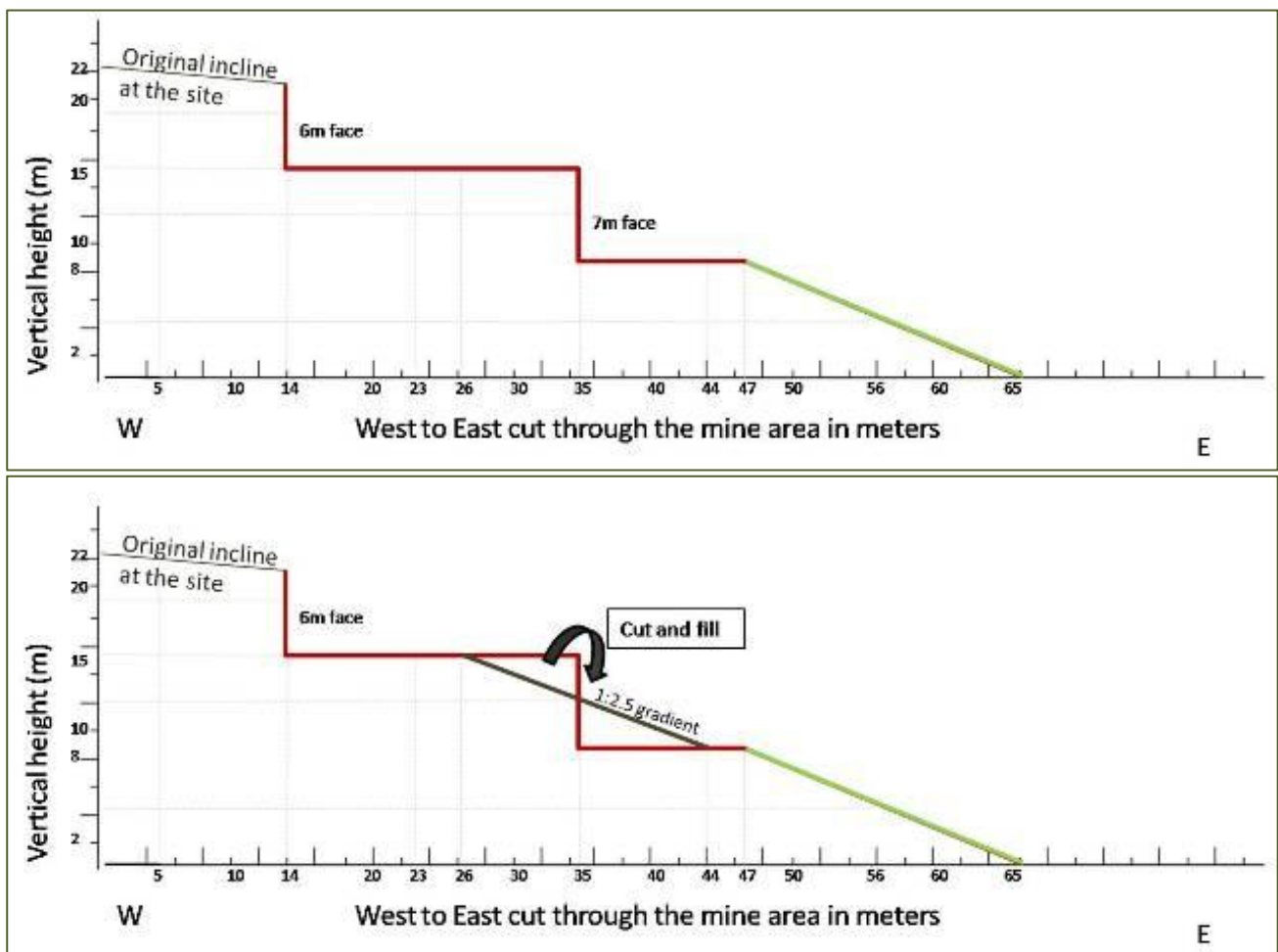


Figure 9: Developing the first bench

Phase 3 will entail the developing of the benches. At about 56m from the western boundary a face of 8m high must be established. A horizontal platform of 21m will be created, cutting back the second bench which will be 11m high. The front 9m of the 21m platform will be cut and filled to create a 1:2.3 gradient, towards the quarry floor.

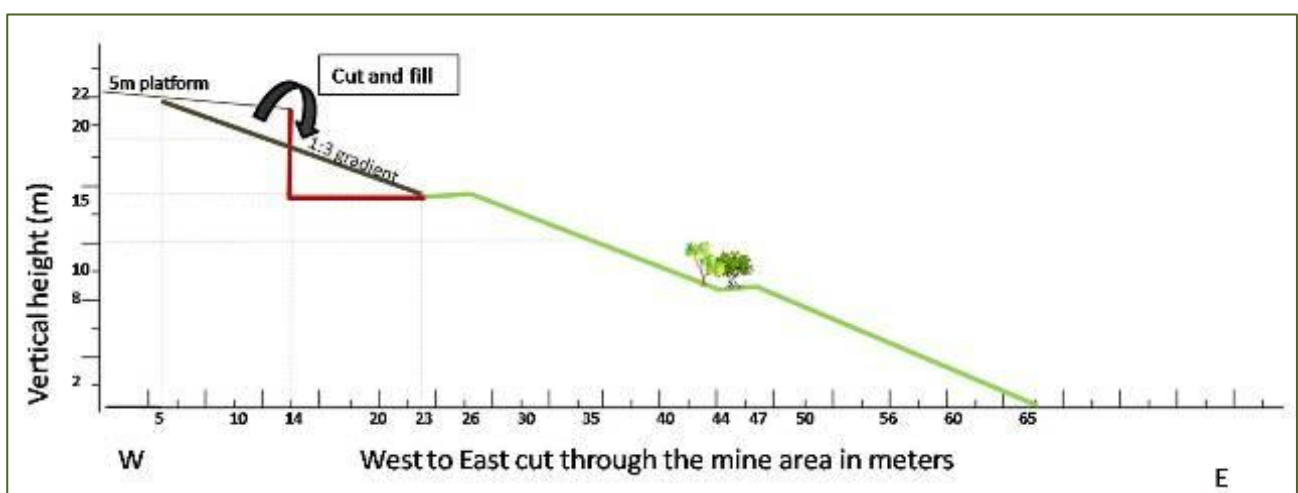
Once the first bench is established, the second bench will follow suit and rehabilitation will commence on the first phase. The 11m high face will be cut to create a 7m high face and establishing a second platform of 21m in length. The front 9m of the platform will be cut and filled to create a 1:2.5 gradient, towards the first platform.



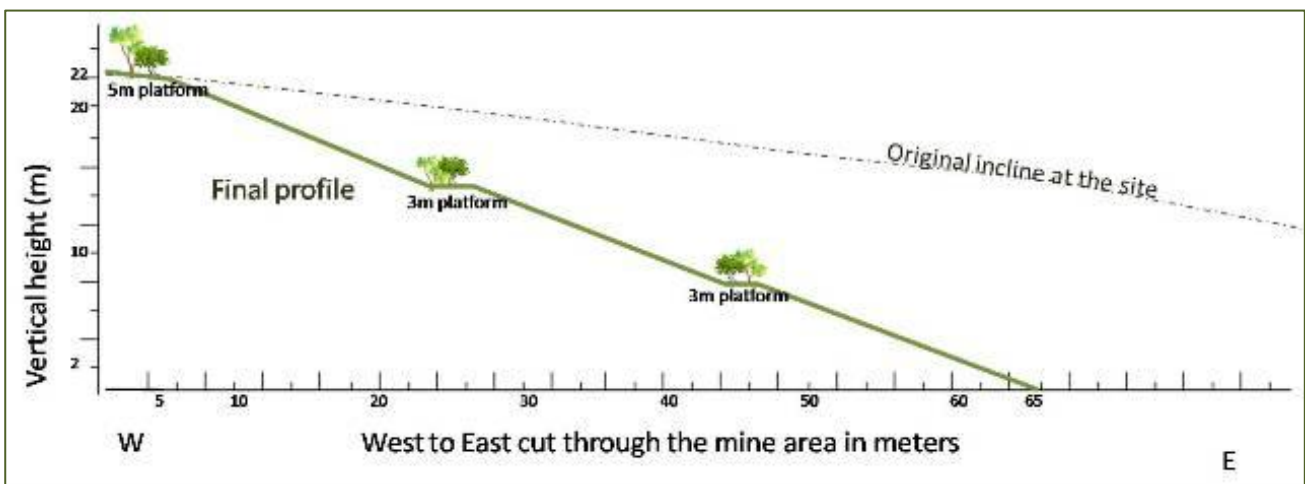


**Figure 10: Establishing and profiling the second bench**

The final bench will be established through profiling the final face. The front 9m of the top platform will be cut and fill to create a 1:3 gradient.

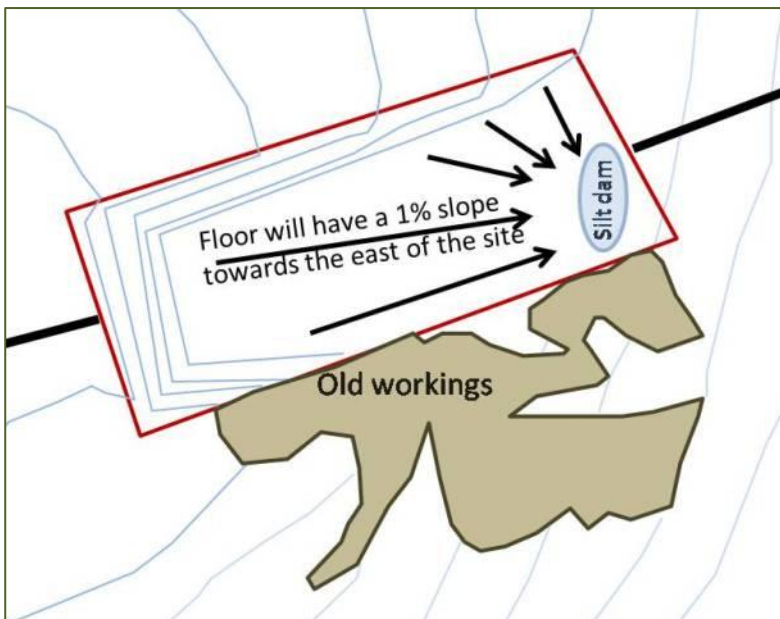


**Figure 11: Final bench development**



**Figure 12: Final profile at the site once Phase 3 had been developed.**

The final profile at the site will result in a 5m platform/pillar area between the western and northern boundaries of the site and the excavation area, with gently sloped benches and 3m long platforms in between the benches. The eastern boundary of the mine will be the lowest area of the mine and a silt dam will be established in the south-eastern corner of the site, so that the site is not free draining. Each bench platform will have a 1:20 gradient towards previous sloped area, to act as an energy breaker for storm water run-off.



**Figure 13: The site will not be free draining, but water will be retained in the silt dam**

Face stability would be reasonable but since the material is subject to weathering, it could become unstable if mining is suspended for long periods. The production face would therefore be benched and rehabilitated as soon as possible to improve safety standards at the mine.



Post closure profiles will result in a reasonably flat floor area and profiled production faces which should pose the minimum safety hazard. Since mining will proceed through the property boundary an application will be tabled with the Principle Inspector of Mines to remove the boundary pillars in order to facilitate total extraction (considering the limited limestone availability) and prevent an unnatural looking landscape.

On completion of the first phase, rehabilitation of this phase will coincide with the development of the second phase and will include minor profiling, limited backfilling with topsoil and organic material and shallow ripping of the area. The same scenario would apply to phases 2 & 3. The floor of the mine area will be more or less aligned with the level of the landscape to the east and will link in with the excavation area to the south.

Potable water would be brought to site daily by workers. A dust suppression system consisting of an elevated tank, pump and sprinkler system will be used. Alternatively a water cart and shade cloth screening will be used to dampen mining areas and access roads and prevent calcrete fines drifting towards residences to the north-east. Water for dust suppression will be supplied from the boreholes on the farm and an agreement to this effect with landowner(s) will be concluded before mining commences.

On the crest of the site, a survey beacon is located and must not be impacted by mining prior to receiving approval from the Survey General to this effect. Application must be made to relocate the beacon to the west, which is the highest side of the hill, outside of the mine area. Alternatively the western mining boundary must be moved 5m east of the beacon to ensure that the beacon will not be impacted on and that the area surrounding it can be rehabilitated.

Once the site has been rehabilitated, the boundary fences will be reinstated on original alignment.

Considering the limited amount of people on site, no waste disposal site is required. A container with a lid would be provided at the site for the storage of any household waste. No sewage plant would be required; a chemical toilet will be provided. A dust suppression system will be used and installed at the crushing site. No maintenance yard will be established since all vehicles will be maintained off site. The proposed operation would be continuous and working hours will be from 7 am to 5 pm five days a week with cessation of activities at 1 pm on Saturdays if market demand require. The existing crusher north-east of the site will be used and no other infrastructure will be erected on site.

The proposed development will result in an extended, sloped box cut that will foster increased runoff and silt transport rates to the east due to the steeper slopes, but since the site is situated on a watershed and the nature of limestone being fairly absorbent to rainwater; erosion and storm water control will not necessary be an impact. Nevertheless, control measures will be implemented and managed, and water within the site will be directed to the silt dam. Once the area has been rehabilitated, vegetation will further absorb runoff and the area will be useable for agriculture.

## MINERAL PROCESSING

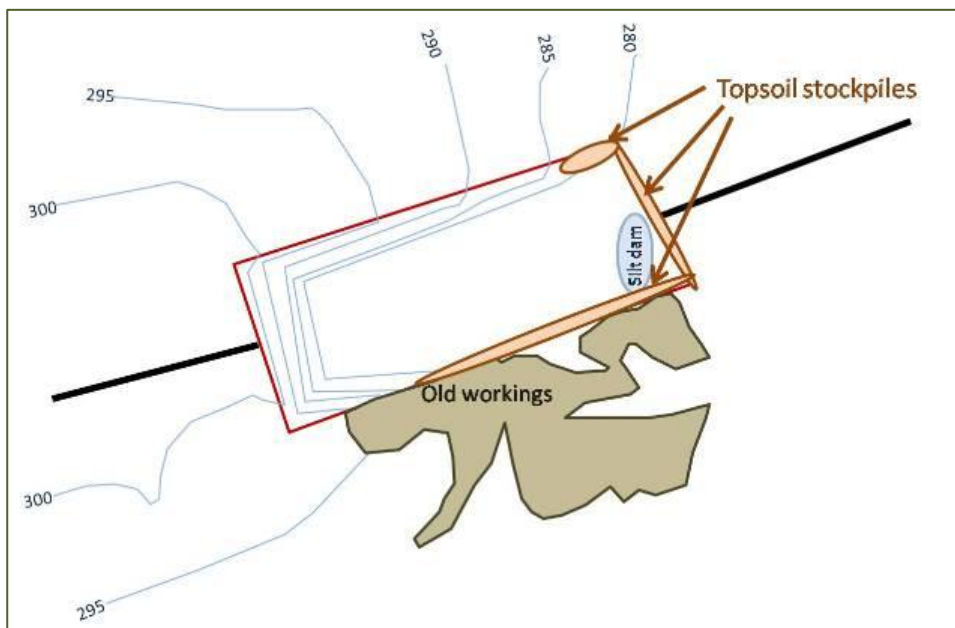
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A secondary crusher/compactor and screen plant is established near the site to process the weathered limestone. The crusher will crush the material into fine or coursed lime surge piles, from where it will be sold. Screened material will be directly loaded onto 5-12m<sup>3</sup> haul trucks and dispatched to the market. A few small stockpiles will be created, which will include the topsoil stockpiles. All extracted material would be utilized and no residue would be generated.

## CONSTRUCTION PHASE

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Limited construction activities will include the removal of topsoil and the vegetation cover from the production phases, which will be stored on the northern, eastern and southern sides of the mine area as a berm, to block visuals from the residence and potentially act as a screen to noise and dust.



**Figure 14: Topsoil stockpiles**

The crushing plant is already located close to the site due for previous mining and will not result in further construction activities. A site office and workshop might be established by means of positioning one container near the entrance to the site and later on a weighbridge could be positioned near the office to maintain better control over sales. A second container for the workshop can be positioned near the crushing plant. In such a case, a concrete vehicle service area with central sump must be constructed at the workshop area to collect spilled hydrocarbons in case emergency repairs have to be executed.

In the event that fuel will be stored, the diesel fuel will be stored onsite within a bunded area and provided with a concrete floor and shall dispose of a capacity of 115% of volume of diesel tank. It shall be provided with a release valve to let water out after rain events. An apron at the fuel pump will be constructed to contain spills during refueling. Also the construction of storage area with bund wall and proper roof for used hydrocarbons. It will have a capacity of 115% of volume of hydrocarbons stored and will dispose of a release valve to let water out after precipitation.

Since there is an Eskom connection with a transformer available on site, there will not be need for a generator. Thus in terms of construction; the transformer must only be fenced in and signposted for safety considerations. Application to the Survey General in Capetown, must be made prior to mining, to relocate the survey beacon to the west, which is the highest side of the hill, outside of the mine area. Alternatively the western mining boundary must be moved 5m east of the beacon to ensure that the beacon will not be impacted on and that the area surrounding it can be rehabilitated. Mine boundary beacons must be placed on the corners of the site prior to mining.

The water supply for dust suppression will be obtained from a designated borehole or purchased from surrounding farmers or trucked in. Water for human consumption will be brought onto site when needed and stored in an appropriate container. A small, fenced area can be constructed for the salvage and waste yard, with receptacles for household waste and hazardous/industrial waste.

Other minor construction activities will be that of the upgrading of the existing access road with the placement of a wearing course. The haul road will be rehabilitated once mining cease.

The boundary fence between the two landowners will also be moved, but reinstated at the closure of the mine. The sewage system will comprise a chemical toilet. No accommodation for personnel will be constructed. The workforce will commute to the site on a daily basis.

Mr. H. C. W. Pistorius who is the director of SA Lime (Peddie) Pty Ltd, will also be the mine manager. He has been exposed to quarrying from a young age, as his father involved him in the limestone quarry business as being part of the biggest AgLime producer in Africa. For the past 20 years, Mr. Pistorius has been involved in the quarry business on a continuous basis, which included product prospecting, quarrying, quality control, earthmoving equipment control, erecting of crushing plants, safety standards and maintenance, etc. Furthermore, he was also exposed to general quarry management and administration, which included product registration, market analysis, stock control, sales promotions, marketing, distribution and logistics.

Mr. Pistorius also became a member of the FSSA (Fertilizer Society of SA) where he served on numerous sub-committees which played a role in the AgLime industry. Production and product standards, industry regulation, product research, interaction with related industries was part of positioning his company and industry. He therefore disposes of adequate knowledge and skills to develop the quarry and perform the required supervision and marketing.

Thus he will be able to ensure that proper mining is conducted and will be able to impose the necessary safety requirements. Considering the above Mr. Pistorius is well capable of managing the mine.

Currently there is no commercial limestone quarry in the Bathurst/Port Alfred area and the proposed concern will therefore be the sole supplier of such material. This will enable the applicant to supply all the material required for agriculture, as a soil conditioner for neutralizing acidic soils, and other growing uses like the production of precipitated calcium carbonate, which is used in the production of paper, paint, ink, plastic, rubber and some foods. Limestone can also be used as an aggregate or base for roads and foundations and as an aggregate in concrete. This quarry has therefore a definite potential to develop in an economic sustainable mining concern.

The proposed concern has limited environmental and Health and Safety considerations, however the current finances available will not be adequate to cover mining costs. However the potential market shows great promise and once the quarry is in operation, finances should become adequate. It is anticipated that on average approximately 2500-4500 cubic meters of material would be extracted per month and sold at approximately R100-R150 per cubic meter onsite, depending on the market. SA Lime (Peddie) Pty Ltd will also make R60 000 available for rehabilitation. The Department of Mineral Resources however will have to make a final decision in this regard considering the financial submissions made to the DMR.

It is important that the applicant disposes of adequate environmental knowledge to ensure that an environmentally friendly concern is established that complies with current legislation and poses limited post closure impacts. The proposed concern will require good housekeeping, which will be within reach of the applicant's abilities since Mr. Pistorius will be the mine manager and on site on a regular basis. Since Mr. Pistorius is also fully conversant with mining methodologies, he will be in a position to implement all of the environmental requirements as stipulated in this report.

The only aspect of concern at the mine is dust and noise control, re-vegetation and road maintenance and in this regard the applicant might need assistance. It is proposed that an ECO is appointed on an *ad hoc* basis to assist in this regard. Re-vegetation of disturbed areas will be easily achieved by seeding the area, a practice, which is easy to implement. Visual and social impacts will be addressed through the rehabilitation of the site and curbing dust and noise generation, which the applicant are well acquainted with.

In conclusion the environmental impacts associated with the proposed mining concern is restricted to visual impact, loss of vegetation cover, dust and noise control, loss of soil fertility and social impact in terms of hauling material on public roads and moving of boundary fences. All of these fall within the scope of the applicant's capabilities but should be monitored on an *ad hoc* basis by an ECO. Through the conditions of this EMP, the applicant will ensure that the important environmental considerations applicable to this particular mining site are executed. The applicant will also submit an annual performance assessment reports reflecting on the company's ability to manage the environment. Should it be required an ECO will be appointed to oversee the project

Since the concern will have a good product turnover, the rehabilitation fund can be managed properly and the applicant will be able to effect the amendment of the guarantee as required by the MPRDA, which in turn will reduce the environmental risk.

## REGIONAL CLIMATE

Climatic conditions such as temperature, rainfall and wind velocity influence for example plant growth, erosion levels of disturbed areas, dust generation and air pollution levels as well as social impact in terms of quality of life. Climatic conditions can therefore influence the significance of

impacts caused by developments such as mines. It is therefore important to understand the role thereof when determining the impacts of a specific development and the remedial measures that need to be implemented.

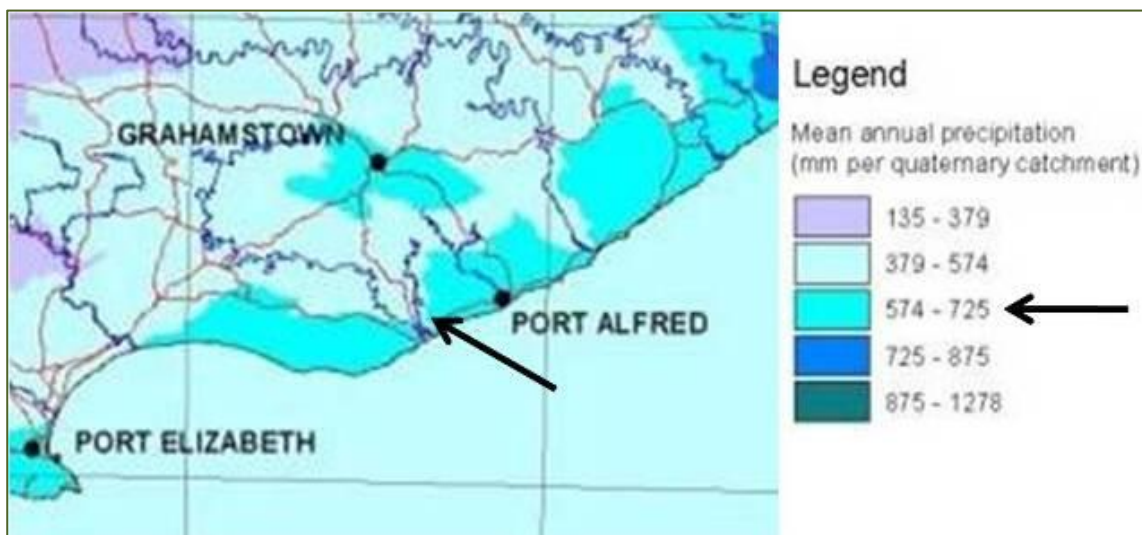
The study area is zoned as sub-tropical, according to the Koppen system of climate classification, having temperatures of between 10 and 22.2 °C. The temperature is mild in both winter and summer, with wind reducing both the heat and humidity.

## RAINFALL

The area receives a bi-modal rainfall distribution with a larger peak in spring and a somewhat smaller peak in autumn. This is a transitional zone, as further east, the pattern changes to a more abundant summer rainfall, whereas further west, the pattern changes to mainly winter rainfall.

Spring rains may also be associated with the passage of cold fronts drifting in from the west. Thunderstorm activity is common along the coast in late summer and autumn and result in intense cycles of rain and wind. This is illustrated by the fact that the maximum rainfall recorded in a 24h period for any month is almost double the monthly average. Dry periods are coinciding with midsummer and mid winter.

The area receives between 574-725mm of rain per annum. There are two periods of elevated rainfall during the spring and autumn (October–November and February-April respectively) with the lowest rainfall in winter (May – July). Seeding must therefore coincide with early spring and early autumn to ensure a successful re-vegetation phase.



**Figure 15: Mean annual precipitation**

## TEMPERATURE

The area is regarded as sub-tropical with temperatures ranging between 10 and 22.2 °c. The area experiences warm to hot summers with maximum temperatures in February and minimum temperatures July. In the winter months, occasional berg winds blow and may last for a few days, usually preceding cold fronts. From the statistics it is essential that seeding be restricted to the warmer periods to achieved optimum germination and growth.

The average monthly evaporation rates for the region ranges seasonally from 104.5 mm in winter to 210.7 mm in summer, following a similar trend to the mean temperatures. Rainfall runoff never exceeds evaporation in this region. The annual relative humidity in the area shows seasonal fluctuations and ranges from a maximum of 80 % to a minimum of 40 % for summer and winter, respectively. The mean relative humidity of the air is 72 % (Albany Coast Groundwater Potential Report, 2005).

## WIND REGIMES

Wind is dominated by south-westerly winds and to a lesser extent south-easterly, which predominate in winter and summer respectively. Winds with a velocity of > 30 m/s occur more frequently in the summer months.

ENVIRONMENTAL IMPACT ASSESSMENT

The impacts of the mining operation on the environmental parameters are assessed in this section in accordance with the criteria of the Minerals and Petroleum Resource Development Act 28 of 2002 and section 21, 22 and 26 of the Environmental Conservation Act. The process will highlight the impacts and emphasized the importance of remedial measures over the short term as well as post extraction. Impacts were assessed according to the criteria listed below:

**Extent** Whether the impact will occurs on a scale limited to the immediate site of the proposed activity, local area and immediate communities and settlements, sub-regional (municipal), regional (provincial) or national scale

**Spatial extent:** None/Insignificant **(0)**, Site **(1)**, Local **(2)**, Sub-Regional **(3)**, Regional **(4)**

**Duration** Whether the time span of the impact will be short term (0-5 years), medium term (5-15 years), long term (in excess of 15 years) or permanent where natural processes or mitigation processes cannot eliminate the impacts.

**Duration:** None **(0)**, Short Term **(1)**, Medium Term **(2)**, Long Term **(3)**, Permanent **(4)**

**Intensity**  
(Magnitude) Whether the size of the impact is low, medium, high or negligible.

**Intensity:** None **(0)**, Very Low **(1)**, Low **(2)**, Low-Medium **(3)**, Medium **(4)**, Medium-High **(5)**, High **(6)**, Very High **(7)**

**Probability** The probability of the impact actual occurring as either unlikely, probable, likely or definite

**Probability:** None **(0)**, Unlikely **(1)**, Probable **(2)**, Likely **(3)**, Definite **(4)**

These criteria are evaluated in terms of

- Significance (Insignificant-low-moderate-high)
- Status (positive-negative-neutral)
- Confidence (based on academic information, specialist knowledge, site evaluations, applicants approach)



The significance of the impact on the parameters of the affected environment is rated as:

Low Significance	The project will not cause any major adverse or beneficial changes to the biophysical, social or economic environment. Impacts experienced will abate almost immediately after cessation of activities and the biophysical, social or economic system should recover and return more or less to the natural state. No expensive mitigating measures will be needed to address any of these impacts. Ecological functions will continue undisturbed and no complaints from Interested and Affected Parties (I&APs) are anticipated. No rare and endangered species or sensitive areas exist in the area.
Moderate Significance	The project will induce moderate short to medium term changes to the biophysical, social or economic environment. The impact would be induced outside the development area and also possibly on a sub-regional level. Over the medium term the impacts could fade away but the implementation of mitigation measures are normally required to eliminate these impacts. The impacts would be experienced for some time after cessation of activities but would not affect the biophysical, social or economic environment severely. With mitigation the biophysical, social or economic system should recover but the return to the natural state would be very slow and in some instances may not be achieved. I&APs might express some concerns and complaints may be received on an <i>ad hoc</i> basis. Rare and endangered species or sensitive areas may exist in the area and could be marginally affected.
High Significance	The project will induce extensive long-term changes to the biophysical, social or economic environment. The impact would be induced outside the development area and also possibly on a regional to national level. The possibility of secondary impacts arising from the project is high. Over the long term the impacts could fade away but the implementation of expensive mitigation measures are normally required to eliminate or mitigate these impacts. These impacts would be experienced after cessation of activities and could affect the biophysical, social or economic environment severely. With mitigation the biophysical, social or economic system could possibly recover but the return to the natural state would be or normally not be achieved. Ecological functions will be permanent disturbed and major complaints from Interested and Affected Parties (I&APs) could be expected. Rare and endangered species or sensitive areas exist in the area might be critically affected.

**Significance:** 0-6 = Insignificant; 7-15 = Very Low; 15-22 = Low; 23-31 = Low-Moderate; 32-40 = Moderate; 41-47 = Moderate-High; 48-55 = High; above 55 = Very High

The significance weight figures are calculated by adding the spatial extent, the duration and intensity and multiplying that by the probability figure.

Should the impact assessment as a minimum reflect 2-3 impacts of high significance and 2-3 impacts of moderate significance the project shall be viewed as a potentially flawed and continuation of the project should be seriously reconsidered or special engineering or biophysical/social intervention must be implemented.

## TOPOGRAPHY

In general the region in which the mining area falls is referred to as the Southern Cape Coastal Belt. The rolling plains and the countryside are interspersed with rugged mountainous topography in the Grahamstown area. According to the Terrain Morphological Units Map the mining area can be described as slightly irregular and slightly undulated plains.

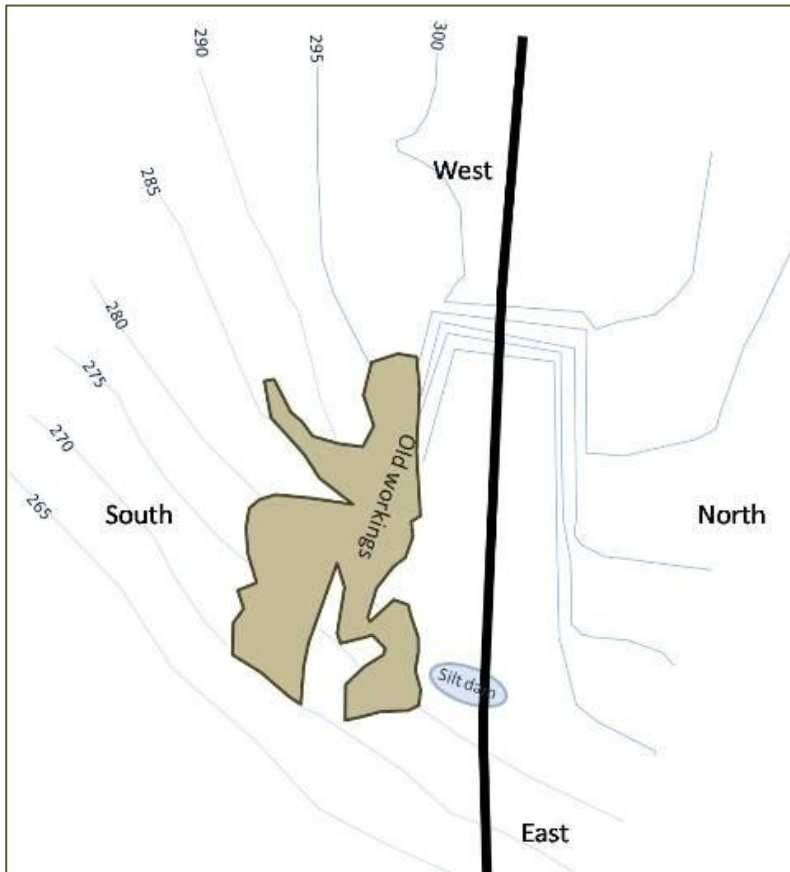
The mining site is situated on eastern side of the crest of a small hill. The incline from the top of the site to the lowest part of the proposed mine area is a 30m drop over a 200m area from the west to the east. Signs of disturbance are clear; un-rehabilitated quarry faces are clearly noticeable to the south of the site which is due to previous mining.



**Figure 16: General terrain topography of the area**

Mining will be done in phases as per the mine plan to ensure a continuous rehabilitation approach. Mining will ultimately result in a box cut excavation, with the highest point at the

western side with three benches into the hill. The southern, un-rehabilitated face will be incorporated into the development of the site. The faces in the south and north will gradually increase into the western direction, and the floor of the excavation will basically be aligned with the level of the landscape to the east. The floor will have a 1% slope towards the east/south-east of the site to allow the runoff from the site to collect in the excavation at the silt dam.



**Figure 17: Final profile and reinstating the boundary fence.**

Clearing of vegetation would be noticeable, but with profiling and rehabilitation after mining; it would be reduced. With the necessary mitigation and the correct mining approach, the visual disturbance expected, could be effectively mitigated. Changing the topography would not change run-off patterns, since this site is located on the crest of the hill.

The infrastructure within the mining area would be the existing crusher, which will be removed once mining ceases and would be permissible in any event since people might have become accustomed to the impacts already caused by the previous mining sight. Since an existing access and internal haul road will used it would not cause any additional visible changes to the landform.

Upon rehabilitation of the area, it would blend in with the surrounding area provided it is re-vegetated properly with a grass cover and indigenous trees through infill planting.

The change in the topography of the mining area will be irreversibly altered since a portion of the land will be permanently removed, but with infill planting it could display a rougher texture, which would fit in with the surrounding environment.

Considering the nature of the mining process envisaged, no unacceptable changes to the area are expected, should the necessary precautionary measures contained in this document be implemented. The impact on topography is considered of moderate significance without mitigation, but considering the small area to be affected, mitigation measures taken; reduces the intensity of the impact to low-moderate. Should the necessary precautionary measures contained in this document be implemented the impact at closure would be reduced.

#### Impact on topography.

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Site Specific	1	Site Specific	1	Site Specific	1
<b>Duration</b>	Permanent	4	Permanent	4	Permanent	4
<b>Intensity</b>	Low-Medium	3	Low	2	Very Low	1
<b>Probability</b>	Definite	4	Definite	4	Definite	4
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Moderate</b>	<b>32</b>	<b>Low-moderate</b>	<b>28</b>	<b>Low</b>	<b>20</b>

#### REMEDIAL MEASURES

- The impact on the topography of worked out areas will be remedied by means of, cut-and-fill profiling and stabilizing production faces.
- Mining shall not progress beyond the approved mine area.
- The production faces to be profiled as described in the mine development plan in such a way that sharp angles are prevented but that flowing curves are formed instead that blend with the surrounding landscape.
- Each bench platform will have a 1:20 gradient towards previous sloped area, to act as an energy breaker for storm water run-off.
- The floor of quarry must be sloped to a 1% gradient towards the east/south-east of the site to divert runoff into the silt dam.

- Quarry must be developed as described under the heading 'Mine methodology', with clearing of vegetation and rehabilitation phase by phase.
- Each phase shall be fully profiled within 60 days after mining in a particular phase ceased and will be fully vegetated within 12 months.
- Any root mass that the quarry generates must be used during the rehabilitation of the site.
- No areas outside the authorized mine area will be disturbed.
- A photographic record must be kept and complemented six monthly and must accompany the six-monthly performance assessment report.
- No stockpiles shall remain at closure.
- Stockpiles will be kept as small as possible and must be inside the mine area on the existing quarry floor directly behind the production face.
- The post rehabilitation topography will result in a box cut into the hill with the highest face in the western side, following the natural incline of the area with three benches.
- All infrastructures shall be removed at closure.

## GEOLOGY

The mining site falls within the T-Q: Algoa Group Nanaga formation. The Nagana Formation represents Pliocene to Early Pleistocene Aeolian deposits occurring up to 40 km inland from the coast. The name Nanaga Formation is reserved for Aeolian deposits formed during regression of the "Alexandria sea", i.e the Neogene regression(s) during which the Alexandria Formation was deposited. The Nanaga normally overlies the Neogene Alexandria Formation paraconformably, but in places unconformably overlies the Cape supergroup or Uitenhage Group. It consists of semi- to well-consolidated calcareous sandstone and sandy limestones displaying typical large-scale aeolian cross-bedding dipping at angles of up to 42 degrees and represents sediments deposited in coastal dune fields, consolidated by the recrystallisation of calcite from shells and other organic matter. A layer of surficial calcrete, up to 3m thick commonly caps these aeolianites and constitutes the target mineral. Geomorphologically the formation forms smooth, rounded hills within undulating ridges, trending subparallel to the present shoreline. Fossils apparently are common to these deposits and would require an archaeological investigation.

Some of the limestone deposits contain variable amounts of quartz grains, and only parts of them are sufficiently high grade and one could expect some impact of surrounding formations along the fringes of the deposit. The better-quality deposits contain about 80% CaCO<sub>3</sub> and are useable for agricultural lime. The proposed mining area constitutes such a deposit.



Figure 18: General geology of the area: The Nanaga Formation is mapped in brown with the symbol “T-Q”. The Witpoort Formation is mapped in light blue with the symbol “Dwi” which is underlain by the Weltevrede Formation comprising shale and subordinate quartzite (sandstone) layers and is mapped in khaki-green with the symbol “Dw”. Both of these formations are of the Witteberd Group, Cape Supergroup.

Mining the limestone would change the geology of the area to a minimum extent, since 1.5 Ha will be removed in comparison with the larger existing formation. Mining will result in permanently removing the limestone layer of between 10-20m on this portion of land. Considering the nature of the development the impact is unavoidable, but considering that only 1.5ha will be removed; does lessen the impact. Also, the material does not constitute a strategic mineral and the site a geo-site therefore the impact is rated as low-moderate with mitigation.

#### Impact on geology

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Site Specific	1	Site Specific	1	Site Specific	1
<b>Duration</b>	Permanent	4	Permanent	4	Permanent	4
<b>Intensity</b>	Low-Medium	3	Low	2	Very Low	1
<b>Probability</b>	Definite	4	Definite	4	Definite	4
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Moderate</b>	<b>32</b>	<b>Low-Moderate</b>	<b>28</b>	<b>Low-Moderate</b>	<b>24</b>

## REMEDIAL MEASURES

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- The minimum working area for an efficient and effective operation should be utilized and demarcated prior to the start of mining activities and the excavator operator must be informed in this regard.
- No mining will be undertaken in areas where reserves have not been adequately proved in order to avoid unnecessary/wasteful mining.
- Mining will be restricted to the proposed depth as described under the heading 'Mine methodology'.
- Application to the Survey General in Capetown, must be made prior to mining, to relocate the survey beacon to the west, which is the highest side of the hill, outside of the mine area. Alternatively the western mining boundary must be moved 5m east of the beacon to ensure that the beacon will not be impacted on and that the area surrounding it can be rehabilitated. Mine boundary beacons must be placed on the corners of the site prior to mining.
- No activities will be permitted outside the approved mine area.
- All root mass, if any, will be returned to the excavation or used in profiling the production faces and rehabilitation.
- Quarry development will take place with final rehabilitation objectives in mind.

## SOILS

Soil is a complex mixture of eroded rock, mineral nutrients, decaying organic matter, water, air and billions of organisms, most of them microscopic decomposers. Soil forms when life-forms decay, when solid rock weathers and crumbles, and when sediments are deposited by erosion.

Mature soils are arranged in a series of zones called soil horizons, each with a distinct texture and composition that vary in different types of soils. A cross-sectional view of the horizon in a soil is called a "soil profile". Most mature soils have at least three horizons.

Colour indicates a lot about how useful a soil is for growing crops. For example, dark brown or black topsoil is nitrogen rich and high in organic matter. Grey, bright yellow or red topsoils are low in organic matter and will need enrichment to support most crops.

The average size of the spaces or pores in a soil determines soil permeability, i.e. the rate at which water and air move from upper to lower soil layers. Soil permeability is also influenced by soil structure: how soil particles are organised and clumped together. Soils vary in their contents of clay (very fine particles), silt (fine particles), sand (medium size particles), and gravel (course to very course particles). The proportion of the different sizes and types of mineral particles



determines the soil texture. Loam soils which are comprised of roughly equal mixtures of clay, sand silt and humus, are the best soils for growing most crops.

Calcareous soils are those that contain free calcium carbonate and can also be regarded as alkaline soils. The term "dystrophic" refers to an imbalance in nutrients. Dystrophic soils are therefore soils that are rich in humus, giving them a brown colour. They have variable amounts of nutrients and are sometimes depleted of oxygen owing to the high concentration of humus. The term "leaching" refers to a process whereby various soil components are dissolved by water moving through the upper layers, carrying the dissolved material to lower layers. Highly leached soils are those where most of the nutrients, etc. have been leached from the upper layers.

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## SOIL PROPERTIES

Topsoil is a very precious, non-renewable resource with high conservation importance and is necessary for the effective rehabilitation of disturbances caused by development. The potential of soils to rehabilitate is defined by its depth, structure, texture, and sequence of soil horizons. It is therefore essential that where it occurs it be preserved and protected and if necessary obtained from outside sources to effect proper rehabilitation of disturbed areas.

The intricate landscape with its mosaic of landforms in conjunction with the geology and climate set the platform for soil development in the area. The plains and hills are the result in the difference in resistance to weathering of the underlying lithological units. In general the area overlaying the mining site and surrounds falls within an area where soils can be described as soils with minimal development, usually shallow on hard or weathering rock, with or without intermittent diverse soils. Lime generally present in part of most of the landscape.

Intermediate microbial activity breaks down the organic component once the system is disturbed hence topsoil storage time must be restricted to the minimum. Due to the alteration of the physical, biological and chemical properties of the soil, a moderate reduction in soil productivity may take place during the storage period. Therefore disturbed soils might need to be upgraded to reinstate and maintain nutrient cycles in the soil.





Figure 19: General description of the soils at the site and surrounding area



Figure 20: Soil depth

The orthic topsoil layer in the mining area is less than 450 mm deep, thus relatively shallow and displays a red-brown topsoil, which is nitrogen rich and high in organic matter. At the site, the soil is not suitable for crop production since it is too shallow; however, the soil is able to sustain thick grass cover and well suited for grazing purposes. Due to the thickness of the vegetation cover the percentage of carbon content will definitely be between 2,5 and 3% and will stimulate and support plant growth well if it is not stored too long since microbial processes will break it gradually down. As a maximum, it needs to be used within two years after it was removed, but considering the time frames for the concurrent rehabilitation, this would not be a possibility. Phosphate and nitrogen content in these soils are normally good as well as the calcium: magnesium ratios.

These soils are all lime rich and will support vegetation covers well and facilitate the use of inorganic fertilizers without the risk of lowering the pH beyond that what is required for mineral absorption. Soils of the study area have low to moderate leaching capabilities hence the soils remain fertile after prolonged heavy precipitation. Soils would therefore easily retain its positive nutrient cycles over the short term should it be disturbed and be denuded of vegetation. If used shortly after stripping no upgrading would be necessary but after prolonged periods, inorganic fertilizers could be applied. Continuous upgrading of soils is therefore not necessary and

application of fertilizers more than once per annum is not required. The impact on soil properties under normal circumstances is rated moderate but it should nevertheless be understood that soil fertility, humus content and the ability to sustain plant life would be affected to some extent.

The potential of soils to rehabilitate is defined by its depth, structure, texture, and sequence of soil horizons. Since the soil on site is still in tact; after the mining process the soil on site would have suitable texture and structural features for it to be easily rehabilitated. Once the quarry is fully developed, mine area can be turned from a fertility point of view, back to a grazing unite.

The topsoil of the mining area will be removed and will be temporarily stored on the eastern, northern and southern sides of the quarry (see Figure 14) and will be reinstated as mining progresses as per the mine plan. Incorrect stockpiling thereof will most definitely cause its physical properties to deteriorate and the soil will become sterile due to compaction, loss of nutrients, texture and structure and decline in biological activity. It is important to fertilize when necessary and controlled irrigation to establish vegetation soon after disturbance.

#### Impact on soil properties

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Site Specific	1	Site Specific	1	Site Specific	1
<b>Duration</b>	Medium Term	2	Short Term	1	Short Term	1
<b>Intensity</b>	High	6	Medium-High	5	Very Low	1
<b>Probability</b>	Definite	4	Likely	3	Probable	2
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Moderate</b>	<b>36</b>	<b>Low</b>	<b>21</b>	<b>Insignificant</b>	<b>6</b>

#### SOIL EROSION

Soil erosion is a natural process, which, without disturbance, would balance itself with the formation of new soil. Any development that destroys the natural protective canopy of vegetation speeds up the process of soil erosion. Soil properties determine the erodibility of soils and their ability to support vegetation and this need be understood in assessing the potential for erosion and the suitability for rehabilitation. Soils susceptible to water erosion are normally silty, are weakly structured, have low organic contents and have poor internal drainage.

The erodibility index is determined by combining the effects of slope and soil type, rainfall intensity and land use. These aspects are represented by terrain morphology (soil and slope), mean annual rainfall and broad land use patterns.

Soils on the mining area are clayey, have moderate organic content and good absorbance capacity. This will render the soil to be less erodible. Under normal circumstances, this soil is stable and not readily subject to erosion. The B-horizon constitutes of the calcrete layer, which will be partly mined, with low erodibility factor. The illegal quarry is mostly erosion free, which supports this statement.

Therefore, naturally the potential of erosion during major rain falls is low at the mining site, but will increase as the area is disturbed. Therefore it is important to develop the mine in accordance with the mine development plan, to ensure that the slopes created are not too steep and that the areas disturbed are rehabilitated as soon as possible. The spreading of topsoil on the steeper slopes of the excavation will cause it to become more susceptible to erosion, thus all available organic matter must be used as mulch on the slope areas to reduce the battering impact of rain and to improve absorption capacity and re-vegetation rate. This will be a temporary impact and could be successfully addressed during the rehabilitation phase. However it is important to profile and cover such areas as soon as possible to prevent the impact.

The existing haul road leading to the mine area will be used and due to the nature of the soil and the gradient erosion needs to be controlled. Over the long term, it should be protected with a proper wearing course and the necessary cross drains before mining commence. Spills of the cross drains must be establish in areas that are well vegetated to insure that erosion does not take place.

#### Impact on soil stability.

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Local	2	Site Specific	1	Site Specific	1
<b>Duration</b>	Long Term	3	Medium Term	2	Short Term	1
<b>Intensity</b>	Medium	4	Low-Medium	3	Low	2
<b>Probability</b>	Likely	3	Probable	2	Unlikely	1
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	

Significance	Low-Moderate	27	Very Low	12	Insignificant	4
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## SOIL POLLUTION

Soil pollution can only occur should hydrocarbon spills occur or when 1) used oils and lubricants are purposefully drained into the soil, 2) storage facilities are destabilized or 3) if ablution facilities contaminate soils. At the process area, these impacts, although low, are anticipated since trucks and earthmoving equipment will be serviced in emergency situations, fuel storage might take place but no sewage system will be installed. Storage of hydraulic fluids might take place, but no other chemicals or hazardous substances will be used at the site. The slope of the land and silty-clayey nature of the subsoil will cause pollution plumes to be localized by the high adsorption capacity of the topsoil.

## HYDROCARBONS

Although the crushing plant will be powered by electricity, with the connecting point already available at the site, it will still require oils and hydraulic fluids as well as the other mining equipment which will require large quantities of diesel fuel, and also oils and hydraulic fluids. In return these machines produce substantial amounts of used oils and lubricants. It is essential that these substances are handled correctly and that workers are properly trained in this regard; otherwise they could inadvertently cause unwanted environmental impacts, such as draining used oils into the soil. It is further imperative that certain areas are designated for maintenance of vehicles and that such areas be provided with a concrete floor with a sump to collect spilled hydrocarbons. All removed hydrocarbons will be drained into drip pans positioned in the sump areas and later on siphoned into appropriate containers and stored within the containers for disposal at the earliest convenience.

Small hydrocarbon spills will penetrate the soil and be retained within the upper layer as concentrated pollution that can be easily scooped up and be disposed of. The limited vertical extent of the plume and the nature of the substrate will preclude it from reaching groundwater. The site is situated on a watershed, thus due to the distance between the plant and any drainage channel; surface water pollution is not anticipated. Natural bio-degradation of hydrocarbons could be slightly slower than in well aerated soils but the use of fertilizers or oil surfactants could assist in breaking down limited spills in a short space of time. The impact is rated low under worst-case scenario and insignificant under controlled conditions, due to the limited spills anticipated in the process area.

If a major spill from one of the vehicles occurs it will lead to a concentrated and average size spill, which will result in medium adverse impacts on vegetation down slope especially during dryer periods. It will severely affect soil fertility through impaired nutrient imbalances, pH values as well as reduced water retention capacity and will affect soils and vegetation over longer periods than smaller spills and needs to be bio-remedied. To rectify such spill a specialist, approved by DWAF will be called in to remedy the impact. In addition, polluted soil should be scooped up into a truck and immediately disposed of at a waste facility in Port Alfred or Grahamstown.

If fuel is going to be stored at the site, the storage of the fuel will be essential. Destabilizing the diesel tank and spilling the entire contents will result in a higher impact than what can be expected from spills from vehicles. It is therefore essential that once established, the diesel tank is protected with a bund wall and positioned in an area with low vehicular traffic. Storage of used oils and lubricants must also be stored safely in appropriate receptacles in a bunded area provided with a roof or alternatively it must be stored inside the workshop container.

The impact is rated low-moderate under worst-case scenario conditions and very low under normal circumstances due to the limited spills anticipated in the quarry area.

## SEWAGE

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The sewage system will consist of a chemical toilet. Due to the small number of people (2-3) that will be onsite, limited soil pollution will therefore take place and a similar impact on the coliforms count in the soil and water is anticipated. The system must be maintained according to specifications stipulated by Municipal by-laws or by a local health inspector. Due to the absence of ablution facilities no effluent will be generated that could affect soils and groundwater sources inside or outside the study area. The anticipated soil pollution risk is rated low under worst-case scenario conditions and insignificant under controlled conditions.

## WASTE

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Due to the low number of people anticipated to be onsite a small amount of domestic waste will be produced in the process area and the waste stream (tins, paper, wood, plastic bags, food, scrap metal, redundant equipment or parts thereof) will be as little as 2 cubic meters per month. Waste need to be stored in proper receptacles to protect it from wind dispersal and it must be removed to the nearest approved waste facility in Port Alfred or Grahamstown a regular basis. Even in limited amounts, uncontrolled storage of waste could lead to littering of the surrounds, which could affect livestock/wild animals and impact on the visuals of the site. Storage of cement bags during the construction phase in particular must be properly controlled, if the weighbridge is built. Cement contaminated waters and residue cement could affect soil and subsoil negatively and the

correct operational procedures need to be implemented. Waste production will be low in the quarry area and the impacts on soils in this area are rated very low. Handling of waste should be included in an environmental awareness programme to be developed for workers.

Vegetation will be removed from the quarry area but will later on be reintroduced to disturbed areas as mulch.

#### Impact of pollution on soils.

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Local	2	Site Specific	1	Site Specific	1
<b>Duration</b>	Short Term	1	Short Term	1	Short Term	1
<b>Intensity</b>	Medium	4	Low	2	Very Low	1
<b>Probability</b>	Likely	3	Probable	2	Unlikely	1
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Low</b>	<b>21</b>	<b>Very Low</b>	<b>8</b>	<b>Insignificant</b>	<b>3</b>

#### REMEDIAL MEASURES

- All *in situ* soils (at least 30cm) will be removed and conserved during future development stages and will not be sold. It will be stored along the northern, eastern and western perimeter (as per mine layout plan) of the mine area and it will be piled to a maximum height of 1,5m. Once removed it will be seeded with the specified seed mixture, upgraded with inorganic fertilizer, irrigated if possible and lightly covered with some of the available grass cuttings removed from development phases.
- Topsoil must be removed ahead of the production face and be reinstated as soon as possible once extraction has been completed to limit the erosion potential.
- Mining will be restricted to the approved mine development plan, with concurrent rehabilitation and slope development as focus, and mine area.
- The amount of soil removed ahead of the production face will be reduced to the minimum required for optimal development.
- Removed topsoil will not be mixed with sub-soils.
- Topsoil stored from previous mine can be used to rehabilitate the old excavation area, as contribution to the environment.
- If needed topsoil stockpiles will be protected from wind action by erecting shade cloth screens (1,8mhigh) across the wind path or cover it with Hessian.
- Topsoil will be reintroduced to disturbed areas and fertilized as follow:

1. Initially at a rate of 200kg 2:3:2 (22) Zn and 150kg 4:1:1 per hectare before seeding.
  2. Once the grass seedlings has reached a 15cm height applications of super phosphate at a rate of 150kg per hectare twice per annum (March & September) will be effected. Seeding will coincide with the rain season or when soil moisture regimes are good. The application of manganese and boron will also be investigated if re-vegetation does not progress satisfactorily.
  3. All vegetation removed from the mine area will be stockpiled, protected against wind erosion and re-introduced as mulch to seeded areas.
  4. In the event that the removed vegetative material is deficient the applicant undertake to obtain all available manure/chipped vegetative matter (without alien seed) and introduce it to profiled areas to improve the fertility and micro-climate of the soil, which in turn would facilitate improved germination and percentage soil cover.
- Upgrading of soils and re-vegetation of disturbed areas will be done concurrently with mining.
  - If needed soils will be analysed by a competent laboratory and the nutrient requirements determined.
  - All erosion gullies on the mining area and on the faces would immediately be filled in and compacted and erosion-monitoring programme will be implemented as a cradle to grave process.
  - Storm water control structures, e.g. the silt dam, will be retained and maintained until closure.
  - The quarry will be developed in such a manner that slopes are smooth to prevent concentration of surface water on them that could stimulate erosion.
  - Should erosion on the slopes become problematic:
    1. Any erosion rills or gullies that develop will be filled in with subsoil, compacted but upper layer to be scarified to bind with topsoil, top dressed with soil, fertilized and seeded.
    2. Such areas will be provided with a mulch/manure layer of at least 5cm thick.
    3. Trunks/branches of trees removed (non seed-bearing alien trees) from other undisturbed properties and to be negotiated with such landowners will be placed in rows along the contour 5m apart and pegged to the ground to reduce water speed and curb erosion.
    4. In worst case scenario geofabric or Soil Saver (natural organic sheet material with seeds) will be pegged onto the slopes after spreading of topsoil and seeding was effected. A soil conservation officer or expert will be appointed to oversee the process.
    5. If wind erosion becomes a problem, shade cloth screens will be erected (north-south direction) across the wind path every 20m. Shade cloth will be properly attached to 2,5m (1m sub-surface) wooden poles and shade cloth will stretch to the ground surface.
  - Once the limestone is removed and the topsoil replaced, the disturbed area must be seeded with the specified seed mixture.
  - The amount of vegetation removed ahead of the production face will be reduced to the minimum required for optimal development.
  - Mining will take place progressively as per the mine plan provided.
  - The mining phases will be developed and rehabilitated to reduce the extent of the disturbed area and prevent erosion.

- Only existing haul roads to the quarry area will be used and vehicles would not deviate from it. Movement of vehicles in the quarry area will be limited to what is necessary to reduce potential impact on areas outside mine boundary.
- Disturbance of the soil and vegetation zones around the quarry will be prohibited.
- Portions of production areas will be profiled and vegetated as an integral part of mining.
- When needed, the mining site could be irrigated using water obtained from the landowners borehole, if agreement is reached, bought from farmers or municipality and trucked in. Alternatively, if sufficient water has collected in the silt dam, it may also be used.
- Vehicles will not drive over rehabilitated areas to prevent dieback of established vegetation.
- Any erosion that develops will be filled in with gravel and sand, compacted, covered with topsoil and seeded.
- Emergency repairs will be done over drip pans.
- Oil and lubricants that might be stored at the site must be stored inside the workshop container.
- Used oils and lubricants will be stored in receptacles with a proper lid within a bunded area. It will be disposed of at a registered recycling facility on a regular basis.
- All filters or oil/lubricant contaminated material will be stored in a separate receptacle within the bund wall and dispose of at a registered recycling facility on a regular basis.
- In the event of storing fuel, the fuel tank shall be established as described under the construction phase. The fuel pump shall be provided with an apron to capture all spilled fuels. The fuel tank will be positioned where the least vehicle movement is taking place.
- All emergency vehicle maintenance and servicing will be done on a concrete pad provided with a sump. If required, a wash bay will be constructed alongside it with an oil trap designed to specification. All regular maintenance and repairs will be off site at a workshop in Port Alfred or Grahamstown.
- The diesel tank and all vehicles will be leak-free.
- Hydrocarbons shall not be drained into the soils nor shall used filters and hydrocarbon-contaminated parts be buried in the soil but will be removed to an approved waste site or recycling facility.
- Making use of bio-remediation facilitated by a specialist company will negate large spills whilst smaller spills could be treated with fertilizer to break it down or be scooped up by front-end loader to a hazardous waste site.
- Peatsorb or sawdust will be used to contain larger spills and some of this material must be on site as a contingency measure.
- No other hazardous chemicals will be used on site without authorization granted by the DMR and other regulating authorities.
- Waste will be removed from the mine area on a continuous basis to the Port Alfred/Grahamstown waste facility with specific emphasis on household waste, plastics, and unusable scrap metal and tire casings.
- All quarry/plant debris must be removed before topsoil is re-introduced to disturbed areas.
- The chemical toilet will be maintained according to Municipal bylaws or specifications issued by a local Health Inspector.
- Cement mixing during the construction phase will not take place on bare soil but on a concrete slab. At closure all foundations and ripped up concrete will be disposed of in the quarry.
- The handling of hydrocarbons will be included in an environmental awareness programme.
- All quarry/plant debris must be removed before topsoil is re-introduced to disturbed areas.



Although land use is not a feature of the environment as such, it does represent the current status of the land surface as a whole, and therefore also reflects the condition of the environment. Land use is reflected by land use patterns, based on terrain morphological units.

Conservation is the maintenance of environment quality and resources or of a particular balance among the species present in a given area. The resources may be physical, biological or cultural. Conservation must be seen as a land use. It is an action that people take to dedicate a piece of land for a specific use, whether it is for the use as a monument, for the breeding of animals, or as a habitat for animals.

A land area dedicated for conservation must be carefully managed to ensure that the land remains a viable resource. For instance, it must have a managed burning programme. Veld fires are one of the most important habitat management actions in South Africa, especially for the fynbos and grass biomes.

Other than natural disasters, humans have the largest impact on the bio-physical environment. Therefore, people have the responsibility of managing the environment in a sustainable manner to ensure the continued existence and maintenance of the biodiversity of the earth.

The land, in which the mining area falls, is currently classified as agricultural land. Currently the mining area is being used as grazing land. Areas to the north-east and the south-east have been cultivated and the area is known for its pineapple production. To the immediate south of the site is a previous quarry that was not rehabilitated. The rest of the site is surrounded by grazing land.



**Figure 21: Surrounding landuse of the proposed mining site**

The potential end use of an area disturbed by development is determined most of the time by the capability of the land before development, which in turn is defined by the soil types, climate and topography in that particular area. Agricultural potential of the soil in the study area is high, in terms of grazing potential but not suitable for crop production since the soil is fairly shallow. Mining will reduce the grazing potential over the short term due to the removal of the soil and thus the disturbance will cause a lower soil fertility (impaired nutrient cycles) and reduced organic content therefore all topsoil will be conserved and reinstated as soon as possible. Considering the short period for which the topsoil will be stored, most of the biological processes within the soil will be maintained and proposed upgrading thereof will further assist in attaining original soil fertility.

It should also be recognized that mining the area in question would only cause a secondary impact by temporarily affecting the grazing capability and hence the carrying capacity of the land by stripping of the topsoil in phases. However, it needs to be recognized that the mining areas must be re-vegetated properly not to affect this small grazing unit. Replaced topsoil will act as a seed bank due to the limited time that it will be stored and it is anticipated that a large portion of the vegetation will grow back. Since this is not a conservation area, the need to maintain biodiversity is not a prerequisite. Production faces may pose a safety threat to stock and trespassers on the property and need to be profiled on a regular basis and the area must be appropriately fenced,

until the site has an 80% grass cover and all the slopes has been sloped in accordance with the mine development plan.

Currently half of this area cannot be fully utilized as grazing land, due to the illegal mining which caused the loss of at least a 0.5Ha area. Mining the area according to the principles set out in the EMP, could not only improve the grazing potential of the mining area, but would restore grazing value back to the area that has been lost for the past few years. Taking into account the small area and the aggressive rehabilitation strategy that will be followed, this impact can be rated overall as low and short term.

The area is not fully functional in terms of the original potential of this veld type, due to bush clearing to make way for mining and grazing units and in this regard, the impact on the remaining habitats, migration corridors and bio-diversity in the area is of low significance. None of the neighboring land uses would be affected by the proposed mining activities. Thus in terms of land use, the two directly affected persons will be the land owners, since they will not be able to used this portion of land for grazing while mining is in operation, but as previously indicated, Mr. Keeton already cannot use this portion of land fully due to the illegal mining scar. Once the area is rehabilitated, it will be restored back to a grazing unit.

Required mining infrastructure will consist of the crushing plant, which is already erected due to previous mining and no further impact on land capability and land-use is anticipated. Once mining cease, the crusher will be removed as well as the containers to be used for the office and workshop area. Considering the ecological and agricultural status of the mine area the impacts on land use and land capability could be rated as low (with mitigation measures) during mining and positive at closure (once rehabilitated).

#### Impact on land capability and land use

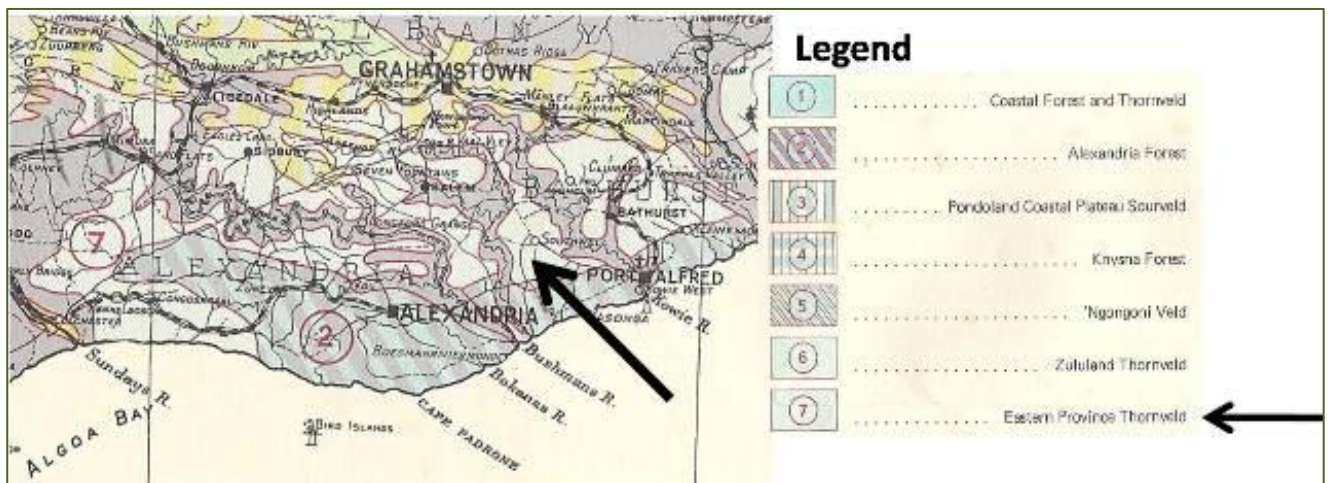
	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Site Specific	1	Site Specific	1	Site Specific	1
<b>Duration</b>	Medium Term	2	Short Term	1	Medium Term	2
<b>Intensity</b>	Low -Medium	3	Low	2	Low	2
<b>Probability</b>	Likely	3	Likely	3	Likely	3
<b>Status</b>	Negative		Negative		<b>Positive</b>	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Low</b>	<b>18</b>	<b>Very Low</b>	<b>12</b>	<b>Very Low</b>	<b>15</b>

- Mining will be restricted to the approved mine area.
- All *in situ* topsoil removed shall be conserved and handled as prescribed under 'soil remedial measures'.
- The quarry will be seeded with the prescribed seed mixture to ensure a surface cover that will stimulate the return of other plant species.
- Alien plant infestation will be prevented through an alien eradication programme.
- Rehabilitation and bench sloping will be done concurrently with mining and in phases as proposed by the mine development plan. Progress will be monitored and audited against proposed rehabilitation schedule to improve land use options and land capability.
- The slopes shall be profiled to such an extent that the area could be used for grazing and recreational purposes/semi-wilderness land. Rehabilitated areas would not be grazed by any domestic animals within two years after closure was granted. These areas will be fenced off.
- No fires would be allowed on the property to safeguard the land use of the property as well as those of abutting properties.
- Production areas/faces will be made stable/safe.
- The crushing plant, containers and chemical toilet will be removed from the property at closure and the crushing plant area will be ripped, soil upgraded and seeded.
- As a contribution to the environment, the previously mined area will also be rehabilitated.
- At closure, the internal haul road will be left in a good and non-eroded state, since it has been established before this mining application.

## FLORA

Vegetation plays an important role in maintaining ecosystems, stabilizing soils, maintaining the aesthetics of an area and in providing income for landowners. When development is anticipated the vegetation structure therefore needs to be analyzed, rare or endangered plant species must be identified and economic value of plant cover must be determined. Vegetation structure is mostly determined by the geology and climatic factors and the Eastern Cape coastline represents a climatic transition between the temperate rainfall region to the south and west and subtropical rainfall region to the east and a variable geology. This results in a diverse range of plant communities, characteristic of Cape Flora and subtropical flora.

The original vegetation of the area is classified according to Acocks as Eastern Cape Thornveld.



**Figure 22: Vegetation at the mining area is classified as the Eastern Province Thornveld.**

Although the climax of the vegetation would have been short forest and scrub-forest, this veld is today, essentially thornveld, is characterised by small (less than 3m tall) Sweet Thorn *Acacia karroo* sometimes none at all. Invasive thicket species such as Karoo Bluebush *Diospyros lycioides*, Karee *Rhus* spp., Cat-thorn *Scutia myrtina*, *Maytenus polyacantha*, and *Ehretia rigida* are also common in this veld type. Forest relics are rare and tend to occur as narrow belts along streams. Grasses are dense and of sourish, mixed type with Redgrass *Themeda triandra*, Bushveld Dropseed *Sporobolus fimbriatus*, Fingergrass *Digitaria eriantha*, *Eragrostis curvula*, and *Tristachya hispida*. There is a great variety of herbaceous species including *Chamaecrista mimosoides*, Mountain Herb *Schistostephium crataegifolium*, *Eriosema kraussianum*, *Senecio speciosus*, *Tephrosia macropoda*, *Monsonia emarginata*, *Lobelia erinus* and *Helichrysum odoratissimum*.

The two main variations can be distinguished as the northern or typical form, and the southern form, south of the Great Fish River.

The mining area falls within the southern form of the Eastern Province Thornveld. The grasses are the same as described above, with addition of *Pentaschistis angustifolia*, *Karroochloa curva*, *Ehrharta calycina*, *Seraria perennis* and patches of *Merxmuellera disticha*.



In terms of the conservation status at the site, virtually none of the vegetation is conserved. Overgrazing has lead to the loss of grass species and the increase of *A. karroo* and other woody plants. With the correct mining and consequent farming post mining, the vegetation type can be considered effectively preserved when grazed.

The southern section of the site was previously disturbed due to previous mining and the northern section of the mine is covered in coastal kweek grass and Sweet Thorn *Acacia karroo*. No red data species was identified or vulnerable species.



**Figure 23: Southern area of the mining site – previously mined area**



**Figure 24: Northern area of the mining site – typical Eastern Province Thornveld with disturbance**



**Figure 25: Vegetation on site: Coastal kweek with thorn trees**

Mining will therefore incorporate the previously disturbed area and clear the rest of the grass unit and once mined out; the site can be re-established with *Cynodon dactylon*. Therefore, mining would temporary disrupt the grazing unit, but since the site will be mined in phases with concurrent rehabilitation to follow; this site can be restored to a functional grazing unit, free of weeds.

Although *Cynodon dactylon* (common Bermuda grass) originates from East Africa, there is evidence that it grew all over Africa before the division of the continents. It is therefore considered to be indigenous to South Africa. This grass has a creeping growth habit, but is far less invasive than kikuyu. Bermuda grass is one of the most heat and drought tolerant species, using less than half as much water as kikuyu at maturity.

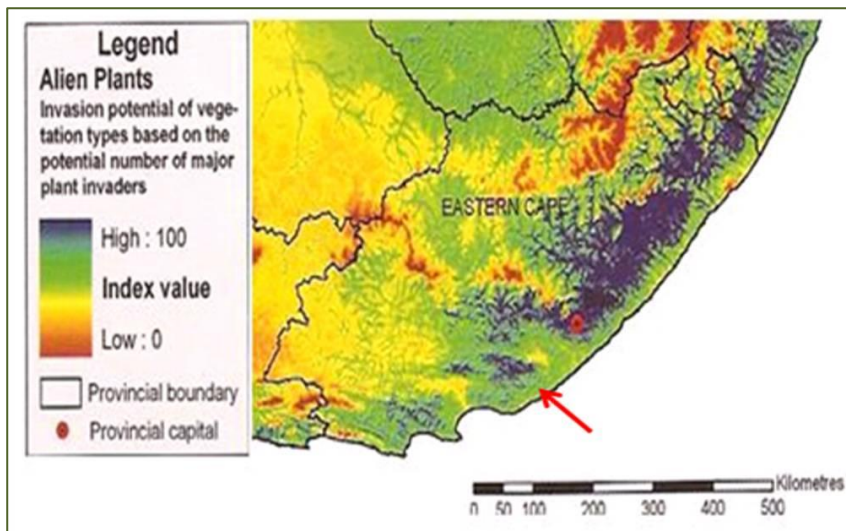
Thus establishing Bermuda grass will improve the stability and grazing unit of the mined out area. It will reduce any possible erosion on the slopes and will out compete weed growth. Nevertheless, it is imperative that the phased approach be followed to ensure that disturbance is restricted to the minimum. In order to protect disturbed areas and to prevent unnecessary visual impact the



minimum vegetation must be removed at any given time. The impact on removing the current vegetation and replacing it with Bermuda grass is rated very low with mitigation.

## ALIEN CONTROL MEASURES

Although herbicides exist that can kill almost any plant invader, it is not always possible to use them. The use of herbicides in South Africa is strictly controlled, and chemicals must be tested and registered for use against particular plants or groups of plants before they can be recommended (Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act of 1974 with Regulations and Amendments).



**Figure 26: Potential Alien Plants Invasion Index**

According to land classification the invasion potential of the land concerned is rated medium-high and disturbed land should be treated with utmost care. At the site *Lantana camara*, and *Ricinus communis* and various other weeds was noted on the disturbed areas. Once re-vegetation of disturbed areas starts this impact could emerge as a significant impact and the necessary control measures need to be implemented. Should it not be put in place, the objective of re-establishing a portion of the original vegetation will not be reached and the proposed mining venture could be rated as unsustainable. This scenario must be prevented at all cost.

Seeding plants should be hand-pulled. Immature plants should either be ring-barked, dug out, or the stems should be cut as near as possible to the ground. The bark on the remaining stem stub must be peeled off into the ground, once the stem has been cut. Mechanical eradication is an effective method of control as long as the stems of older plants are severed as low as possible, thereby ensuring that no buds will re-sprout.

Considering the low conservation value of the vegetation to be removed during the mining process and the limited area to be affected, the impact is rated of very low significance with mitigation.

#### Impact on the flora

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Site Specific	1	Site Specific	1	Site Specific	1
<b>Duration</b>	Medium Term	2	Short Term	1	Medium Term	2
<b>Intensity</b>	Low-Medium	3	Low	2	Very Low	1
<b>Probability</b>	Likely	3	Probable	2	Unlikely	1
<b>Status</b>	Negative		Negative		Neutral	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Low</b>	<b>18</b>	<b>Very Low</b>	<b>8</b>	<b>Insignificant</b>	<b>4</b>

#### REMEDIAL MEASURES

With a vigorous grass re-vegetation programme, it will create an improved micro climate and niche that will encourage certain species to re-colonize rehabilitated areas and the specie composition and diversity will improve over time. The success rate of re-vegetation will however, depend on concurrent rehabilitation approach, wetting and a post-rehabilitation maintenance programme being followed.

- Mining would be restricted to the areas demarcated by the mine plans and no vegetation outside the demarcated mine boundaries will be removed.
- As a contribution to the environment, the previously mined area will also be rehabilitated by sloping the site, ripping, topdressing with stored topsoil and seeding the area as mining progress.
- The rehabilitation plan will be implemented in accordance with the time frames set. 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.
- Indigenous vegetation outside the mine boundary shall not be affected by mining activities. Furthermore, no vegetation outside the mine areas will be removed and spread of alien vegetation will be prevented.
- All other indigenous plant species that can be transplanted will be removed from mine areas, potted and be used during the rehabilitation phase.
- Only the existing haul road will be used and vehicles will not traverse virgin land.
- All slope areas will be properly stabilized through compaction to ensure proper establishment of grass vegetation.

- The mining area will be reclaimed to a grass cover. Disturbed areas will be re-vegetated with a grass cover by seeding with *Cynodon dactylon* (Bermuda grass). For best results it can be established in the following way:
  - Spread Super Phosphate at a rate of 50g per m<sup>2</sup> over the entire area; this is a general recommendation, made in the absence of a soil test. Dig the area over incorporating the Super Phosphate and even compost to a depth of approximately 15 cm. Do not leave compost as a layer on top of the soil as it dries out faster than soil, and will not allow the seed to stay moist enough during the critical germination period.
  - Break down clods to create a fine seedbed. Spread a balanced fertiliser such as 5:1:5 or 3:1:5 at 30 g per m<sup>2</sup> and rake into the surface of the soil.
  - Sowing the seed: Ration of about 1 kg per 100 m<sup>2</sup> is sufficient for a proper cover. Broadcast the seed over the area as evenly as possible by hand, or by using a drop seeder (a fertiliser spreader will do, as long as it does not crush the seed). To achieve an even spread, split the amount of seed in two, moving up and down with one half and across and back with the other. The seed is very small so it can be mix with sand to bulk it up.
  - Rake the area lightly (using a steel rake), so that most of the seed is covered by no more than 1 cm of soil. This seed needs light to germinate so don't bury it too deeply.
  - Compacting: It is essential to compact the area lightly. A roller can be used or simply trample lightly under foot. This step is very important, as it brings the seed into direct contact with moist soil, reduces wash-away and initiates capillary action (the movement of water upwards through the soil profile).
  - Watering: Keep the area moist at all times for the first two weeks. By then the seed will have germinated and watering frequency should be reduced. It might be necessary to water more than once a day and avoid puddles. Although this is a relatively drought tolerant grass at maturity, it still needs regular watering during establishment. Irrigation can be reduced once the root system is established.
  - Continuous fertilisation: 50 g per m<sup>2</sup> of 5:1:5 or 3:1:5 three times a year. Slow release formulations are recommended.
- Seed will be broadcasted by hand and areas will be raked to cover seed and protect it from birds feeding in the area. 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 closure was granted.
- All root mass recovered after mining could be pulverized/mulched and reworked into the topsoil.
- Juvenile alien trees will be pulled and removed onto an area cleared for crop production where it will be burnt when it is dry.
- Once the area has been vegetated, a continuous alien control programme will be implemented by pulling any seedlings on a weekly basis. No plant and tree will be left until it reaches seed bearing age.
- Once an area is vegetated, no traffic will be permitted in such area, except for on the approved haul road. Driving in non-mining areas will be prevented.
- Veld fires will be prevented since it could affect the vegetation as well as impacts on soil stability and fertility. No fires will be permitted in the mining and the required fire extinguishers will be made available.
- Should re-vegetation be exceptionally slow due to dry conditions the seeded area will be irrigated once per week with a sprinkler until a sufficient ground cover has been established

Water for irrigation purposes will be withdrawn from the landowner only after agreement is reached.

- Should re-vegetation fail due to climatic conditions it will be repeated the following growing season.

## FAUNA

Animals play an important role in maintaining ecosystem functioning for example pollination, spreading of seeds, removing of pests, trimming of vegetation and therefore determining penetrability of vegetation and generation of manure etc.

Existing data on the distribution of sensitive and threatened animal species is at a relatively poor and coarse resolution (usually only reported at the level of 1:50 000 mapsheets with some habitat information). In many cases habitat suitability is the only way to allocate species to habitats or vegetation types. The exact location of populations of threatened plant species needs to be established in the field. Due to these limited resources that this area offers, original species diversity is low. In addition, the surrounding areas have been transformed by farming and cultivation land resulting in wild animals becoming scarcer.

In terms of the broad EMPAT assessment (Environmental Potential Atlas for South Africa) the site could host a low to moderate number of sensitive faunal species as depicted in the relevant maps but would definitely be restricted to the areas not used for mining activities.



**Figure 27: Sensitive bird species**



Figure 28: Sensitive mammal species



Figure 29: Sensitive butterfly species



Figure 30: Sensitive reptile species

In terms of the Eastern Cape State of Environment Report the site is deemed to be a much less important faunal habitat and no species of special concern occurs in this area.

Since there are very few remaining wild mammals on site, no detailed faunal survey was conducted. The more important animals that could be hosted by the proposed mine area are, guinea fowl, locusts, Spectacled Dormouse (*Graphiurus ocularis* – Rare) field mice, herpetofauna species such as the Ringhals (*Hemachatus haemachatus*), Cape Cobra (*Naja nivea*), Common Night Adder (*Causus rhombeatus*) and Puff adder (*Bitis arietans*), horned adder, Yellowbellied House Snake (*Lamprophis fuscus* - rare, restricted to termitaria and hollows under rocks), lizards-frogs-

tortoises-terrapin-toads (all protected), Blue Duiker (*Philantomba monticola* – Rare), Bushpig (*Tragelaphus scriptus*), Common Duiker (*Sylvicapra grimmia*), Large Spotted Genet (*Genetta tigrina*), African Striped Weasel (*Poecilogale albinucha* Rare), Scrub Hare (*Lepus saxatilis*), River Rabbit, Bushbuck (*Tragelaphus scriptus*), and Porcupine (*Hystrix africaeaustralis*), Caracal (*Felis caracal*), Serval (*Felis serval*- Rare), Vervet Monkey (*Cercopithecus aethiops*), Honey Badger (*Mellivora capensis* - Vulnerable), aardvark (*Orycteropus afra* – Vulnerable), Antbear (*Orycteropus afer* - Vulnerable), African Wild Cat (*Felis lybica cafra* – Vulnerable).

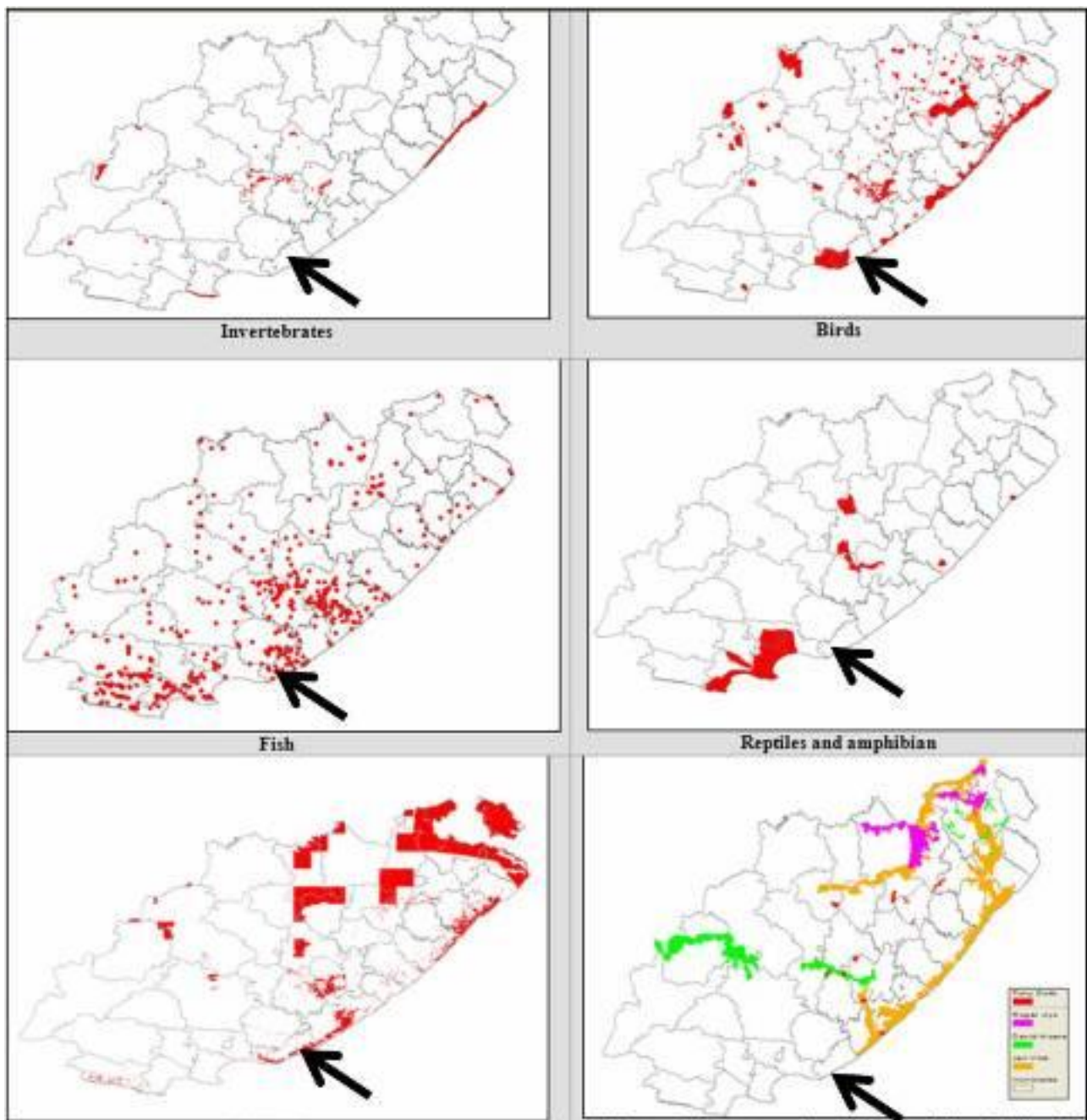
Most of the rare animal's habitats are associated with riverine environs, which preclude their existence in the study site, since the site is situated on a hill crest/watershed and not close to any river environment. The site is 1.5Ha in extent covered with grassland, which might provide feed for some wild animals, but does not provide habitat for wild animals, except for some small rodents, reptiles, insects, etc.

Mining would be restricted to a limited area and the slow extraction rate would provide adequate time for slow migration from the affected area and be sustained in the similar adjoining habitats. . In addition, noise generated by vehicles will cause most animals to vacate the site on a temporary basis. If certain species were to be affected they would simply vacated the proposed mining areas during the day and return during the night and over the weekends. The impact could be rated as very low due to the number of animals and species that will be affected.

Since this is also a farm land, this area is and will continue to be used to provide feed for cattle, thus this small area to be mined will be rehabilitated back to a grazing unit. It must also be noted that human activities such as crop farming and illegal mining activities also impacts on the flora and fauna in the area. The fact that some wildlife is still spotted in the area is an indication of the animals adapting to the collective impact of human activities.

Since only 1.5 Ha will be mined, migration patterns of animals within the will not be detrimentally affected. The proposed re-vegetation process would provide the opportunity for some of the animals to return to the rehabilitated environment. The extent of the impacts mentioned would; however rely on a dedicated rehabilitation approach from both the applicant and the DMR. The DMR neglected in the past to enforce environmental legislation resulting in degradation and since this approach will result in further degradation, it should be abolished.





**Figure 31: Eastern Cape state of the environment**

Limited hydrocarbon spillages would not detrimentally affect fauna on site. Storage of hydrocarbons and the servicing of vehicles will be strictly controlled within the plant area where no wild life will be present hence no impact is anticipated. As the plant and quarry area is not directly linked to any drainage channel and movement of vehicles will not take place in close proximity to any stream environment, no aquatic fauna will be affected. With regards to silt transport all silt will be trapped within the silt pond of the excavation and it will not pose an impact on fauna.



Indiscriminate hunting/trapping/poaching could be a potential problem and the necessary discipline and monitoring has to be enforced. The applicant will take responsibility for any animal (wild or domestic) that is proved to be killed by members of quarry staff. Strict control measures will be put in place and severe penalties will be applicable if any animal on site is poached.

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 very low. Since the site is small and will be fully rehabilitated no permanent or significant impact will be imposed on species diversity, forage patters or migration. The impact on the fauna at the site is rated as very low, provided that proper grassland is established.

#### Impact on fauna.

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Local	2	Site Specific	1	Site Specific	1
<b>Duration</b>	Short Term	1	Short Term	1	Medium Term	2
<b>Intensity</b>	Medium	4	Low	2	Low	2
<b>Probability</b>	Likely	3	Probable	2	Unlikely	1
<b>Status</b>	Negative		Negative		Neutral	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Low</b>	<b>21</b>	<b>Very Low</b>	<b>8</b>	<b>Insignificant</b>	<b>5</b>

#### REMEDIAL MEASURES

- Handling of fuels 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 or killed and this requirement will be included in the environmental awareness programme, which must be discussed with workers on an annual basis by the owner of the proposed quarry but preferably by a 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.
- 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 be carefully relocated.

- Areas to be cleared will be swept 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.
- Veld fires will be prevented by not allowing any open fires in the mine areas or smoking outside the mine areas.
- Mining area will be clearly demarcated and areas outside it will be out of bounds.
- Production faces will be profiled properly to ensure that it does not hold any danger to animals and to facilitate proper re-vegetation.

## WATER

### SURFACE WATER

According to hydrology maps, the area falls within the Bushmans river catchment area. This includes the whole of primary drainage area P with a total surface area of 5 064 Km<sup>2</sup>. The towns involved include Port Alfred, Bathurst, Kleinemonde, Kenton on Sea, Bushmans River Mouth, Boknes, Cannon Rocks and Alexandria. The catchments involved comprise those of Kowie, Kariega and Lower Bushmans rivers and the coastal strip to the west of the Bushmans River Mouth.

Port Alfred and Bathurst obtains water from the Mansfield Dam (0,2 million m<sup>3</sup> live storage) and the Sarel Hayward Dam (2,5 million m<sup>3</sup> live storage). The latter is an off-channel dam into which water is pumped from a small weir on the Kowie River. Water stored in the dam becomes saline during dry periods because of the marine origins of the shales underlying the dam basin. Regular flushing of the stored water and replacement with fresh water from the Kowie River during periods of high flow is required to counteract this. The combined yield of the two dams is estimated to be 1,6 million m<sup>3</sup>/a (Ninham Shand, 1987). Water is pumped from these dams to a water treatment works with a capacity of 6 Ml/d. The scheme is owned and operated by the Port Alfred Municipality. Water is also abstracted from coastal sand dunes near the town. The yield of this scheme is 0,13 million m<sup>3</sup>/a.

The Bushmans river catchment area receives between 150-278 x10<sup>5</sup> m<sup>2</sup> mean annual runoff, which is the lowest, in comparison with the rest of the Eastern Cape's catchment areas.

Since the quarry is also located on the watershed, it will therefore pose a negligible impact on any surface waters. When developed, water from the quarry area will accumulate in the excavation and this grey water will not drain into the surrounding area. Should it be required that water be pumped from the mine, it will be done from a floating platform with the inlet near the water surface to minimize silt load deposited in the natural environment. Spill areas must be protected by means of a dissipation bed or by a v-shape gabion fitted with geotextile on the inside to filter sediment out. No surface impact is anticipated in this regard.

Extraction of the limestone will obviously increase runoff from the sides of the excavation but it will all be retained in the excavation and a sporadic wetland and stock watering facility will therefore be established. To limit runoff from the quarry sides it will be developed and rehabilitated in phases, which will also prevent the silt load of water in the excavation being unnecessary increased.

#### SEWAGE FACILITIES

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The proposed chemical toilet will not cause an increase in coliform levels of perched aquifers as well as the main aquifer because of the reason provided above. Furthermore, the limited time that this facility will be in place at one given point will reduce the potential impact and would be less than the impact of sewage systems at residences on the farms in the area.

#### HYDROCARBONS

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If needed, bulk fuel storage facilities will be housed onsite and servicing of vehicles would be performed therefore should the limited day to day spills occur, the nature of the soil and concentration thereof in the excavation and silt traps will prevent that it reach the watercourses outside the mine area. If major spills occur due to destabilization of the fuel tank or used hydrocarbon storage facility, it will be directed and contained in the silt pond and subsurface migration of the plume will be contained by the high absorption capacity of the limestone. Under normal climatic conditions a limited impact on vegetation and zero impact on aquatic life are anticipated. However, it remains essential that all storage areas are protected with bund walls and sumps to contain spills effectively. Emergency repairs onsite could lead to limited contamination of surface water but the use of appropriate receptacles such as drip pans will cause this impact to be negligible.

#### HAUL ROAD

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The haul road could be a source of increased silt laden runoff due to the wearing course that will be put in place and the steeper gradient of the mine and plant area. This will, however be easily

controlled by cross and mitre drains directing runoff to the vegetated areas on side of the road where silt will mostly be filtered out.

#### Impact on surface water quality

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Local	2	Site Specific	1	Site Specific	1
<b>Duration</b>	Medium Term	2	Short Term	1	Short Term	1
<b>Intensity</b>	Low Medium	3	Low	2	Very Low	1
<b>Probability</b>	Likely	3	Probable	2	Unlikely	1
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Low</b>	<b>21</b>	<b>Very Low</b>	<b>8</b>	<b>Insignificant</b>	<b>3</b>

#### GROUNDWATER

The main rivers draining the region are the Bushman's, Boknes, Kariega, Kowie, and the Kleinemonde. There is no significant groundwater baseflow in the rivers and runoff consists of storm runoff and throughflow from drainage of the weathered zone immediately following rain events.

Groundwater flow is restricted to joints, fractures and faults that have a variable degree of openness and marine salts have therefore not been leached from the rock matrix over geological time. The Nanaga Formation overlies Bokkeveld shales, hence produces more saline than elsewhere. High salinities are also recorded in boreholes drilled in the Nanaga in these catchments. As a result, runoff from the Nanaga in these catchments generally produces high salt loads. Water quality of springs draining the Nanaga is generally poor.

However, regardless the quality of the groundwater, the mining activities will not have any negative or positive impact on the groundwater, since mining will be restricted to 10-20 m and will not intercede any groundwater table, since the depth of ground water exceeds 30m. Taken the extent of the operation into consideration, infiltration of sediment and hydrocarbons and solvents into the soil will not affect the primary aquifer. Because of the limited extent of the mine, recharge of the aquifer will sparsely be affected, since the borehole water will only be used for

rehabilitation when necessary and dust suppression. The impact can be rated as very low with mitigation.

## HYDROCARBONS

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Handling and storage of hydrocarbons onsite will be controlled as discussed under chapter dealing with the construction phase and soil matters and no extensive spills are anticipated. As hydrocarbon storage and servicing of vehicles might take place within the plant area all spillages will tend to percolate into the soil but the limestone layers will prevent it from reaching any aquifer and the high adsorption capacity of the limestone will restrict the plume. Limited daily spills caused by refuelling of vehicles and oil leaks will not affect the main aquifer due to depth of the limestone reserve and small volumes of hydrocarbons involved. It should also be recognized that hydrocarbons are biodegradable and small spills will be naturally remedied over time.

However, if a fuel tank is inadvertently destabilized it could lead to extensive impact on soils. Considering the likelihood that the latter will occur with the storage areas being protected by bund walls and servicing being done on a concrete floor with a sump, this impact is rated of low significance.

In the absence of mitigation measures the cumulative impact is rated of low significance whilst a negligible impact will be applicable if mitigation measures are implemented. Vehicles will also not be cleaned onsite hence oil contaminated wash water will not be a consideration.

## WASTE

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The mining site will host 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 site in Port Alfred or Grahamstown. 'Industrial waste' will be restricted to scrap metal and machine parts, which will be stored at the plant area and disposed of at a registered recycling facility on a regular basis. Considering the above, no treatment facilities are required for the site. The impact is rated negligible.

## WATER CONSUMPTION

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Potable water will be brought to site and will be minimal. If it is required to irrigate vegetated areas during extreme dry periods, *ad hoc* consumption will not exceed 15m<sup>3</sup> per day and will be obtained from the excavation's silt pond, or bought from farmers or be trucked in from Port

Alfred/Grahamstown hence no abstraction permit will be required. Water consumption for dust suppression at the plant and stockpile area will be required and will be obtained from similar sources. During worst case climatic conditions water consumption will not exceed 15 cubic meters per day whilst during periods of low wind speeds it will not exceed 5 cubic meters per day. Water will be stored onsite in elevated JoJo PVC tanks. Since no water will be abstracted from a natural source the impact is rated insignificant.

#### Impact on ground water quality & reserves

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Local	2	Site Specific	1	Site Specific	1
<b>Duration</b>	Medium Term	2	Short Term	1	Short Term	1
<b>Intensity</b>	Medium	4	Low-Medium	3	Very Low	1
<b>Probability</b>	Likely	3	Probable	2	Unlikely	1
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Low-Moderate</b>	<b>24</b>	<b>Very-Low</b>	<b>10</b>	<b>Insignificant</b>	<b>3</b>

#### REMEDIAL MEASURES

- Production faces will be protected against erosion to prevent increased silt transport by means of the mechanisms stipulated in the chapters on the construction phase and soil management.
- No grey water shall be allowed to enter the veld directly but will be concentrated in settling pond.
- The silt dam to be constructed should at least be 8-10 meters long, five meters wide and 1,5m deep. The dam wall should allow for 0,4m freeboard and a properly designed and stabilized/protected spillway of not less than 1,5m wide. The silt dam must be scooped out regularly and the fines incorporated in the topsoil and used during rehabilitation. The dams will reflect profiled and vegetated sides.
- Mining will be restricted to the proposed depth and footprint.
- Disturbed areas of the mine will be vegetated as soon as possible and as per rehabilitation plan.
- Haul roads to be protected against erosion by construction of cross drains and mitre drains.
- Vehicles will not use alternative roads or damage vegetation outside the approved mine boundary.
- The chemical toilet will be maintained to Municipal specification, will be inspected on a regular basis and be located within the excavation.
- Bulk fuel containers, if erected, will be positioned away of main internal haul routes to reduce the risk of it being destabilized. These containers shall be bunded and a storage capacity of at least 115% of storage volume will be provided. Fuel pumps will be provided with an apron and sump to contain spills. Vehicles will be serviced on a concrete slab provided with a sump to

contain spills. Wash-bays, if ever deemed necessary will be provided with an oil trap, from where the concentrated oil layer will be scooped off on a regular basis. All used hydrocarbon storage will be restricted within a bunded area and where applicable under roof and provision will be made for disposal to a registered recycling facility on a regular basis.

- No foreign or unapproved material/substance will be dumped or stored within the footprint of the mine area, with specific emphasis on post closure use.
- Waste will be contained in receptacles stationed at appropriate designated areas and 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. If necessary the waste area will be lined with a durable PVC liner 20cm below ground level.
- Vehicle maintenance will be done over suitable drip trays within the service area.
- 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 removed from the property on a regular basis to an approved facility.
- If spills do occur the affected soil will be removed to an approved waste site or in case of minor spills, the soil can be treated with fertilizer/appropriate oil/petroleum/diesel surfactants to facilitate breaking down hydrocarbons. 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 and DME will be informed immediately for assistance and advice and a competent company conversant with bio-remediation will be appointed as soon as possible to address the possible impacts of such spill. All costs would be for the account of the applicant.
- Water from the silt traps (floating suction pipe) will be first utilized for dust suppression to always maintain the holding capacity thereof and to reduce possibly consumption water usage from local surface water sources.
- The borehole will be tested for capacity and water level prior to quarry development.
- Water from the existing borehole will not be used without permission of the farmer.
- 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'.

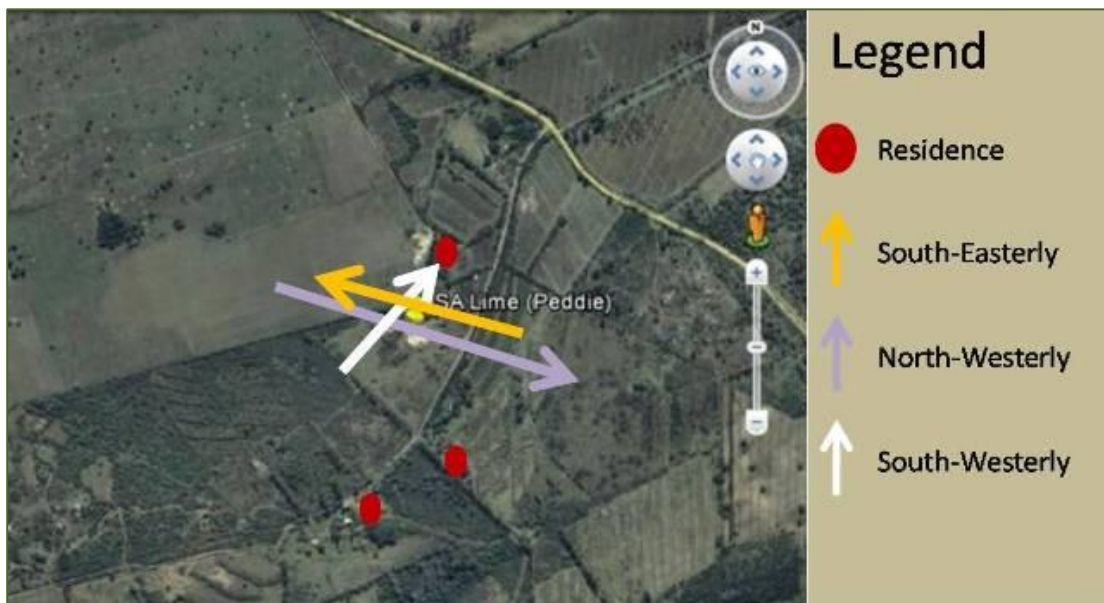
## AIR QUALITY

The amount of dust generated in a mining area is directly linked to the type of material that is extracted, mechanical processes involved, traffic volumes, windspeed and soil moisture content. The finer the material (more easily airborne) and the higher the clay and silt concentrations the more severe is the impact. The dryer the soil becomes the more dust it generates therefore removed topsoil must be replaced, seeded and covered with organic matter as soon as possible.

The air quality of the immediate surroundings is good due to its rural status. During windy periods the abutting agricultural areas and the abutting quarry operations will liberate a limited amount of dust into the atmosphere causing a slight rise in air pollution levels. The same scenario applies when motorists are using the gravel roads. Since the property involved is still zoned agricultural and rural, it would cause tolerable ambient levels to be higher than those for residential areas. It would on the other hand not exempt the applicant to implement measures to keep disturbed areas as small as possible and to reduce dust generation when and wherever possible.

Mechanical processes are restricted to mining and loading and pulverizing of the mined material, but no blasting will be allowed. Thus, during the handling of limestone, the coarse material will not readily generate dust, however, limestone material when crush, produces a fine white dust, which can lead to irritation, but does not have seriously harmful effects. If inhaled, the dust can cause inflammation of lungs, while redness of the eyes occurs on contact. The dust may cause the skin to become dry as well, but the overall impact is minimal.

Thus the crushing of limestone will increase dust generation, but if managed properly and installing dust sprays on the crusher, this impact will be reduced. If dust generation becomes a serious problem, the area can simply be irrigated once or twice per day. The fact that a berm was constructed on the southern boundary of the previous mine and the vegetation screen between the excavation and the nearby residence does to some degree mitigates this impact.



**Figure 32: Prevailing winds in this area**



The strong south westerly and south- eastern winds may arise during dry periods, to liberate dust from the quarry (which will include the topsoil stockpiles) and under normal circumstances from the crushing plant into the atmosphere and may cause deposition of dust at nearby residence. More specifically, during the south-westerly winds, dust will be blown towards this residence from the quarry site and during north-westerly winds, dust will be blown from the crushing plant towards this residence. The other residence will most likely not experience any impact, since the wind would blow the dust away from these residents most of the time and no health or discomfort (like dust fall out) impacts will be expected. In the event of other winds blowing, the location of the residence compared to the site, the topography, the berm around the previous mine and the vegetation screen separating them, would mitigate the impact to low.

The dust from the crushing plant may also pose health problems especially to the workers, as previously listed. The applicant and workers must comply with Mine Health and Safety guidelines, thus mitigating these potential health risks, by simply irrigating the area once or twice per day, during very windy periods and installing a sprinkler system on the crushing plant to be used whenever the crushing plant is operating.

Small stockpiles will be established within the excavation, but will be removed within a week. Topsoil stockpiles may cause more dust liberation into the air, as previously discussed, but again distance to affected parties will preclude any major impact from occurring. Spreading of topsoil during the re-vegetation phase will result in the loose soil to become prone to wind erosion and consideration should be given to the irrigation of such areas. Once seeded, the impact from such areas would abate very soon.

Since the existing access road will be used, no additional roads needs to be constructed and no additional areas will be expose. Vehicular traffic will increase; but not to the extent to cause a high impact on dust generation and the impact is rated low. The worst case scenario is a small dust plume that will appear at the crushing plant and would constitute the highest impact on air quality and aesthetics of the area. No more than 20 truckloads would be carted from the property per day resulting in vehicle movement approximately every 15 minutes. The mining site is surrounded by agricultural land and the author is confident that the dust that will be generated can be well controlled and the deposition that might occur will be below 20-30mg/m<sup>2</sup> per day. If need be, dust levels could be determined to ensure that dust counts are below DEDEA requirements.

Vehicular emissions will be related to one excavator, one frond-end loader and a number of trucks and it is anticipated that the impact would be very low. People would not reside on the property; therefore smoke generated by cooking fires would not be a consideration. No waste would be

burned on site. No other form of chemical air pollution is envisaged. No odours will be generated by the mining operation.

The overall impact on air quality is rated as low with mitigation, 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 to original levels.

#### Impact on air quality

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Local	2	Local	2	Site Specific	1
<b>Duration</b>	Short Term	1	Short Term	1	Short Term	1
<b>Intensity</b>	Medium-High	5	Low-Medium	3	Very Low	1
<b>Probability</b>	Definite	4	Likely	3	Unlikely	1
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Moderate</b>	<b>32</b>	<b>Low</b>	<b>18</b>	<b>Insignificant</b>	<b>3</b>

#### REMEDIAL MEASURES

- Vehicles to be maintained properly and fitted with standard exhaust systems and will not be left idling unnecessary.
- Comply with Mine Health and Safety guidelines at all times.
- No cooking fires will be allowed on the property.
- No chemicals will be stored or disposed off on site.
- Waste will not be burnt on site. Waste will be retained in proper receptacles placed at the site and removed regularly to the waste site. The waste stream will be limited and be removed from site weekly to prevent odours from occurring.
- Wearing course of haul roads in process area will be upgraded when necessary to reduce dust generation.
- The mine will be developed in phases to reduce the extent of exposed areas.
- Topsoil will be reintroduced to mine areas as soon as possible and irrigated immediately after placement.
- The chemical toilet shall be regularly serviced as per Municipal guidelines.
- If the mining methodology allows, the mine will be developed in phases to reduce the extent of exposed areas and the minimum area for optimal mining will be denuded ahead of the production face.
- Disturbed mine areas will be re-vegetated as soon as possible as per the re-vegetation plan.

- An irrigation system will be installed in the process area to curb dust generation. Equipment for this purpose must be in place before crushing activities commence.
- The crusher and screens will be fitted with atomizers with specific reference to material transfer points or transfer points should be enclosed. Rubber chutes will be installed at final transfer points to stockpiles.
- The sprinkler system on the crusher will be well maintained and used appropriately.
- During periods of high winds and liberation of excessive dust volumes, disturbed areas will be watered down by means of a sprinkler system or water cart. Equipment for this purpose must be obtained as soon as possible on approval of the EMP. If needed, shade cloth windbreaks (10m apart, 2,5m high) will be erected.
- If dust levels in the process area necessitates, 3m high shade cloth windbreaks will be established around individual stockpiles with access point opposite from prevailing wind direction.
- Crushing will cease if dust counts exceed acceptable levels at any nearby residence. Quarry activities shall not impose dust counts of more than 80 mg/m<sup>2</sup>/per day at any residence or more than 40 mg/m<sup>2</sup>/per day during normal operations.
- No stockpiles will be retained for long periods in the mining area that could result in a source of dust.
- 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 quarry operations shall cease. The management system will allow for monitoring the situation over weekends when no workers are on site.
- Speed of vehicles will be restricted to 40km/h.
- Dust counts must be done whenever the DMR requires such measurements and the outcome of the dust sampling presented to the DMR.
- The terms of reference for the dust counts must be determined in conjunction with the officials from the DMR.
- This potential impact should be addressed in an environmental awareness programme.

## NOISE

The impact of noise levels generated by mining 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 beneficiation is 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 rural setting of the study area would, under normal circumstances, probably cause the ambient noise levels to be between 35 and 40 dB during the day, but levels will be intermittently elevated to approximately 55dB within 50m from the Southwell DR01969 gravel road. Noises generated at this quarry will generally be low-pitched if operating equipment is well maintained. There is one exception and that is the reverse sirens which produce a high pitched, irritating noise and possible could cause some irritation to nearest residences early in the morning or later at night. However, the workday at the quarry will only start at around eight and ends at 16.30 from Mondays to Fridays, thus mining will only take place during normal working hours and this impact would thus only be experienced by residents residing at home during the daytime. Since the fitting of the sirens is a requirement of the Mine Health & Safety Act as well as OHS Act, there is no mitigation possible, except for preventing operations very early in the morning or late at night.

The crushing plant is situated about 30m from the neighboring resident north-east of the site and the mine area about 130m away. The other neighbor is about 160m away from the mining site to the south-east, thus for the duration of the life time of the mine, the neighbors will be subjected to noise generated from the crushing plant and mine machinery and workers. It must be noted that during the public participation process these neighbors did not object to this project on the basis of noise impact and also previous illegal mining never led to any complaints received. Nevertheless, the crushing plants that would be hosted on the process area will add to the noise impact and will rise to 75dB at source. It is known that within 100m from the quarry, noise levels drop with about 10dB, thus noise levels at this nearby residence will therefore be between 70dB-60dB, which will contribute to a nuisance factor and be applicable during crushing periods. In addition, adverse conditions such as low cloud cover or strong winds blowing towards recipients could increase noise levels between 3 & 7 dB, and the fact that the neighbor is in the wind path, further increases the impact. The impact of noise on this neighbor is therefore rated moderate-high with mitigation.

In terms of the other resident south-east from the site, it is expected that noise levels at this neighbor, which is about 160m away from the site, will be approximately 40-50dB. The impact is noise on this neighbor is rated moderate with mitigation. It is expected that noise levels at the landowners' residents which is about 400m and 3km away from the site will preclude any significant impact on these residences.

Impacts related to the use of the bulldozer will be *ad hoc* as it will only be used during the clearing of potential overburden onsite when necessary or when profiling the sides of the quarry.

Maintenance of equipment where steel on steel action is involved will be audible and should be avoided early morning or late afternoon. Mining or crushing at night-time is not contemplated. Extension of crushing hours must be communicated to landowners and neighbors.

If mining is approved, this impact will be unavoidable, and would last for the period of the mine's lifespan. The best way to mitigate the noise levels will be to maintain all the machinery and trucks used in the mining process well, which is in the reach of the applicant and to keep to working hours. Furthermore, no mining will take place over weekends and public holidays, but normal working hours during the week will be applied: working hours would on average be from 7am to 6pm on weekdays, which would coincide well with the daily activities of the inhabitants of the area. This will assist in mitigating the impact to an acceptable extent.

No workers will be housed on the property therefore noise generated at night would not become a nuisance. Management of this impact during the day could be achieved via an environmental awareness programme. In addition, staff and contractors would be sensitized not to engage in unnecessary hooting, shouting, flapping of tailgates and use of exhaust brakes during operational hours. Maintaining speeds below 40km/h would assist in curbing noise impact.

#### Noise Impact

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Local	2	Local	2	None	0
<b>Duration</b>	Short Term	1	Short Term	1	Short Term	1
<b>Intensity</b>	Very High	7	High	6	Very Low	1
<b>Probability</b>	Definite	4	Definite	4	Probable	2
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Moderate</b>	<b>40</b>	<b>Moderate</b>	<b>36</b>	<b>Insignificant</b>	<b>4</b>

#### REMEDIAL MEASURES

- All vehicles will be fitted with standard exhaust systems and be regularly serviced.
- Unnecessary hooting, shouting, flapping of tailgates and use of exhaust brakes will be discouraged and be penalized where necessary.
- Unnecessary idling of vehicles will be discouraged.
- Traveling speed on the internal haul road will be reduced to 40km/h.

- Moving parts of vehicles/screen/crusher will be regularly lubricated, replaced and serviced.
- Repair work that involves using grinders and hammers on steel or any other steel on steel activity must not be done early morning or early evening.
- The vegetation screen between the neighbors house to the south-east of the site may not be removed or impacted on during mining to help absorb some of the noise generated by the crushing plant and as a screen for dust.
- Normal working hours will apply for weekdays (7am-5pm) and Saturdays (8am-1pm) if necessary (will liaise with property owners) – No work on public holidays or Sundays.
- Workforce and contractors will be properly managed in terms of noise generation and be informed on acceptable behavior.
- Protective ear devices will be provided to all operators of machinery/vehicles generating noise above 50dB at source.
- All Mine Health and Safety guidelines must be complied with.

## WASTE GENERATION AND MANAGEMENT

### BUILDING RUBBLE

Construction activities related to bund walls, ramp and septic tank are anticipated therefore cement residue, brick residue, ceramic waste and PVC residue will be generated but in small amounts. Since the crushing plant is already established, no additional foundation needs to be constructed. This material generated during the construction phase will on a weekly basis be removed from site to the local waste facility in Port Alfred/Grahamstown.

At closure all foundations and brick structures (buildings/bund walls, etc.) need to be removed to the quarry void. Any other material needs to be sold off or to be deposited at the approved waste facility.

Negligible impacts on soils, water, vegetation, air quality and humans are anticipated.

### INDUSTRIAL WASTE

During the operational stage a small amount of industrial waste such as batteries, tyres, computers, cables and dysfunctional equipment will be generated. There will be a need to store this waste and removed it to approved waste sites or recycling facilities as it might over the long term affect soils. The impact is rated of low significance.

### DOMESTIC WASTE

The waste stream will consist mainly 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 strategic places within the quarry area to encourage workers to use them. Poor control over domestic waste handling could lead to littering the site and abutting properties and must be avoided since it could lead to livestock mortality. Due to the limited number of people anticipated on site, the limited waste stream will have negligible impacts on soils, water vegetation, air quality and humans.

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#### MINE RESIDUE

The nature of the mine restricts the type of residue to oversize material and overburden, and root mass. The oversize material and overburden can be returned to the excavation and be covered with soil on a weekly basis. The root mass can be stockpiled and worked into the topsoil as organic matter. The amount of surface vegetation to be removed ahead of the face will be negligible and will be returned to the profiled areas as mulch.

Since no chemical processes, mineral processing or washing plant is required on site no chemical/mineral waste will be generated. If stockpiles are handled correctly during the project it will have low impact.

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#### SEWAGE SYSTEM

The sewage system will consist of a chemical toilet and due to the limited number of people on site, the effluent stream will be limited to approximately 0,1m<sup>3</sup> per week and no impacts on soils, groundwater, surface water, air and humans are anticipated.

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#### HYDROCARBONS

Storage of used hydrocarbons, which is classified as hazardous waste and servicing of vehicles, could take place in the process area. Normally this waste is not properly controlled on mining sites and result in soil and water pollution. The position of the plant is such that this type of pollution will not necessarily affect water sources, animals or humans, but will remain a poor environmental approach. The absence of perched aquifers will preclude any impact on groundwater. Hydrocarbon spills could marginally affect re-vegetation process detrimentally over time. It is therefore essential that designated areas for the storage of used hydrocarbons, lubricants and solvents are created. It is also important to provide the correct receptacles for storage and tools for transfer thereof. With regards to services areas it should occur on cement top provided with a sump. Considering that the sub-garage for mayor repairs and servicing of vehicles is off site: only emergency servicing of equipment and vehicles will take place and then just within the designated area. Used filters and gaskets or oil contaminated parts are normally

dumped in domestic waste bins, which should be avoided and special receptacles must be made available. Cleaning of engines, engine parts or trucks should take place in a wash-bay area fitted with an oil trap but will most probably be done offsite at the sub-garage.

The correct strategies should therefore be put in place to categorized waste correctly and identify suitable waste sites for different waste types generated in the process area. Effectively controlling this impact will require that the human error factor needs to be addressed through an environmental awareness programme.

#### SALVAGE YARD / SCRAP METAL

Since it is a mechanized operation a moderate amount of dysfunctional machine parts and scrap metal could be generated and will be stored within a designated fenced area. It will impact on the visual appearance of the site and potentially on the heavy metal concentration in soils. Thus the salvage section should be tidied up on a regular basis and usable spares must be neatly positioned; uncontrolled stacking in the area should be avoided. It is therefore imperative that all unusable equipment and parts be regularly disposed off at an appropriate recycling facility.

At closure, all scrap metal and dysfunctional equipment will be sold to a commercial scrap yard. The post closure impact is rated insignificant.

#### Impact of waste on the environment

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Local	2	Site Specific	1	Site Specific	1
<b>Duration</b>	Short Term	1	Short Term	1	Short Term	1
<b>Intensity</b>	Medium	4	Low-Medium	3	Very Low	1
<b>Probability</b>	Definite	4	Likely	3	Unlikely	1
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Low-Moderate</b>	<b>28</b>	<b>Very Low</b>	<b>15</b>	<b>Insignificant</b>	<b>3</b>

#### REMEDIAL MEASURES

- Staff would be trained to distinguish between various types of building rubble. Rubble will be neatly stored in a demarcated area close to the area earmarked for the crusher and if



applicable will be dampened if it produces dust. General rubble will be disposed off within a month after completion of the construction phase at the local waste facility and other, such as metals will be sold to a recycling company.

- An area will be cleared and demarcated for industrial waste. Tyre casings will be disposed of as soon as possible at the nearest registered waste facility or be sold to a recycling facility. Dysfunctional equipment shall be sold to a recycling company or disposed of at a hazardous waste site, depending on the nature of the materials involved. All vehicle batteries shall be recycled to a facility like e.g. Midas or be removed to a hazardous waste facility. Staff will be informed on the hazards and correct manner to deal with waste stored at the quarry.
- The odd tyre casings and dysfunctional equipment that could be generated, will be disposed of immediately at the nearest registered waste facility.
- Any waste produced will be removed from the mine area on a continuous basis to the Port Alfred/Grahamstown waste facility with specific emphasis on household waste, plastics, unusable scrap metal and tire casings, if any.
- During the project a skip with a proper cover will be positioned in the process area. Large refuse bins fitted with a proper lid will be positioned at the various work stations in the process area, quarry area and office area and be emptied on a regular basis in the skip.
- Vehicles may not leak any fuel, oil or lubricants and will be maintained to an acceptable standard.
- Any fuel spills will be cleaned up immediately and the soil from spill areas to be removed to an approved waste disposal site.
- The salvage yard will be neat and all usable material will be placed in rows and separated in applicable categories.
- Unusable scrap metal or dysfunctional machinery will be positioned on one side and removed on a monthly basis to a recycling facility.
- A designated service area fitted with a concrete slab and sump will be provided.
- No servicing will be done elsewhere on mine or process area. Oils will not be drained on the concrete floor but into appropriate receptacles, which will then be emptied with funnels into the used oil receptacles.
- A designated area for the storage of used hydrocarbons will be provided. It will dispose of a bund wall (115% of volume stored and fitted with a release valve in case of heavy precipitation) and concrete floor. It will be divided in two distinct sections for used oils and contaminated parts and will be clearly marked as such. Appropriate receptacles will be provided for each type. If these receptacles do not dispose of a proper lid, the area must be provided with a roof.
- All hydrocarbons will be sold off on a monthly basis to recycling companies.
- All hydrocarbon-contaminated material, including soil to be disposed at a hazardous waste facility. Affected soil will be treated with fertilizer/surfactants or bio-remedied by a specialist in case of any large spills.
- No hydrocarbons will be drained into the soil.

- Contaminated vehicles or machine part will only be washed/cleaned if ever such need arise in a wash-bay constructed for this purpose and it must dispose over an appropriately designed oil trap.
- None of these wastes will be buried/drained into the soil.
- A chemical toilet will be placed at the quarry and it will be regularly serviced and emptied at an approved waste site. A Health Inspector should inspect the system and surrounds annually.
- Proper care will be taken that the surrounds are not used for ablutions and the necessary penalty system will be imposed for such offence.
- Waste receptacles will be clearly marked to increase visibility and to distinguish it from hazardous waste receptacles. During normal operations the waste bins will suffice.
- Domestic waste generated ancillary to the mining process will be deposited in containers with scavenger proof lids placed at quarry. It will be weekly removed from site to the nearest waste site and not dumped in the veld nor burnt nor buried on site. 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.
- Any foul smells will be treated with the necessary disinfectants or lime can be introduced to the bottom of the receptacle.
- A cleanup will be done on a monthly basis.
- All topsoil to be removed on identified phases and areas will be used in the rehabilitation process.
- Facilities must be cleaned up and will be maintained and kept neat on a continuous basis.
- All vegetation removed will be used as organic material in the rehabilitation process.
- A general clean up of the property will be done on a weekly basis and all staff will be involved to establish a sense of pride in achieving a clean environment.
- Waste will not be burnt or buried on site.
- Staff will be equipped to distinguish between domestic waste and industrial waste.
- Oversize boulders will be returned to the quarry floor and be covered with gravel.
- Effluent from the silt dam will be dealt with as described under the heading "Surface Water". The slurry must be used for rehabilitation and mixed in with the topsoil.
- Guaze or a fine grid structure must be placed in front of the inlet pipe and regularly checked and cleaned up.
- At closure all remaining stockpiles will be flattened and reintroduced to disturbed quarry areas within 3 months and the topsoil stockpiles reintroduced to disturbed quarry areas.
- At closure, all waste will be removed from site and all machinery.
- At closure all concrete floors/foundations will be ripped up and the material disposed of in the quarry void and covered with overburden and topsoil.
- A general clean-up of the property will be done on a weekly basis and before every year end closure and all personnel will be involved to establish a sense of pride in achieving a clean environment.
- The handling of all waste will be included in an environmental awareness programme.

Originally, the landscape would have been described as very attractive and of high aesthetic quality. However, due to mining and farming activities the current landscape can be described as low-moderately attractive with low aesthetic quality. Onsite assessment of immediate landscapes revealed that the proposed mine is bordered by semi or completely transformed land.

Although the site is situated near the residence access road, previous mining constructed a berm on the southern boundary of the site, shielding the site from the by passers. This berm must be kept in place to continue to act as a shield from the quarry, until the proposed mining has ceased, thereafter the berm, which is the topsoil from the previous mine, can be removed and topsoil used to rehabilitated the previous mining scar.

The study area and surrounds are sparsely populated and the site is not visible from the public Southwell gravel road. The fact that half of the mine area is disturbed, does to some extent constitute a lesser focal point in the landscape and will result in the visuals of the area being marginally affected and would request a proper re-vegetation approach, irrespective thereof that surrounding areas dispose of low to medium quality landscapes. An undertaking is necessary that the ecology of the area will be restored to prevent it from reverting to the poor status of the surrounds. It should be taken into consideration that only 1,5 ha will be developed and a concurrent rehabilitation plan will be followed as well as rehabilitating the previous old mining scar, will improve the current state of the area and must be seen as a positive.

The fact that mining will change the texture (vegetated/rough to bare/smooth) and color (green/brown to whitish-grey) of the area will increase visibility moderately and necessitates that production areas be profiled and re-vegetated concurrently with extraction activities, but since this site is not readily visible from any public road, this impact will be temporary and insignificant. Since mining will result in a box cut with sloped areas that will be readily absorbed in the landscape.

The crushing site and the un-rehabilitated quarry to the south of the application area already exists and the proposed mobile office and workshop area will add to the infrastructure on site but it will not change the visual intrusion already experience, and this impact is rated low. In addition, most of the crushing site is hidden by a vegetation screen.

The study area and immediate surrounds do not constitute a major tourist destination and the development of the quarry will not affect tourist expenditure in any way. 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. It is not expected that it would cause the quarry operation to become more visible. Dust generation on the internal haul road and crushing plant will be experienced, resulting in only a limited visual dust plume to hang in the air above the road, however a sprinkler system will be used which will lower the impact.

Based on the above assessment the impact during mining is rated of low significance.



**Figure 33: Previous mining scar, notice the berm that shields the site from the residence access road**



**Figure 34: The old entrance to the site, the berm is placed just after the entrance. Picture one is taken from the old quarry side and picture two is taken from the road side.**





**Figure 35: Crushing plant already constructed at site due to previous mining**



**Figure 36: Vegetation screen that shelters the neighbor north-east of the site from the mining site as well as the crushing plant area**



**Figure 37: View to the north**

**Figure 38: View to the east**



Figure 39: View to the south



Figure 40: View to the south-west

### Visual Impact

	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
<b>Extent</b>	Local	2	Local	2	Site Specific	1
<b>Duration</b>	Permanent	4	Short Term	1	Short Term	1
<b>Intensity</b>	Low-Medium	3	Low	2	Very Low	1
<b>Probability</b>	Likely	3	Probable	2	Unlikely	1
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Low-Moderate</b>	<b>27</b>	<b>Very-Low</b>	<b>10</b>	<b>Insignificant</b>	<b>3</b>

### REMEDIAL MEASURES

- No vegetation clearing will take place outside the proposed mine area during the mining operation. Especially the vegetation screen between the crushing plant and the neighbor.
- The soil berm on the southern boundary of the site that was placed during the previous mining, must be kept and not removed until the proposed mining has ceased and the site sloped with 60% grass cover. Thereafter, the berm can be removed and used for rehabilitating the previous mine scar.
- Reduce visual impact through proper re-vegetation.
- Mining areas will be re-vegetated to a 50% cover during the first year, a 70% cover in the second year.
- 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'.



- The sides of the quarries will be rounded off through a cut and fill action as described in the mine development plan.
- Cuts will follow curvilinear lines, which will blend in with those of the surrounding landscape, rather than straight geometric lines.
- Alien vegetation will be removed on a continuous basis to ensure that established natural vegetation is not again out-competed.
- Excessive dust plumes within the mine area or on the haul roads will be eliminated through wetting.
- Dust generated at the crushing plant will be controlled with a sprinkler system.
- Visuals will be drastically improved at closure of the mining concern.
- At closure, all disturbed areas would have been rehabilitated as per the re-vegetation plan and all mobile infrastructure will be removed and disturbed areas be rehabilitated as per the re-vegetation plan.

## TRANSPORT IMPACT

The existing access road gaining access to the mining site that links with the Southwell DR01969 public gravel road will be used. This road is used by three farmers and is in poor standard. The road is narrow and has not been maintained and has been eroded and has potholes. This road is a single lane road with no shoulder area and therefore not wide enough for the farmers to overtake slow moving haul trucks when they are travelling on the same road. It is important that the necessary safety precautions be taken. This road has however a proper Bell Mouth entrance to the Southwell road. Line of sight is good to the left and right, but the entrance is situated on a small bent in the Southwell road, thus drivers will be sensitized on safety procedures and only skilled drivers will be appointed.

The farm road that links with the Southwell road is also not constructed for carrying heavy vehicles and will require grading and upgrading of the wearing course from time to time. The road must be protected against erosion by means of cross and mitre drains; spill out of these cross drains must be directed into areas that are well established with vegetation, which will not lead to any erosion. The impact on the integrity of the road is deemed of low-moderate significance when the necessary maintenance is provided.



**Figure 41: Bell Mouth entrance**



**Figure 42: Farm road is narrow and needs upgrading**



**Figure 43: Line of sight to the left and right on the Southwell Road**

Another access road gains access to the crushing plant and runs directly past the neighbors house north-east of the site. This road must not be used and access to the crushing plant must be strictly controlled and gained only via the mining site. This will eliminate the impacts caused by trucks (noise, dust and road integrity) passing the neighbors house.



**Figure 44: Access road to the mining site may be used but not the alternative access road leading to the crushing plant**

The structural integrity of the Southwell DR01969 public road is average to poor standard and is constantly used by farmers transporting crop goods with heavy vehicles and people travelling between Port Alfred and Grahamstown, and it will experience an additional impact on structural integrity if mining commences. Potholes are common and some edge breaking was also noted on this road. Furthermore, safety risks for motorists could increase with the increase in heavy vehicles on any road. Cyclists and pedestrians will also experience a similar risk and truck drivers will be sensitized on the matter. It is therefore understood that heavy vehicles will slow down vehicles on these roads and increase the safety risks, and thus the impact is rated low-moderate on the Southwell road, considering the contribution to the overall freight that is hauled on this road.



**Figure 45: Southwell road**

The necessary heavy vehicle signage must be erected on both sides of the access to the Southwell road as per the specifications of the District Roads Engineer. During periods of high hauling rates, a flagman must secure the access to mitigate the safety risks. The upgrading and maintenance of these roads rest solely with the District Road Engineer (DRE) for the western region. The applicant can contribute to the maintenance of this road and the Department of Roads and Transport can be consulted. It would therefore be essential that adequate liaison between the applicant and the DRE be established in terms of the repair of any section of the road that could pose a threat to the public.

Material will only be carted from the property as from 08:00 to 17:00 during the week, but may result in the need to cart on Saturday mornings as well. Road safety for motorists is of importance and truck drivers will be informed accordingly and be sensitized towards displaying proper road etiquette.

#### **Traffic Impact**

	<b>OPERATIONAL (no mitigation)</b>	<b>WEIGHT</b>	<b>OPERATIONAL (with mitigation)</b>	<b>WEIGHT</b>	<b>CLOSURE</b>	<b>WEIGHT</b>
<b>Extent</b>	Sub Regional	3	Sub Regional	3	Site Specific	1
<b>Duration</b>	Short Term	1	Short Term	1	Short Term	1
<b>Intensity</b>	High	6	Medium-High	5	Low	2
<b>Probability</b>	Definite	4	Likely	3	Unlikely	1
<b>Status</b>	Negative		Negative		Negative	
<b>Confidence</b>	High		High		High	
<b>Significance</b>	<b>Moderate</b>	<b>40</b>	<b>Low-Moderate</b>	<b>27</b>	<b>Insignificant</b>	<b>4</b>

- 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 and this aspect will be included in the environmental awareness programme.
- No unnecessary hooting would be permitted.
- Vehicles entering the Southwell public gravel road, the farm access road, or any other road will come to a complete stop before entering the road and any transgressions in this regard will be heavily penalized. All contractors will sign a letter of agreement to this effect.
- The access road past the North-Eastern neighbor may not be use to gain access to the crushing plant, but access to the crushing plant will only be gained via the mining site.
- All vehicles visiting the quarry shall be road worthy and will be included in the agreement with contractors.
- Overloading will not be permitted. Speeding will be prohibited and drivers will be penalized should it be proved that this requirement is contravened.
- Hauling of material will only mostly commence at 08:00 and ceases at 17:00 on week days. No vehicles may park along the road outside the mine area before or after the said times.
- The appropriate signage (W107 & W108 –1,2m size) will be erected on both sides of the access to the Southwell road and will be maintained in collaboration with the District Roads Engineer.
- The District Roads Engineer will be consulted on the maintenance of the roads to be used.
- If poor visibility or slow access of vehicles onto the Southwell road could result in any accidents, a flagman will be used at the access.
- Internal haul road will be maintained to an acceptable standard to prevent erosion and maintain safety standards.

## SOCIO -ECONOMIC IMPACT

It is very important for any mining application to consider the social impacts, whether it is beneficial or harmful to the surrounding community. Limestone mining is beneficial to some community members requiring lime for agricultural activities, thus the availability of such material is very convenient and more affordable, and also it can provide job opportunities and must be seen as a positive contributor to upliftment of inhabitants of the area. Establishing the concern will also result in certain downstream employment and other growing uses like the production of precipitated calcium carbonate, which is used in the production of paper, paint, ink, plastic, rubber and some foods. Limestone can also be used as an aggregate or base for roads and foundations and as an aggregate in concrete.



On the other hand, developing the quarry could potentially pose some social impacts on residents in terms of limited dust and noise pollution, impact on the traffic and road integrity, safety issues on farms, and cattle theft, but with the mitigation measures described elsewhere, these impacts could be reduced to acceptable levels.

The establishment of the concern will also have a temporary impact on agricultural activities on the mining site while mining is in operation, but once the site is rehabilitated the impact will be eliminated. Therefore, it is expected that should the guidelines of the EMP be followed, no complaints are expected.

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

#### Impact on the Socio-Economic Impact

	<b>OPERATIONAL (no mitigation)</b>	<b>WEIGHT</b>	<b>OPERATIONAL (with mitigation)</b>	<b>WEIGHT</b>	<b>CLOSURE</b>	<b>WEIGHT</b>
<b>Extent</b>	Local	2	Local	2	Local	2
<b>Duration</b>	Short Term	1	Short Term	1	Short Term	1
<b>Intensity</b>	Low	2	Low-Medium	3	Low	2
<b>Probability</b>	Likely	3	Definite	4	Unlikely	1
<b>Status</b>	<b>Positive</b>		<b>Positive</b>		Negative	
<b>Confidence</b>	Medium		Medium		High	
<b>Significance</b>	<b>Very Low</b>	<b>15</b>	<b>Low-Moderate</b>	<b>24</b>	<b>Insignificant</b>	<b>5</b>

#### REMEDIAL MEASURES

- Those described under previous headings plus establishing regular meetings with nearby neighbours.
- No wandering of any quarry workers on any area outside the quarry area, especially onto the neighboring property.
- No stock theft or poaching will be tolerated by the workforce and any person found guilty of these transgressions will be removed from the property, dismissed and handed over to the police for sentencing. Landowners will be fully compensated for stock loss.



- No wood will be gathered from outside the mine area and no plant or crop will be removed by the workforce. Any transgressions in this regard will result in disciplinary action being taken and the guilty party being removed from the property.

## 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. This area is rich in heritage buildings and sites thus an Archaeology Report will be conducted by Dr. Binneman from the Albany Museum in Grahamstown and SAHRA office in East London and the full report will be submitted to the DMR once completed.

## PUBLIC PARTICIPATION

Current legislation (section 10 of the MPRDA) requires that interested and affected parties be consulted and as part of the public participation process the following steps were taken:

- On 15 March 2012 the landowners, Mr. Keeton and Mr. Stirk and all the abutting landowners (see attach letters) were consulted with a letter sent via email, providing information regarding the development, a response form and background information on the proposed development, and requesting a final chance to provide comments/objections before 19 March 2012. The same letter was thereafter posted and sent as registered mail.
- On 15 March 2012 Eskom (Beacon Bay), the Department of Roads and Public Works, the Department of Rural Development and Land Reform and the Ndlambe Municipality was also consulted with a letter providing information regarding the development, a response form and background information on the proposed development, and requesting a final chance to provide comments/objections before 19 March 2012.
- Mr. Stirk, Mr. Reed, Mr. Blade, Mr. Keeton, Mr. Glanville and Mr. Keyser from the Department of Roads and Public Works replied with some concerns regarding the use of the road and can be summarized as follow:
  - Concern was raised that no blasting should take place, due to the old monuments, heritage buildings and graves in close vicinity to the mine and the impact blasting will have on the foundations of these old buildings;
  - Concern regarding the generation of dust;
  - Concern regarding the outstanding rehabilitation on the previous mine and that the same scenario will take place;
  - Concern regarding the maintenance of the public roads
- Response was formulated to the concerns raised and forwarded on 19 March 2012.

- In addition, all the concerns were considered and mitigation measures captured in this EMP document to ensure that all the concerns will be mitigated and dealt with.
- The DMR will consult with Departments of Water Affairs, Agriculture and Environmental Affairs.
- At closure, abutting landowners and affected departments will be consulted on the end result of rehabilitation.

## CONCLUSION

- A. The proposed quarry can be developed in a sustainable manner provided that the following requirements are met:
1. A phased approach must be followed and should the applicant not be able to rehabilitate phase 1 effectively operations at the quarry must be stopped.
  2. The berm on the southern boundary of the old mine must be kept in place until the site has been rehabilitated.
  3. Vegetation outside the mine area is not disturbed.
  4. An aggressive rehabilitation plan is followed.
  5. Alien trees must be prevented from establishing in the mine area.
  6. Surface water must be managed appropriately and may not be compromised and mining must not result in erosion of the mining area.
  7. The Department of Mineral Resources must provide the necessary guidance and monitoring and where applicable enforce environmental legislation.
- B. The proposed quarry can meaningfully contribute to the agricultural industry and economic growth of the Southwell area and surrounds. Since the quarry will be financially sustainable, it would provide ample finances for the rehabilitation process.

## FINANCIAL PROVISION

The amount calculated is required for the rehabilitation of environmental damage caused by the operation and makes provision for premature closure and worst-case scenario. This amount reflects the cost should the Department has to rehabilitate the area disturbed in case of liquidation or abscondence of the holder. In this regard it should be noted that only one quarry will be developed at a time and this serves as an undertaking to this effect.

## ANALYSIS OF REHABILITATION COSTS: PRIVATE RATES

Tendering process & advertisement = **R4000**

Transport of equipment = **R3000**

Supervision fees and reporting = **R5000**

Aftercare – erosion, alien eradication, seeding/planting and monitoring = **R10 000**

Closure documents = **R5000**

Contingencies = **R5000**

**Sub-Total = R32 000**

#### MINE AREA (FOR PHASE 1)

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Cut and fill of production faces:  $2250\text{m}^3 @ R7/\text{m}^3 = \text{R15 750}$

Profiling of quarry floor = **R2000**

Seeding and fertilising of 0,4ha –@ R4000 per ha = **R1000**

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

Erosion control measures = **R5 000**

**Sub-Total = R24 750**

**Grant Total = R56 750**

A financial guarantee to the value of R60 000 will be made available to the DME before approval. Should the applicant fail to rehabilitate each phase concurrently with mining it is proposed that additional payments are made to the sum of R180 000 in total.

## UNDERTAKING: IMPACT ASSESSMENT

I, Mr. H.C.W. Pistorius, declare that the above information is in my opinion true, complete and correct. I undertake to implement the measures at both quarries 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 me, make such changes to this plan, as he/she may deem necessary.

Signed on this day \_\_\_\_\_ of \_\_\_\_\_ 20\_\_\_\_

\_\_\_\_\_  
**Signature of applicant**

## MONITORING AND PERFORMANCE ASSESSMENT

### 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 various 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, die-off of established vegetation and prevention of water quality deterioration and prevention of spreading of alien vegetation.

### COMPLIANCE REPORTING / SUBMISSION OF INFORMATION

- Layout plans could be updated annually or should mining operations change drastically and updated copies will be submitted to the DMR

- Any environmental emergency/accident will be reported immediately to DMR and where applicable to DWAF/DEA.
- Should the assessment of environmental impacts in future be proved incorrect or should have impacts 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 be reported to the DMR and other relevant Departments immediately.
- A six-monthly performance assessment will be compiled and submitted to the DMR.
- Once extraction is completed 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 was completed in accordance to the management plan. Should any major shortcomings be detected then 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:

- An environmental monitoring checklist should be developed immediately after approval to facilitate a formal assessment process. It should be in line with environmental matters addressed in the EMP, with specific attention to: phase development, storm water control measures, dust control, re-vegetation and noise control.
- The entire quarry will be monitored on a weekly basis until closure is granted.
- The mining/rehabilitation activities will be regularly visited by the holder/manager to ensure that mining is taking place within approved boundaries, that the necessary dust control measures are implemented and well maintained, noise levels controlled, 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 is adequate.
- The minimum vegetation is removed ahead of the mining face.
- Re-vegetation process is successful and that alien vegetation is removed.
- The area will be regularly visited by the holder/manager to ensure that the handling of hydrocarbons is according to approved guidelines and that the necessary precautionary measures for spills are adequate.
- General waste is handled correctly and effectively removed from the property.
- That the mine is clean and tidy.
- Should any remedial measure 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 can be introduced to make employees and contractors aware of EMP requirements.

- Should serious environmental misconduct by workers occur, the specific activity would be stopped until the problem has been remedied and financial penalties will be imposed.

## REHABILITATION SCHEDULE

### QUARRY

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1. Profiling of Phase 1– continuous with mining with and completed before commencement of Phase 2, and so forth.
2. Pulverising/mulching of root mass reworked back into topsoil – weekly
3. Re-vegetation of the final phase must be completed within 6 months after completion of mining.
4. Submit a closure plan & risk assessment three months before mining operations are to cease.
5. Aftercare/maintenance – Two years after rehabilitation was successfully completed.

### GENERAL

1. Quarterly eradication of alien vegetation until closure certificate is issued
2. Light application of fertilizers in March for duration of mining, rehabilitation and aftercare phases.

## 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.
- The mine area will be rehabilitated back to a sustainable environment for farming purposes.
  - Production faces of the quarry will be profiled as described in the mine development plan and the edge rounded off to create a flowing landscape.
  - The top flat section of the floor will be a 1% slope towards the south-east of the site where run-off will be trapped in the silt dam and the site will not be free draining.
  - The rehabilitated area will be kept clear of alien and invasive plant species.
  - The area would be litter free.

- There will be no remaining stockpiles, equipment, waste, scrap metal/redundant equipment left in the mining environment.
- Hydrocarbons, and contaminated soil, if any, will be safely removed from site.
- Safe drainage of the mine must be achieved without causing erosion of the slopes and the quarry floor.
- The proposed land-use will be achieved within 1 year after rehabilitation has been completed.
- The old mining scar will to be rehabilitated as a contribution to the environment.
- Nearby residents will not be subjected to any post closure social or environmental impacts.

## AFTERCARE

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

- Vegetation cover – reseeds bare areas with Bermuda grass – September to March
- Stability of production faces – Reshape affected areas, compact - May to August - Seeding done as from September to March
- Eradication of alien vegetation – Quarterly

## POST CLOSURE MAINTENANCE

In order to provide the necessary funds for this task the following funds need to be secured:

Eradication of invasive vegetation = R4000 per annum x 2 year = **R8 000**

Infill of any erosion gullies – **R5 000**

Seeding, fertilizer van infill planting – **R5000**

**Total = R18 000**

## POST CLOSURE AESTHETIC ACCEPTABILITY

The quarry area will resemble a box cut into the hill and incline, following the natural slope of the topography once it is sloped. The area will display homogeneous grassland, which will serve as a grazing unit and the anticipated change in landform will after re-vegetation not be clearly noticeable.

If rehabilitation is not afforded adequate time and finances the above assessment will change dramatically and the area will revert to a poor quality landscape and land use will not be achieved.



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 holder is in compliance with other Regulations and legislation. Other legislation that will be observed includes, but are 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, Mr. W. R. Ross, take cognisance of the following penalties should I transgress any section of the MPRDA or any other Act governing any other activity on the two quarry sites 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	A fine or imprisonment of

	other site than that demarcated and indicated in the EMP	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 terms of any other law, which has been identified by the Minister or which is to be retained by agreement with the landowner.	Penalty that may be imposed by Magistrate's 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

## UNDERTAKING

I, Mr. H.C.W. Pistorius, 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 at **Port Elizabeth** on this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

\_\_\_\_\_  
**Signature of applicant**

**Agency declaration:** This document was compiled on behalf of the applicant by Stellenryck Environmental Solutions

## APPROVAL

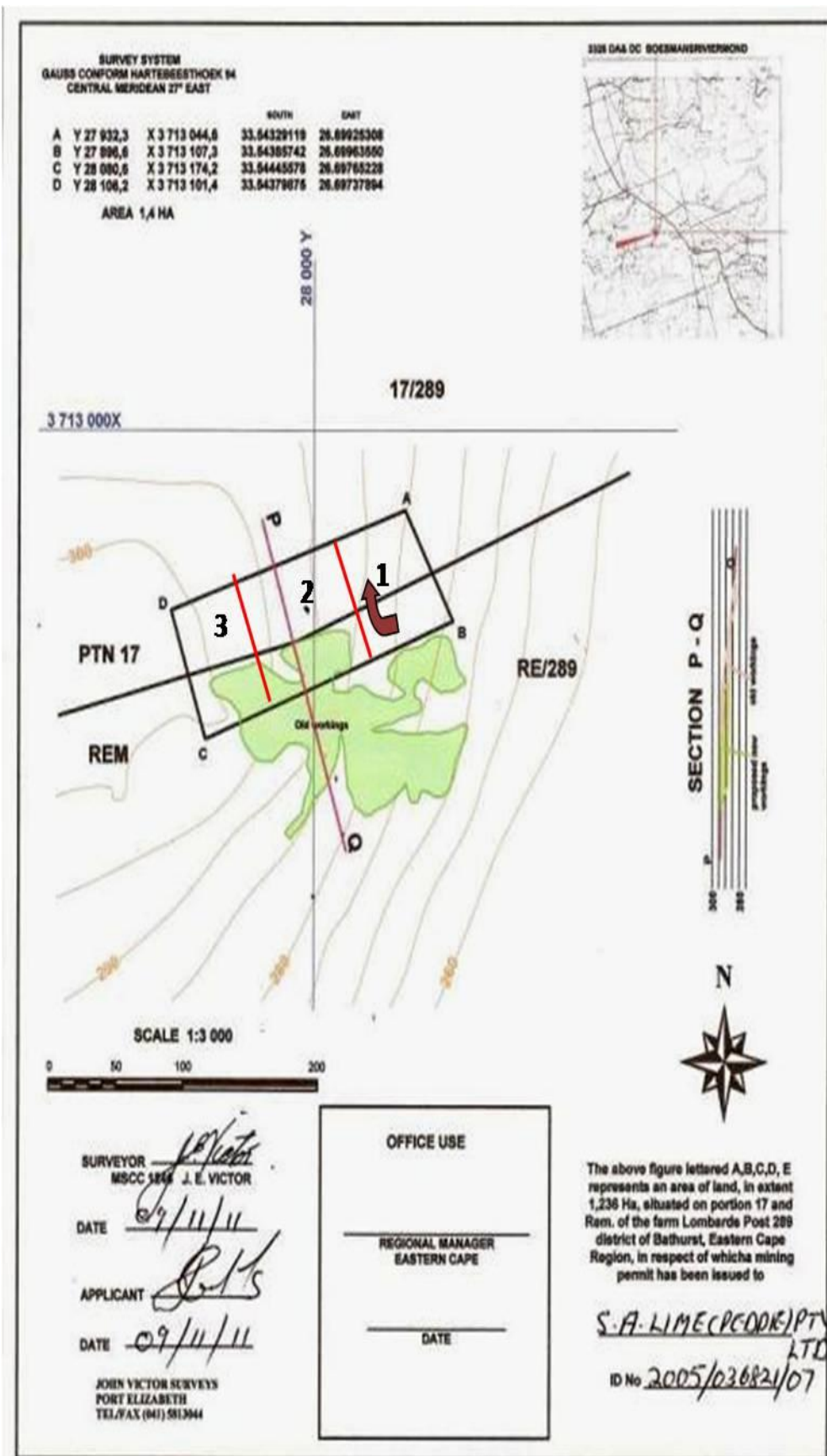
Approved in terms of Section 39(4) of the Mineral and Petroleum Resources Development Act, 2002 (Act 29 of 2002)

Signed at **Port Elizabeth** on this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

.....

**REGIONAL MANAGER  
EASTERN CAPE**

Copy right on the format and contents of this report are reserved to Stellenryck Environmental Services.





*Stellenryck Environmental Solutions*

4 Josephine Ave    Mobile: 082 4140 464    Fax: 041-367 2049  
Lorraine    Office: 041-367 2049    E-mail: stellenryck@telkomsa.net  
6070

---

## PUBLIC PARTICIPATION PROCESS

Name of Applicant : SA Lime (Peddie)(Pty) Ltd

Application number : EC 30/5/1/3/2/10019 MP

### 1. The following persons/entities were identified as Interested and Affected Parties:

- Mr. C. Stik
- Mr. P. du Plessis
- Mr. G. Bladen
- Mrs. B. Cumings
- Mr. A. Jardine
- Mr. B. Glanville
- Mr. G. Reed
- Mr. H. Collett
- Mr. Keeton
- Mr. T.V. Smith, Eskom, Beacon Bay
- Department of Roads & Public Works (Mr. M. Keyser)
- Department of Rural Development and Land Reform (Mr. H.S. Prinsloo & Ms. F.N. Klaas)
- Ndlambe Municipality (Mr. M. Matiwane and several other officials)

### 2. Consultation documentation:

a. Consultation letter :



**PUBLIC PARTICIPATION: MINING PERMIT APPLICATION FOR  
THE MINING OF LIME ON THE REMAINDER AND PORTION 17 OF  
THE FARM LOMBARDS POST 289, BATHUST**



**PREPARED FOR:**

**S.A. Lime (Peddie)(Pty) Ltd**

**P.O. Box 12665**

**CENTRAHILL**

**6006**

**March 2012**



## *Stellenryck Environmental Solutions*

4 Josephine Ave    Mobile: 082 4140 464    Fax: 041-367 2049  
Lorraine    Office: 041-367 2049    E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)  
6070

---

Mr. M. Matiwane  
2012

Date: 15 March

Directorate of Development Planning and Local Economic Development  
P O Box 13  
PORT ALFRED  
6170

---

### **MINING PERMIT APPLICATION FOR LIME MINING ON THE REMAINDER AND PORTION 17 OF THE FARM LOMBARDS POST 289, BATHURST: SA LIME (PEDDIE)(PTY) LTD.**

You are hereby informed that SA Lime (Peddie)(Pty) Ltd has appointed Stellenryck Environmental Solutions CC (SES) to conduct the Public Participation Process for the above mentioned mining venture.

In terms of section 27(5)(b) of the Minerals & Petroleum Resource Development Act 28 of 2002, an applicant for a mining permit must consult with Interested and Affected Parties (I&APs) regarding any proposed mining activity and submit the result of the said consultation to the Department of Mineral Resources (DMR).

Stellenryck submitted the mining permit application to the DMR and the application was accepted by the DMR on 18 February 2012. Acceptance of the application must not be construed as the approval of the project, since the process of approval/refusal that has commenced on the date of acceptance, must still run its course.



This communication therefore serves to inform you about the intention of SA Lime (Peddie) to mine 1.5 Ha of an area that has been transformed. According to our interpretation the proposed development falls on both Mr Keeton's and Mr. Stirk's properties and you have been identified as an interested and affected party (I&AP) in the project and the purpose of this letter is therefore to:

- Inform you of the locality of the proposed mining area.
- Give you an opportunity to raise any comments you might have in respect of the proposed mining activities detailed in the attached annexure.
- Incorporate any valid concerns in the final Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) to be submitted to the DMR in terms of section 39(1) of the said Act. In terms of section 39(4) of the Act the EMP must be approved by the DMR prior to the commencement of any mining or related activities.

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This consultation process is important as it raises your awareness on the nature of the operation and grants you the opportunity to raise any comments you might have on the mining venture. You are therefore requested to submit your comments/observations/concerns in writing by means of completing, as a minimum, the accompanying comment and registration sheet. Should any observation/concern be identified as definite and significant environmental/social impacts, the relevant matter will be investigated, assessed and where necessary, mitigation measures will be developed and captured in the Environmental Impact Assessment (EIA) & Management Plan (EMP) to address any identified impact satisfactorily. In order to ensure that your comments are captured in the response report to be submitted to the Department of Mineral Resources, your response is required in writing not later than 23 March 2012. Comments on environmental matters must reach this office not later than 30 March 2012 and should be informed by the background information to be received in due course.

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Yours sincerely



---

**J. A. van As**

**STELLENRYCK ENVIRONMENTAL SOLUTIONS**

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**THE REMAINDER AND PORTION 17 OF THE FARM LOMBARDS POST 289, BATHURST**

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Stellenryck Environmental Solutions

Postal address:

Stellenryck Environmental Solutions

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6070

Contact details of Interested & Affected Party

Name: .....

Property/Organization .....

Postal address .....

Telephone ..... Fax No.....

Mobile ..... E-mail.....

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*or*

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I, \_\_\_\_\_ confirm that I have received the Public Consultation Notice from SA Lime (Peddie) Pty Ltd regarding lime mining on the Remainder and Portion 17 of the Farm Lombards Post 289, Bathurst.

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Signature	ID Number	Date

**Name of any other person whom you think should be consulted**

**Name and Surname**.....

**Farm Name and Portion**.....

**Telephone**.....**Fax**.....

**Address**.....

## PARTICULARS OF APPLICANT

S.A. Lime (Peddie)(Pty) Ltd

(Reg no. 2005/36821/07)

P.O. Box 12665

CENTRAHILL

6006

## MINE MANAGER

Mr. H.C.W. Pistorius

P.O. Box 12665

CENTRAHILL

6006

Cell: 0828811119

## PARTICULARS OF LANDOWNERS

Mr. Keeton

P O Box 912

Grahamstown

6140

Mr. C. Stirk

P O Box 2003

Grahamstown

6140

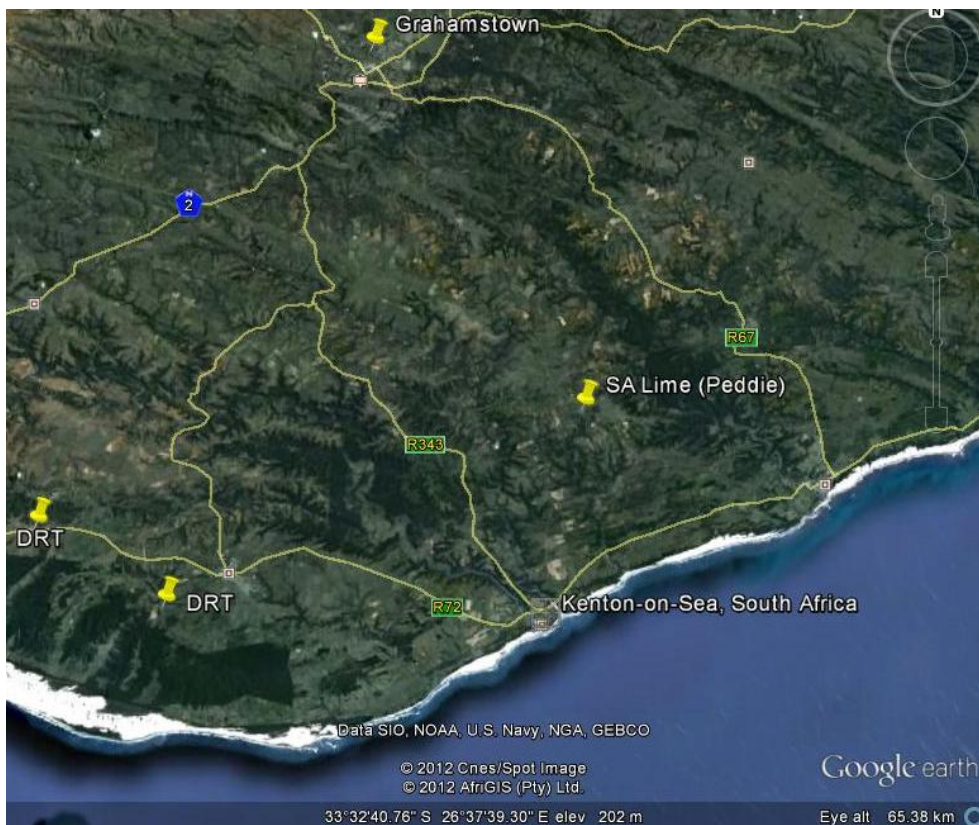
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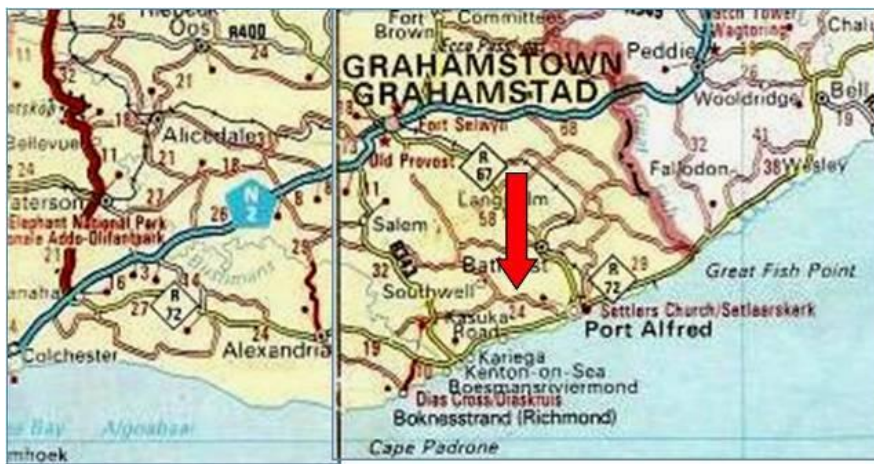
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The site is situated in a rural area surrounded by extensively cultivated small farms on all sides. The proposed site has been mined previously by Mr. Peter Keeton. The surrounding area is sparsely populated

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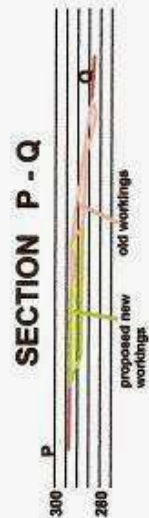
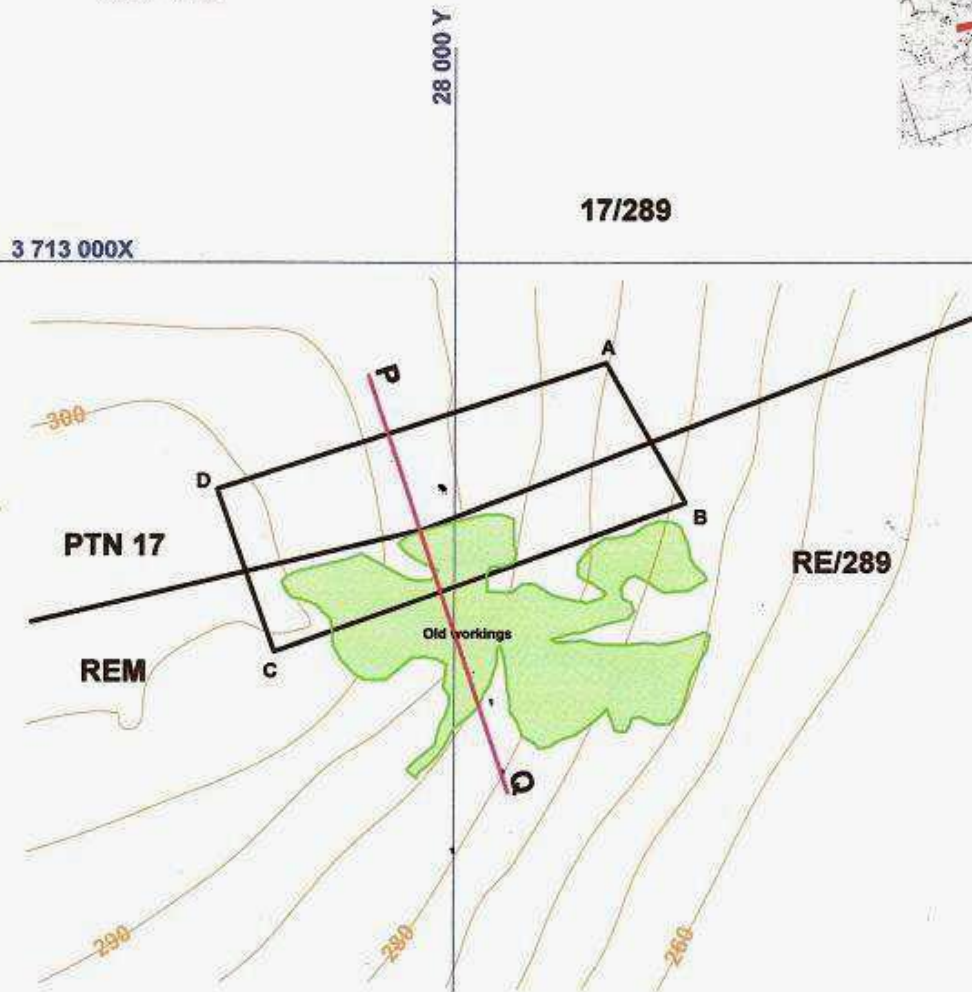


SURVEY SYSTEM  
GAUSS CONFORM HARTEBEESTHOEK 94  
CENTRAL MERIDIAN 27° EAST

			SOUTH	EAST
A	Y 27 932,3	X 3 713 044,6	33.54329119	26.69925308
B	Y 27 896,6	X 3 713 107,3	33.54385742	26.69963550
C	Y 28 080,6	X 3 713 174,2	33.54445578	26.69765228
D	Y 28 106,2	X 3 713 101,4	33.54379875	26.69737894

AREA 1,4 HA

3326 DA& DC BOESMANSRIVERMOND



SCALE 1:3 000



SURVEYOR *J. E. Victor*  
MSCC 1246 J. E. VICTOR

DATE *09/11/11*

APPLICANT *B.L.S.*

DATE *09/11/11*

JOHN VICTOR SURVEYS  
PORT ELIZABETH  
TEL/FAX (041) 5813044

OFFICE USE

REGIONAL MANAGER  
EASTERN CAPE

DATE

The above figure lettered A,B,C,D, E represents an area of land, in extent 1,236 Ha, situated on portion 17 and Rem. of the farm Lombards Post 289 district of Bathurst, Eastern Cape Region, in respect of which a mining permit has been issued to

*S.A. LIME (PCOPK) PTY LTD*  
ID No *2005/036821/07*



**PUBLIC PARTICIPATION: MINING PERMIT APPLICATION FOR  
THE MINING OF LIME ON THE REMAINDER AND PORTION 17 OF  
THE FARM LOMBARDS POST 289, BATHUST**



**PREPARED FOR:**

**S.A. Lime (Peddie)(Pty) Ltd**

**P.O. Box 12665**

**CENTRAHILL**

**6006**

**March 2012**



4 Josephine Ave    Mobile: 082 4140 464    Fax: 041-367 2049  
Lorraine    Office: 041-367 2049    E-mail: stellenryck@telkomsa.net  
6070

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Mr. M. Keyser

Date: 15 March 2012

Department Roads & Public Works

P O Box 11100

Algoa Park

6005

---

**MINING PERMIT APPLICATION FOR LIME MINING ON THE REMAINDER AND PORTION 17 OF THE FARM LOMBARDS POST 289, BATHURST: SA LIME (PEDDIE)(PTY) LTD.**

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**J. A. van As**

**STELLENRYCK ENVIRONMENTAL SOLUTIONS**



**PUBLIC PARTICIPATION REPLY FORM FOR MINING PERMIT APPLICATION:**  
**THE REMAINDER AND PORTION 17 OF THE FARM LOMBARDS POST 289, BATHURST**

Please return by fax or registered post to:

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J. A. van As

Stellenryck Environmental Solutions

Postal address:

Stellenryck Environmental Solutions

4 Josephine Avenue

Lorraine

6070

Contact details of Interested & Affected Party

Name: .....

Property/Organization .....

Postal address .....

Telephone ..... Fax No.....

Mobile ..... E-mail.....

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**Telephone**.....**Fax**.....

**Address**.....

## PARTICULARS OF APPLICANT

S.A. Lime (Peddie)(Pty) Ltd

(Reg no. 2005/36821/07)

P.O. Box 12665

CENTRAHILL

6006

## MINE MANAGER

Mr. H.C.W. Pistorius

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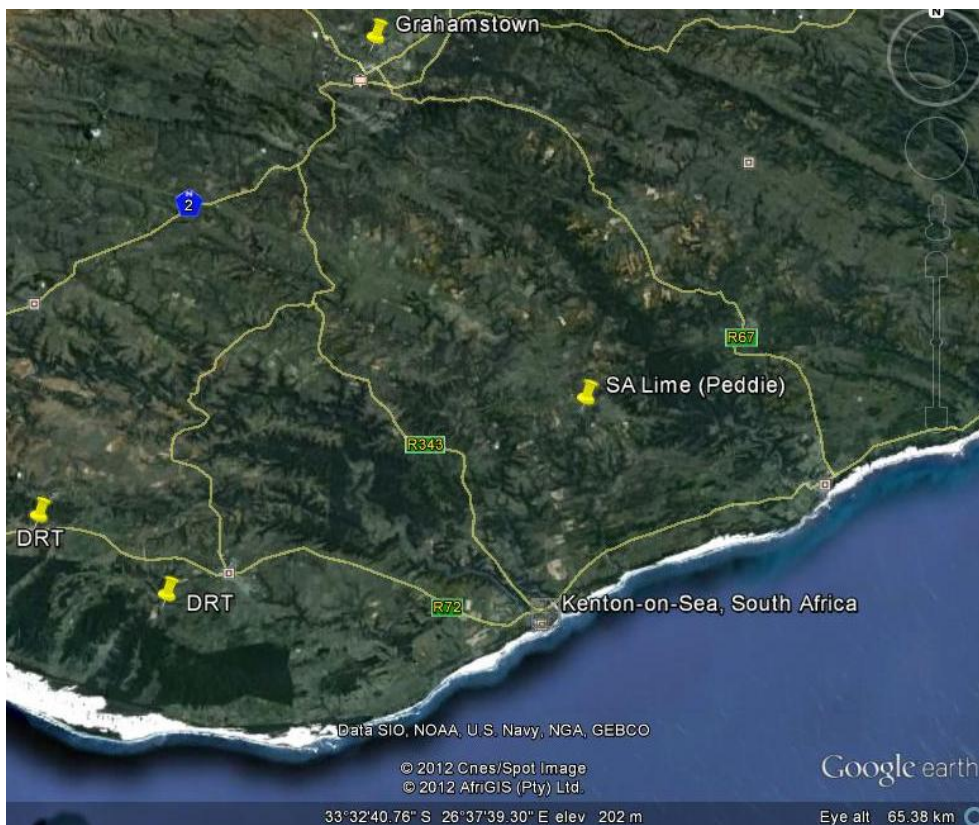
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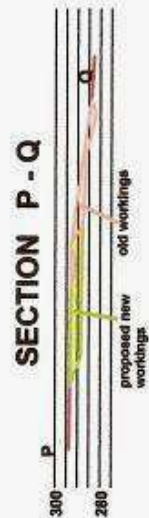
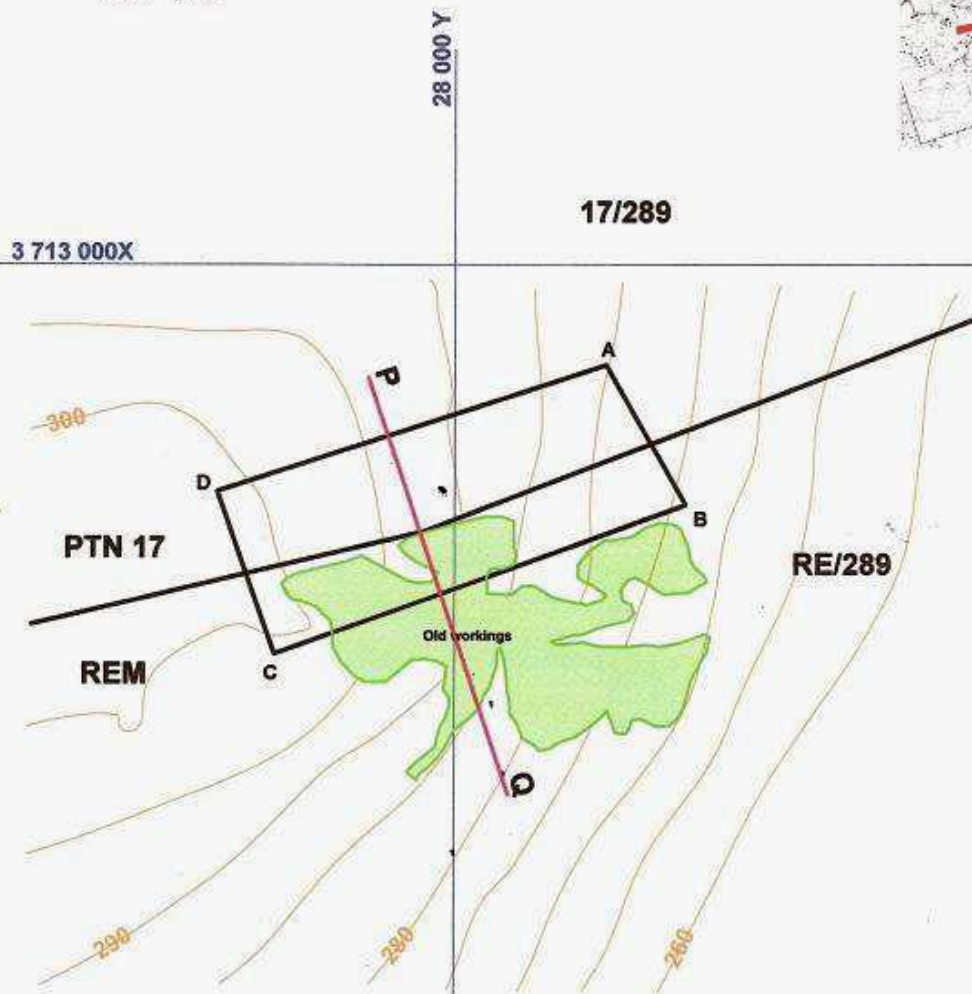


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SCALE 1:3 000  
0 50 100 200

SURVEYOR *J. E. Victor*  
MSCC 1246 J. E. VICTOR

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JOHN VICTOR SURVEYS  
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OFFICE USE

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*S.A. LIME (PCOPK) PTY LTD*  
ID No *2005/036821/07*





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THE MINING OF LIME ON THE REMAINDER AND PORTION 17 OF  
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**PREPARED FOR:**

**S.A. Lime (Peddie)(Pty) Ltd**

**P.O. Box 12665**

**CENTRAHILL**

**6006**

**March 2012**



## *Stellenryck Environmental Solutions*

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6070

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Mr. H.S. Prinsloo / Ms. F.N. Klaas

Date: 15 March 2012

Department Rural Development and Land Reform

P O Box 27579

Port Elizabeth

6005

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**Telephone**.....**Fax**.....

**Address**.....

## PARTICULARS OF APPLICANT

S.A. Lime (Peddie)(Pty) Ltd

(Reg no. 2005/36821/07)

P.O. Box 12665

CENTRAHILL

6006

## MINE MANAGER

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Grahamstown

6140

## PLAN SHOWING THE PROPERTY AND MINING AREA CONCERNED.

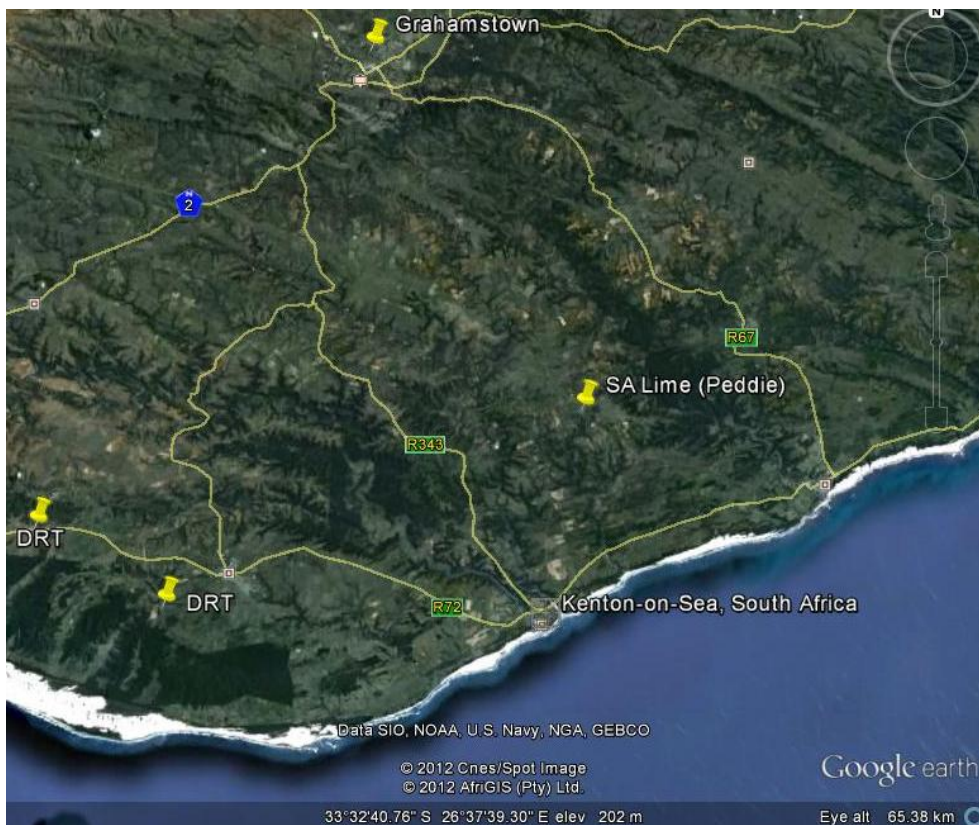


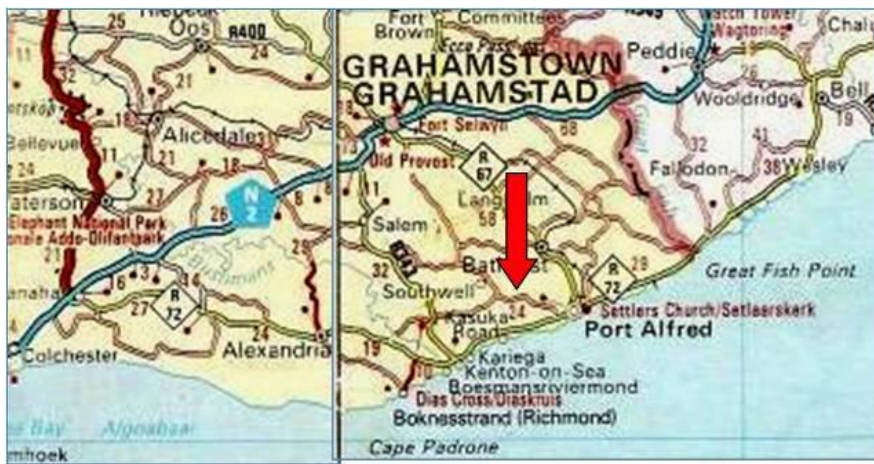
The proposed quarry is situated in the magisterial district of Bathurst and is under control of the Ndlambe

Local Municipality. Access to the quarry is gained by turning off to the right from the R72, 1,8km from Port Alfred, onto the South-Well gravel Road. After travelling approximately 17,1km on this road, follow the turnoff to the left for approximately 550m and the quarry would be located on the immediate left. A gravel road leads to the quarry.

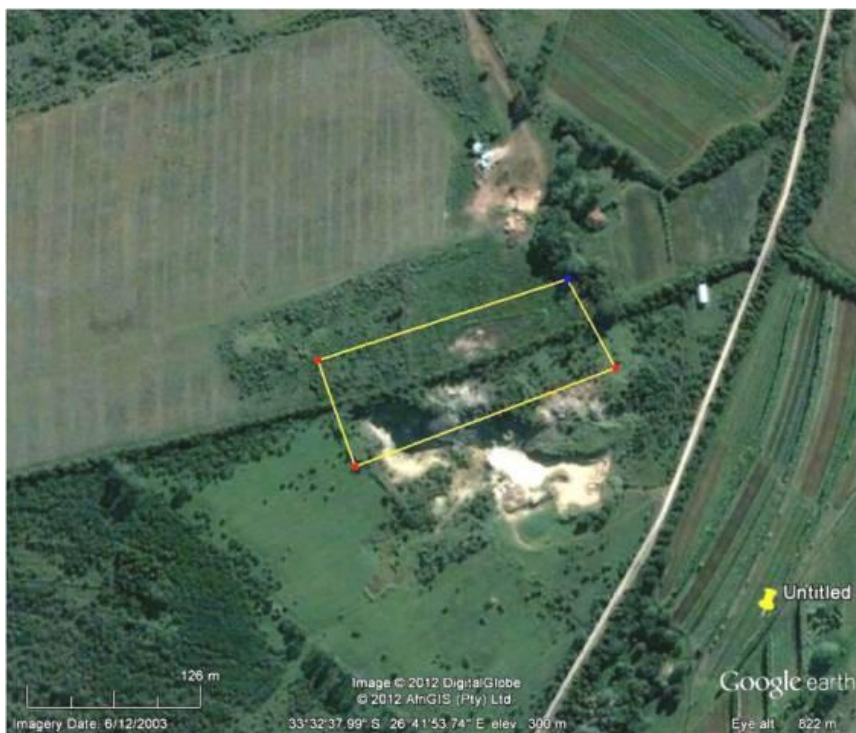
The site is situated in a rural area surrounded by extensively cultivated small farms on all sides. The proposed site has been mined previously by Mr. Peter Keeton. The surrounding area is sparsely populated

but there are two residences within 100m from the site. A power line might be located within 100m from the proposed mining area, but has not been affected by historic mining much closer to the line. The gravel access road would be located within 100m from the proposed operation.





Site location



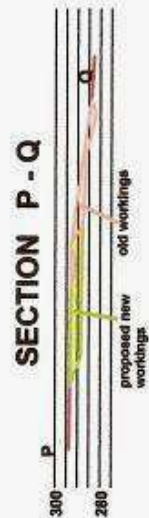
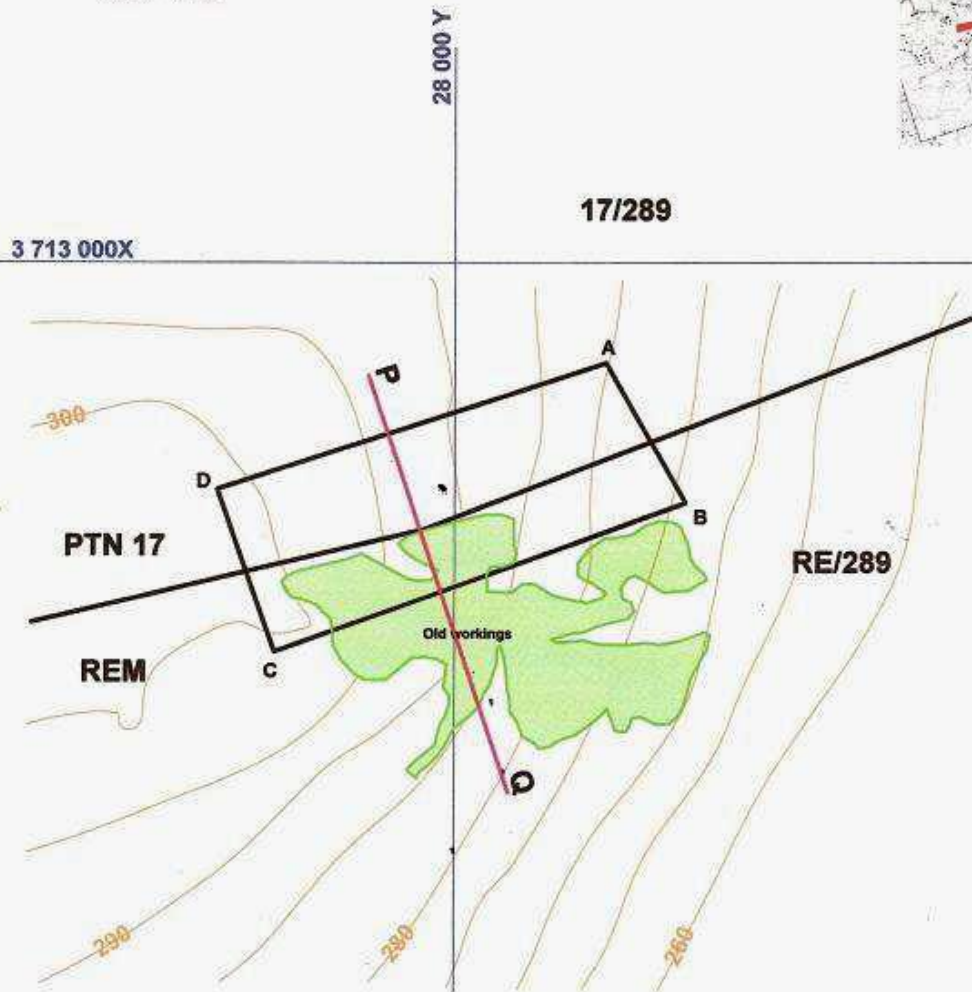


SURVEY SYSTEM  
GAUSS CONFORM HARTEBEESTHOEK 94  
CENTRAL MERIDIAN 27° EAST

			SOUTH	EAST
A	Y 27 932,3	X 3 713 044,6	33.54329119	26.69925308
B	Y 27 896,6	X 3 713 107,3	33.54385742	26.69963550
C	Y 28 080,6	X 3 713 174,2	33.54445578	26.69765228
D	Y 28 106,2	X 3 713 101,4	33.54379875	26.69737894

AREA 1,4 HA

3326 DA& DC BOESMANSRIVERMOND



SCALE 1:3 000  
0 50 100 200

SURVEYOR *J. E. Victor*  
MSCC 1246 J. E. VICTOR

DATE *09/11/11*

APPLICANT *B.L.S.*

DATE *09/11/11*

JOHN VICTOR SURVEYS  
PORT ELIZABETH  
TEL/FAX (041) 5813044

OFFICE USE

REGIONAL MANAGER  
EASTERN CAPE

DATE

The above figure lettered A,B,C,D, E represents an area of land, in extent 1,236 Ha, situated on portion 17 and Rem. of the farm Lombards Post 289 district of Bathurst, Eastern Cape Region, in respect of which a mining permit has been issued to

*S.A. LIME (PCOPK) PTY LTD*  
ID No *2005/036821/07*



**PUBLIC PARTICIPATION: MINING PERMIT APPLICATION FOR  
THE MINING OF LIME ON THE REMAINDER AND PORTION 17 OF  
THE FARM LOMBARDS POST 289, BATHUST**



**PREPARED FOR:**

**S.A. Lime (Peddie)(Pty) Ltd**

**P.O. Box 12665**

**CENTRAHILL**

**6006**

**March 2012**



4 Josephine Ave    Mobile: 082 4140 464    Fax: 041-367 2049  
Lorraine    Office: 041-367 2049    E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)  
6070

---

Interested & Affected Parties

Date: 15 March 2012

---

**MINING PERMIT APPLICATION FOR LIME MINING ON THE REMAINDER AND PORTION 17 OF THE FARM LOMBARDS POST 289, BATHURST: SA LIME (PEDDIE)(PTY) LTD.**

You are hereby informed that SA Lime (Peddie)(Pty) Ltd has appointed Stellenryck Environmental Solutions CC (SES) to conduct the Public Participation Process for the above mentioned mining venture.

In terms of section 27(5)(b) of the Minerals & Petroleum Resource Development Act 28 of 2002, an applicant for a mining permit must consult with Interested and Affected Parties (I&APs) regarding any proposed mining activity and submit the result of the said consultation to the Department of Mineral Resources (DMR).

Stellenryck submitted the mining permit application to the DMR and the application was accepted by the DMR on 18 February 2012. Acceptance of the application must not be construed as the approval of the project, since the process of approval/refusal that has commenced on the date of acceptance, must still run its course.

This communication therefore serves to inform you about the intention of SA Lime (Peddie) to mine 1.5 Ha of an area that has been transformed. According to our interpretation the proposed development falls on both Mr Keeton's and Mr. Stirk's properties and you have been identified as an interested and affected party (I&AP) in the project and the purpose of this letter is therefore to:

- Inform you of the locality of the proposed mining area.
- Give you an opportunity to raise any comments you might have in respect of the proposed mining activities detailed in the attached annexure.
- Incorporate any valid concerns in the final Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) to be submitted to the DMR in terms of section 39(1) of the said Act. In terms of section 39(4) of the Act the EMP must be approved by the DMR prior to the commencement of any mining or related activities.

### **Your involvement**

This consultation process is important as it raises your awareness on the nature of the operation and grants you the opportunity to raise any comments you might have on the mining venture. You are therefore requested to submit your comments/observations/concerns in writing by means of completing, as a minimum, the accompanying comment and registration sheet. Should any observation/concern be identified as definite and significant environmental/social impacts, the relevant matter will be investigated, assessed and where necessary, mitigation measures will be developed and captured in the Environmental Impact Assessment (EIA) & Management Plan (EMP) to address any identified impact satisfactorily. In order to ensure that your comments are captured in the response report to be submitted to the Department of Mineral Resources, your response is required in writing not later than 23 March 2012. Comments on environmental matters must reach this office not later than 30 March 2012 and should be informed by the background information to be received in due course.

### **Way Forward**

22. The outcome of this consultation process will be submitted to the DMR for decision making.
23. Thereafter, an EIA & EMP will be submitted to the DMR and other affected Government Departments for evaluation and decision making.
24. If the application is found acceptable by the DMR, a financial guarantee that will cover rehabilitation costs will be submitted to cover costs related to potential environmental disturbances that may be caused by invasive mining activities.
25. If the DMR's decision making process results in approval of the mining venture, a Mining Permit will be granted and the EMP will be approved. You will be notified of the issue of the Mining Permit.
26. Mining activities will then be conducted in accordance with the approved mining programme and EMP.
27. Annual environmental performance assessments will be conducted and the outcome submitted to the DMR for evaluation and any appropriate decision making.

28. On completion of mining activities, an application for closure and final environmental performance assessment, which will include your comments on the status of mining areas, will be lodged with the DMR for decision making and the issue of a closure certificate.

To provide additional information on the project please refer to the attached background information document on the proposed project. Please note it is not intended to provide all details on the project or to replace the EIA/EMP. Should you wish to discuss any aspect of the application please do not hesitate to contact us.

Should you wish the applicant to consult any other party during the EMP process, please provide SES with the relevant contact details.

Yours sincerely



---

**J. A. van As**

**STELLENRYCK ENVIRONMENTAL SOLUTIONS**



**PUBLIC PARTICIPATION REPLY FORM FOR MINING PERMIT APPLICATION:**  
**THE REMAINDER AND PORTION 17 OF THE FARM LOMBARDS POST 289, BATHURST**

Please return by fax or registered post to:

Fax: 041-3672049

J. A. van As

Stellenryck Environmental Solutions

Postal address:

Stellenryck Environmental Solutions

4 Josephine Avenue

Lorraine

6070

Contact details of Interested & Affected Party

Name: .....

Property/Organization .....

Postal address .....

Telephone ..... Fax No.....

Mobile ..... E-mail.....

Please list your comments on the project (Should you require more space use additional page):

1.....

.....

2.....

.....

3.....

.....

4.....

.....

5.....

.....

*or*

I have no comments on the proposed SA Lime (Peddie)(Pty) Ltd mining venture.

I, \_\_\_\_\_ confirm that I have received the Public Consultation Notice from SA Lime (Peddie) Pty Ltd regarding lime mining on the Remainder and Portion 17 of the Farm Lombards Post 289, Bathurst.

_____	_____	_____
Signature	ID Number	Date

**Name of any other person whom you think should be consulted**

**Name and Surname**.....

**Farm Name and Portion**.....

**Telephone**.....**Fax**.....

**Address**.....

## PARTICULARS OF APPLICANT

S.A. Lime (Peddie)(Pty) Ltd

(Reg no. 2005/36821/07)

P.O. Box 12665

CENTRAHILL

6006

## MINE MANAGER

Mr. H.C.W. Pistorius

P.O. Box 12665

CENTRAHILL

6006

Cell: 0828811119

## PARTICULARS OF LANDOWNERS

Mr. Keeton

P O Box 912

Grahamstown

6140

Mr. C. Stirk

P O Box 2003

Grahamstown

6140

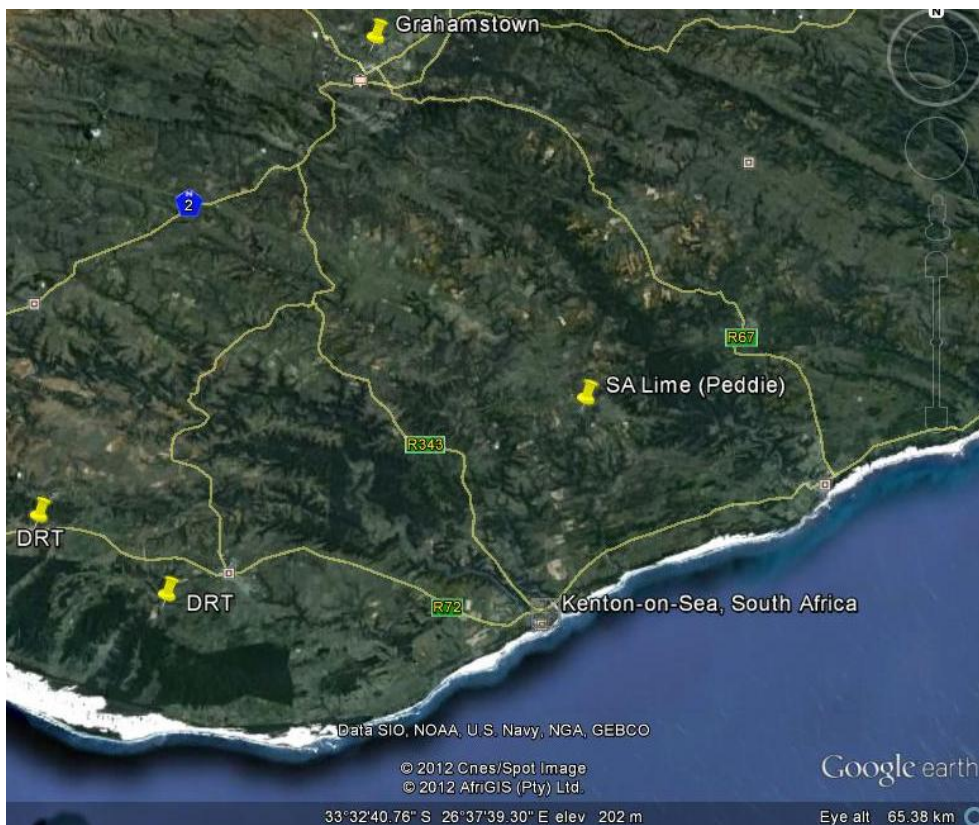
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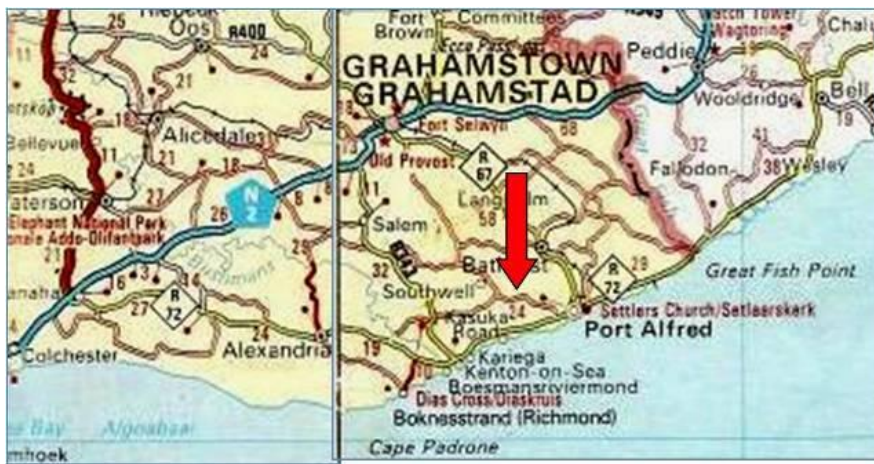
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Local Municipality. Access to the quarry is gained by turning off to the right from the R72, 1,8km from Port Alfred, onto the South-Well gravel Road. After travelling approximately 17,1km on this road, follow the turnoff to the left for approximately 550m and the quarry would be located on the immediate left. A gravel road leads to the quarry.

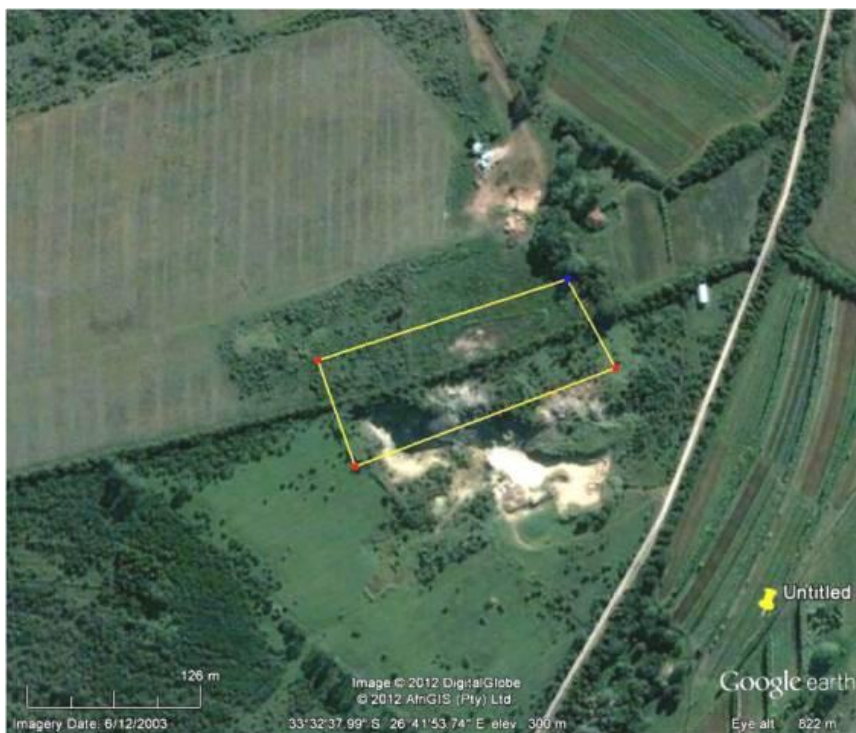
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but there are two residences within 100m from the site. A power line might be located within 100m from the proposed mining area, but has not been affected by historic mining much closer to the line. The gravel access road would be located within 100m from the proposed operation.





Site location



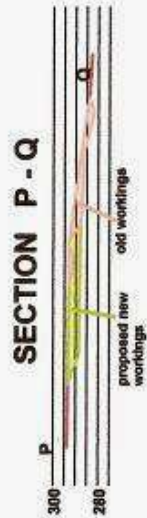
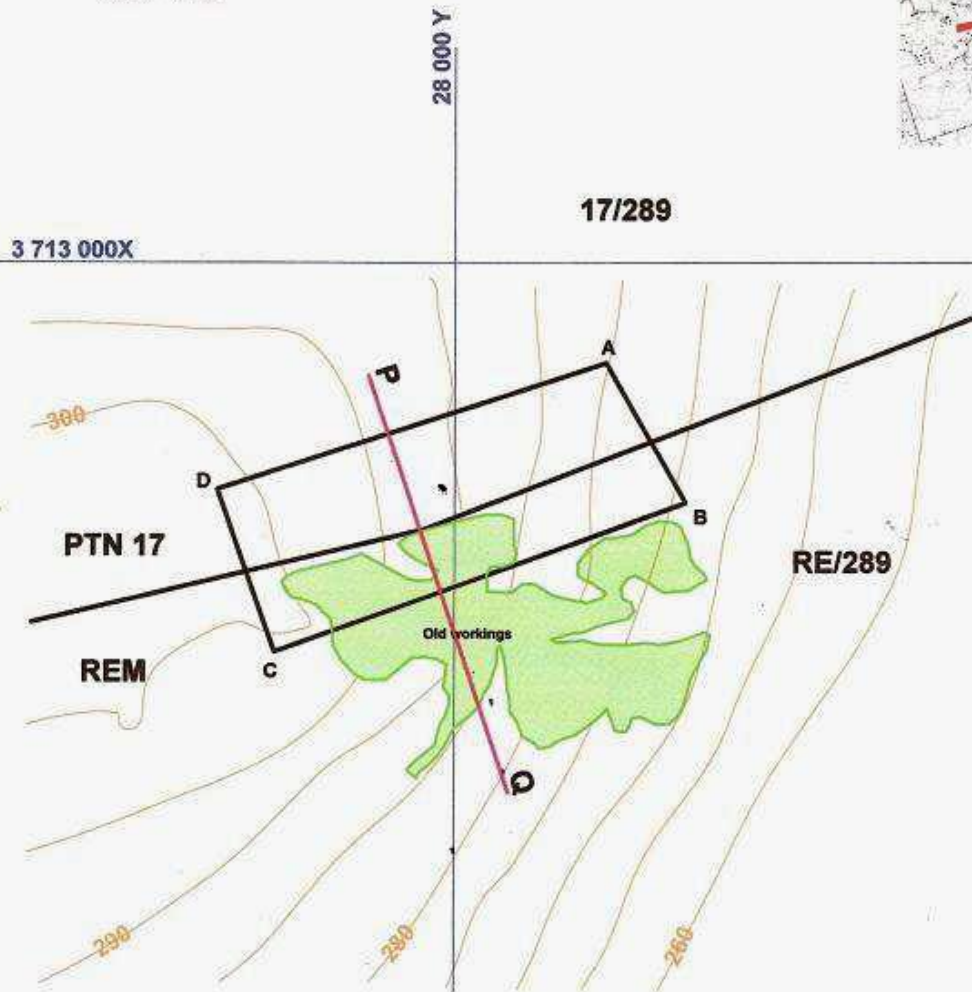


SURVEY SYSTEM  
GAUSS CONFORM HARTEBEESTHOEK 94  
CENTRAL MERIDIAN 27° EAST

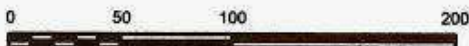
			SOUTH	EAST
A	Y 27 932,3	X 3 713 044,6	33.54329119	26.69925308
B	Y 27 896,6	X 3 713 107,3	33.54385742	26.69963550
C	Y 28 080,6	X 3 713 174,2	33.54445578	26.69765228
D	Y 28 106,2	X 3 713 101,4	33.54379875	26.69737894

AREA 1,4 HA

3326 DA& DC BOESMANSRIVERMOND



SCALE 1:3 000



SURVEYOR *J. E. Victor*  
MSCC 1246 J. E. VICTOR

DATE *09/11/11*

APPLICANT *B.L.S.*

DATE *09/11/11*

JOHN VICTOR SURVEYS  
PORT ELIZABETH  
TEL/FAX (041) 5813044

OFFICE USE

REGIONAL MANAGER  
EASTERN CAPE

DATE

The above figure lettered A,B,C,D, E represents an area of land, in extent 1,236 Ha, situated on portion 17 and Rem. of the farm Lombards Post 289 district of Bathurst, Eastern Cape Region, in respect of which a mining permit has been issued to

*S.A. LIME (PCOPK) PTY LTD*  
ID No *2005/036821/07*

Consultation Letters to Mr. Keeton and black owners:

13/2012 12:22  
DATE  
15/03/2012

Pistonius

START TIME  
12:16

\*\*\* TRANSMISSION REPORT \*\*\*  
Lexmark 5000 Series

SENT TO  
0466367915

SCANNED/SENT  
9/9

0413672049

RESULT  
OK

Keeton & black neighbours





## Stellenryck Environmental Solutions

Reg no: 2008/144543/23

VAT no: 4130255278

4 Josephine Ave  
Lorraine  
6070

Mobile: 082 4140 464  
Office: 041-367 2049

Fax: 041-367 2049  
E-mail: stellenryck@telkomsa.net

Mr. Keaton  
P O Box 912  
GRAHAMSTOWN  
6140

15 March 2012

Dear Mr Keaton

### **PROPOSED LIME STONE MINING: SA LIME (PEDDIE)(PTY) LTD**

Our telephone conversation regarding the above mentioned refers.

Herewith the information documentation regarding the said mining venture for your perusal and response by the mentioned date.

Please note that we are not able to trace the black neighbours who bought your brother's property.

We will highly appreciate if you can forward the attached documentation to these individuals as well.

Yours faithfully

J.A. van As

Member: J.A. van As: B.Sc (Botany & Zoology), B.Sc Hons (Eco-Physiology), M.Sc (Plant Physiology)

**\*8-page consultation letter was attached to the above.**

Page 1 of 1

Pistorius

**Stellenryck**

**From:** "Stellenryck" <[stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)>  
**Sent:** 14 March 2012 07:51 PM  
**Attach:** I&AP.pdf  
**Subject:** Proposed Mining Operation

Good evening,

Please see the attached document for your attention and response.

Kind regards

*Vanessa van As*  
pp: J.A. van As  
Stellenryck Environmental Solutions  
4 Josephine Ave  
Lorraine  
6070  
Tel/Fax: 041 - 367 2049  
Cell: 082 414 0464  
E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)

Bcc to:

Stirk  
Du Plessis  
Bladen  
Judy Jardine  
Glanville  
Reed  
Collett

Pistorius

**Stellenryck**

Ndlambe Municipality

Port Alfred

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <mmtiwane@ndlambe.gov.za>  
**Sent:** 15 March 2012 01:10 PM  
**Attach:** Ndlambe Mun.pdf  
**Subject:** PROPOSED MINING OPERATION  
Dear Mr. Matiwane,

Our telephone conversation regarding the above mentioned, refers.

Attached please find the relevant documentation for your perusal and response by the indicated date.

Thank you

Kind regards

*Vanessa van As*

pp:  
J.A. van As  
Stellenryck Environmental Solutions  
4 Josephine Ave  
Lorraine  
6070  
Tel/Fax: 041 - 367 2049  
Cell: 082 414 0464  
E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)

**Stellenryck**

Pistorius

Alan Jardine

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <camvac@iafrica.com>  
**Sent:** 15 March 2012 12:28 PM  
**Attach:** I&AP.pdf  
**Subject:** Proposed Mining Operation  
**Attention :** Mr. Alan Jardine

Dear Mr. Jardine,

Our telephone conversation regarding the above mentioned proposed quarry refers.

Herewith attached please find the documentation for your perusal and response by the indicated date.

Kind regards

*Vanessa van As*

pp:  
J.A. van As  
Stellenryck Environmental Solutions  
4 Josephine Ave  
Lorraine  
6070  
Tel/Fax: 041 - 367 2049  
Cell: 082 414 0464  
E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)

## **Stellenryck**

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <dos@awe.co.za>  
**Sent:** 08 March 2012 03:36 PM  
**Attach:** consultation.pdf  
**Subject:** CONSULTATION

Dear Mr. Landman,

Please see attached documentation as telephonically discussed with my wife on Wednesday.

Yours faithfully

J.A. van As  
Stellenryck Environmental Solutions  
4 Josephine Ave  
Lorraine 6070  
Tel/Fax: 041 - 367 2049  
Cell: 082 414 0464  
E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)

## **Stellenryck**

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <hitechplumb@telkomsa.net>  
**Sent:** 08 March 2012 03:38 PM  
**Attach:** consultation.pdf  
**Subject:** CONSULTATION

Dear Mr. de Beer,

Please see attached documentation for your perusal and comments.

Yours faithfully

J.A. van As  
Stellenryck Environmental Solutions  
4 Josephine Ave  
Lorraine 6070  
Tel/Fax: 041 - 367 2049  
Cell: 082 414 0464  
E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)

**Stellenryck**

*Land Affairs*

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <HSPRINSLOO@ruraldevelopment.gov.za>  
**Cc:** <FNKlaas@ruraldevelopment.gov.za>  
**Sent:** 15 March 2012 12:47 PM  
**Attach:** Land Affairs.pdf  
**Subject:** PROPOSED MINING OPERATION  
Good day,

Attached herewith documentation regarding the above mentioned for your perusal and response by indicated date please.

Kind regards

*Vanessa van As*

pp:  
J.A. van As  
Stellenryck Environmental Solutions  
4 Josephine Ave  
Lorraine  
6070  
Tel/Fax: 041 - 367 2049  
Cell: 082 414 0464  
E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)



Stellenryck

MKeyser DRT.

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <lungiswa.nibe@dpw.ecape.gov.za>  
**Sent:** 15 March 2012 12:38 PM  
**Attach:** DRT.pdf  
**Subject:** PUBLIC PARTICIPATION: PROPOSED MINING VENTURE  
Dear Ms. Nibe,

Please see the attached documentation regarding proposed quarry of SA Lime (Peddie)(Pty) Ltd for the attention of Mr. M. Keyser.

Thank you

Kind regards

*Vanessa van As*

Stellenryck Environmental Solutions  
4 Josephine Ave  
Lorraine  
6070  
Tel/Fax: 041 - 367 2049  
Cell: 082 414 0464  
E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)



**Stellenryck**

Cummings

From: "Stellenryck" <stellenryck@telkomsa.net>  
 To: <eacummings@yahoo.com>  
 Sent: 15 March 2012 01:53 PM  
 Attach: I&AP.pdf  
 Subject: PROPOSED MINING OPERATIONS  
 Dear Ms. Cummings,

Our telephonic conversation regarding the above refers.

Attached please find relevant documentation for your perusal and response by indicated date.

Kind regards

*Vanessa van As*

pp:  
 J.A. van As  
 Stellenryck Environmental Solutions  
 4 Josephine Ave  
 Lorraine  
 6070  
 Tel/Fax: 041 - 367 2049  
 Cell: 082 414 0464  
 E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)

Detailed letters e-mailed:

**Stellenryck**

From: "Stellenryck" <stellenryck@telkomsa.net>  
 To: <Tom.Smith@eskom.co.za>  
 Sent: 16 March 2012 10:18 AM  
 Attach: I&AP.pdf  
 Subject: Proposed Mining Venture  
 Dear Mr. Smith,

Please find attached documentation regarding a proposed mining operation of SA Lime (Peddie)(Pty) Ltd for your perusal and response.

Kind regards

*Vanessa van As*

pp:  
 J.A. van As  
 Stellenryck Environmental Solutions  
 4 Josephine Ave  
 Lorraine  
 6070  
 Tel/Fax: 041 - 367 2049  
 Cell: 082 414 0464  
 E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)

## Stellenryck

**From:** "Muleki Matiwane" <mmatiwane@ndlambe.gov.za>  
**To:** "xmasiza" <xmasiza@ndlambe.gov.za>; "Nombulelo Booysen" <nbooyesen@ndlambe.gov.za>; "portalfred@ndlambe.gov.za" <portalfred@ndlambe.gov.za>; "Howard Dredge" <howard@ndlambe.gov.za>; "Lazola Maneli" <lmaneli@ndlambe.gov.za>; "R. Dumezweni" <rdumezweni@ndlambe.gov.za>  
**Cc:** "Fanie Fouche" <ffouche@ndlambe.gov.za>; "Shaheed Burton" <sburton@ndlambe.gov.za>; "Julia Mvunelwa" <jmvmunelwa@ndlambe.gov.za>; "Tabisa Magawu" <tmagawu@ndlambe.gov.za>; "Tembisa" <tfutuse@ndlambe.gov.za>; "J Nel" <jnel@ndlambe.gov.za>; "Aubrina Coltman" <acolman@ndlambe.gov.za>; "Michelle Marais" <mmarais@ndlambe.gov.za>; "Dianne Pittaway" <dpittaway@ndlambe.gov.za>; <stellenryck@telkomsa.net>  
**Sent:** 19 March 2012 09:10 AM  
**Attach:** Consultation.pdf  
**Subject:** Fwd: SA LIME(PEDDIE) PTY LTD

Dear all.

Attached please find further correspondence relating to the proposed mining operations in portions 17 and the remainder of the farm Lombards Post Number 289 in the District of Bathurst.

Please bring the correspondence to the relevant official for attention.

— Forwarded Message —

**From:** "Stellenryck" <[stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)>  
**To:** [mmatiwane@ndlambe.gov.za](mailto:mmatiwane@ndlambe.gov.za)  
**Sent:** Monday, March 19, 2012 7:30:59 AM  
**Subject:** Re: SA LIME(PEDDIE) PTY LTD

> Dear Mr. Matiwane  
>  
> Attached documentation regarding proposed quarry for your attention and  
> possible response  
>  
> Regards  
>  
> J.A. van As  
> Stellenryck Environmental Solutions  
> 4 Josephine Ave  
> Lorraine 6070  
> Tel/Fax: 041 - 367 2049  
> Cell: 082 414 0464  
> E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)  
>

## **Stellenryck**

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <judyjardine@intekom.co.za>  
**Sent:** 19 March 2012 09:32 AM  
**Attach:** Consultation.pdf  
**Subject:** Fw: SA Lime (Peddie) Pty Ltd Mining

J.A. van As  
Stellenryck Environmental Solutions  
4 Josephine Ave  
Lorraine 6070  
Tel/Fax: 041 - 367 2049  
Cell: 082 414 0464  
E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)

> Dear Interested & Affected Party  
>  
> Our previous communication regarding the SA Lime (peddie) Pty Ltd mining  
> concern refers. We kindly remind you that we would like to receive your  
> initial comments on the mining matter today. We have included our  
> preliminary view of environmental impacts that would be imposed by the  
> development should you wish to comment on these findings.  
>  
> Regards  
>  
>  
> J.A. van As  
> Stellenryck Environmental Solutions  
> 4 Josephine Ave  
> Lorraine 6070  
> Tel/Fax: 041 - 367 2049  
> Cell: 082 414 0464  
> E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)

## Stellenryck

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <HSPRINSLOO@ruraldevelopment.gov.za>  
**Sent:** 19 March 2012 07:43 AM  
**Attach:** Consultation Land Affairs.pdf  
**Subject:** Re: SA LIME(PEDDIE) PTY LTD

>> Dear Mr. Prinsloo  
>>  
>> Attached documentation regarding proposed quarry for your attention and  
>> possible response  
>>  
>> Regards  
>>  
>> J.A. van As  
>> Stellenryck Environmental Solutions  
>> 4 Josephine Ave  
>> Lorraine 6070  
>> Tel/Fax: 041 - 367 2049  
>> Cell: 082 414 0464  
>> E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)

## Stellenryck

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <lungiswa.nibe@dpw.ecape.gov.za>  
**Sent:** 19 March 2012 07:27 AM  
**Attach:** Consultation Roads.pdf  
**Subject:** SA LIME(PEDDIE) PTY LTD

Dear Mr. Keyser

Attached documentation regarding proposed quarry for your attention and possible response

Regards

J.A. van As  
Stellenryck Environmental Solutions  
4 Josephine Ave  
Lorraine 6070  
Tel/Fax: 041 - 367 2049  
Cell: 082 414 0464  
E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)



## Stellenryck

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <mmatiwane@ndlambe.gov.za>  
**Sent:** 19 March 2012 07:30 AM  
**Attach:** Consultation.pdf  
**Subject:** Re: SA LIME(PEDDIE) PTY LTD

> Dear Mr. Matiwane  
>  
> Attached documentation regarding proposed quarry for your attention and  
> possible response  
>  
> Regards  
>  
> J.A. van As  
> Stellenryck Environmental Solutions  
> 4 Josephine Ave  
> Lorraine 6070  
> Tel/Fax: 041 - 367 2049  
> Cell: 082 414 0464  
> E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)  
>

## Stellenryck

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <HSPRINSLOO@ruraldevelopment.gov.za>  
**Sent:** 19 March 2012 07:43 AM  
**Attach:** Consultation Land Affairs.pdf  
**Subject:** Re: SA LIME(PEDDIE) PTY LTD

>> Dear Mr. Prinsloo  
>>  
>> Attached documentation regarding proposed quarry for your attention and  
>> possible response  
>>  
>> Regards  
>>  
>> J.A. van As  
>> Stellenryck Environmental Solutions  
>> 4 Josephine Ave  
>> Lorraine 6070  
>> Tel/Fax: 041 - 367 2049  
>> Cell: 082 414 0464  
>> E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)  
>>

## **Stellenryck**

---

**From:** "Hi Tech Plumbers" <hitechplumb@telkomsa.net>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 08 March 2012 04:44 PM  
**Attach:** ATT00021.txt  
**Subject:** Read: CONSULTATION  
Your message

To: hitechplumb@telkomsa.net  
Subject: CONSULTATION  
Sent: 3/8/2012 3:38 PM

was read on 3/8/2012 4:44 PM.

## **Stellenryck**

---

**From:** "Lungiswa Nibe" <Lungiswa.Nibe@dpw.ecape.gov.za>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 15 March 2012 12:37 PM  
**Attach:** ATT00336.txt  
**Subject:** Read: PUBLIC PARTICIPATION: PROPOSED MINING VENTURE  
Your message was read on Thursday, March 15, 2012 10:37:13 AM UTC.

## **Stellenryck**

**From:** "Lungiswa Nibe" <Lungiswa.Nibe@dpw.ecape.gov.za>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 19 March 2012 08:04 AM  
**Attach:** ATT00136.txt  
**Subject:** Read: SA LIME(PEDDIE) PTY LTD

Your message was read on Monday, March 19, 2012 6:04:03 AM UTC.

## **Stellenryck**

**From:** "Lungiswa Nibe" <Lungiswa.Nibe@dpw.ecape.gov.za>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 19 March 2012 08:04 AM  
**Attach:** ATT00136.txt  
**Subject:** Read: SA LIME(PEDDIE) PTY LTD

Your message was read on Monday, March 19, 2012 6:04:03 AM UTC.



## Stellenryck

**From:** "Colin Stirk" <cstirk@intekom.co.za>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 19 March 2012 07:18 AM  
**Attach:** ATT00057.txt  
**Subject:** Read: SA Lime (Peddie) Pty Ltd Mining  
Your message

To: cstirk@intekom.co.za  
Subject: SA Lime (Peddie) Pty Ltd Mining  
Sent: 2012/03/19 07:05 AM

was read on 2012/03/19 07:18 AM.

## Stellenryck

**From:** "Greg & Elzette Reed" <gregreed@imaginet.co.za>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 19 March 2012 08:22 AM  
**Attach:** ATT00122.txt  
**Subject:** Read: SA Lime (Peddie) Pty Ltd Mining

This is a receipt for the mail you sent to  
<cstirk@intekom.co.za> at 2012/03/19 07:05 AM

This receipt verifies that the message has been displayed on the  
recipient's computer at 2012/03/19 08:22 AM

## Stellenryck

**From:** "Geoff Bladen" <bladen@imaginet.co.za>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 19 March 2012 07:55 AM  
**Attach:** ATT00104.txt  
**Subject:** Read: SA Lime (Peddie) Pty Ltd Mining

Your message

To: cstirk@intekom.co.za  
Subject: SA Lime (Peddie) Pty Ltd Mining  
Sent: 2012/03/19 07:05 AM

was read on 2012/03/19 07:54 AM.

## Stellenryck

Stirk : Kort brief

**From:** "Colin Stirk" <cstirk@intekom.co.za>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 15 March 2012 08:40 AM  
**Attach:** ATT00204.txt  
**Subject:** Read: Proposed Mining Operation  
Your message

To: "Undisclosed-Recipient:" <@cressida.telkomsa.net>  
Subject: Proposed Mining Operation  
Sent: 2012/03/14 07:51 PM

was read on 2012/03/15 08:40 AM.

**Stellenryck**

Glanville: Kae brief

**From:** "Carol Glanville" <basille@intekom.co.za>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 15 March 2012 08:00 AM  
**Attach:** ATT00190.txd  
**Subject:** Read: Proposed Mining Operation

This is a receipt for the mail you sent to

<"Undisclosed-Recipient:"@cressida.telkomsa.net> at 3/14/2012 7:51 PM

This receipt verifies that the message has been displayed on the recipient's computer at 3/15/2012 8:00 AM

--

This message has been scanned for viruses and dangerous content by Pinpoint, and is believed to be clean.

**Stellenryck**

Bladen: Kae Brief

**From:** "Geoff Bladen" <bladen@imagnet.co.za>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 15 March 2012 07:08 AM  
**Attach:** ATT00166.txd  
**Subject:** Read: Proposed Mining Operation  
Your message

To: Undisclosed-Recipient;  
Subject: Proposed Mining Operation  
Sent: 2012/03/14 07:51 PM

was read on 2012/03/15 07:08 AM.

## Stellenryck

Hugh Collett: Kat Brief

**From:** "Mr Hugh" <0716772120@vodamail.co.za>  
**To:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 15 March 2012 05:56 AM  
**Attach:** ATT00148.txt  
**Subject:** Read: Proposed Mining Operation

This is a receipt for the mail you sent to  
<"Undisclosed-Recipient:"@vodamail.co.za> at 3/14/2012 7:51 PM

This receipt verifies that the message has been displayed on the recipient's computer at 3/15/2012 5:56 AM

### Outcome of Consultation

To date we have received the following comments/requests:

<u>Name</u>	<u>Comments</u>
Mr. B. Glanville	Please refer to comment form below
Mr. C. Stirk	Please refer to comment form below
Mr. G.S. Reed	Please refer to comment form below

**PUBLIC PARTICIPATION REPLY FORM FOR MINING PERMIT APPLICATION:  
THE REMAINDER AND PORTION 17 OF THE FARM LOMBARDS POST 289, BATHURST**

Please return by fax or registered post to:

Fax: 041-3672049

J. A. van As

Stellenryck Environmental Solutions

Postal address:

Stellenryck Environmental Solutions

4 Josephine Avenue

Lorraine

6070

Contact details of Interested & Affected Party

Name:

*Basille Glanville*

Property/Organization

Postal address

*Box 156, Port Alfred 6170*

Telephone

*046-6367914* Fax No. *046-6367914*

Mobile

*0848040125*

E-mail

*basille@wolkow.co.za*

Please list your comments on the project (Should you require more space use additional page):

1.

2.

3.

4.

5.

*See attached*

*or*

I have no comments on the proposed SA Lime (Peddie)(Pty) Ltd mining venture.

I, *Basille Glanville*

confirm that I have received the Public

Consultation Notice from SA Lime (Peddie) Pty Ltd regarding lime mining on the Remainder and Portion 17 of the Farm Lombards Post 289, Bathurst.

*B. Glanville*

Signature

*4808045072081*

ID Number

*19/3/2012*

Date

Name of any other person whom you think should be consulted

Name and Surname

Farm Name and Portion

Telephone

Fax

Address

Member: J.A. van As: B.Sc (Botany & Zoology), B.Sc Hons (Eco-Physiology), M.Sc (Plant Physiology)



Dear Mr. Van As,

In response to your E.I.A. proposed Mine License Document that you emailed me, I would like to place the following comments on record:

As a neighbour who has lived in this house situated about 200 meters south east of Mr. Keetons old lime mill, I personally do not have any objection to the proposed license application provided that the milling work is done at the present mill site situated on Mr. Stirk's property and the mining undertaken as set out in the E.I.A. Impact Assessment that was emailed to me on 19th March 2012.

In the past when Mr. Keeton milled lime at the old site on his farm, depending on the prevailing wind, my garden, house and adjacent lands were covered in lime and I was forced to keep all windows and doors closed for days on end. I do not know whether you have discussed this matter with the occupants of Glen Retha farm who could now be affected by the lime dust due to the mill being moved from Mr. Keeton's farm to its present position. This farm has been bought by the State and is registered in the name of "The Glenretha Trust". Mr. Roger Keeton is one of the Trustees together with a few of their farm occupants. The Minister of Land Affairs, Mr. Nkwinty, was personally responsible for the purchasing of this property. To proceed, without in depth consultation with these people regarding the effect the mine might have on their lives, might prove to be costly in the long term. I have personally experienced the inconvenience.

Having filled you in on the background history of the old mine and it's health hazards, I would like you to know that I am **absolutely against** the use of any blasting materials being used during the life of the mine. Last year, Innowind, a French Renewables Company, commissioned an E.I.A., which covered Mr. Stirk's farm as well as all the neighbouring farms with the intention of establishing a Wind Farm on Mr. Stirk's property. An anthropologist from Richards Bay, Mr. Gavin Anderson, accompanied by myself as guide, spent almost a day inspecting the old buildings, looking for marked and unmarked graves and fossils in the vicinity of the proposed mine. Although I was not privy to his final report, I do know that he was concerned about the possible effect of the turbines on the flimsy foundations of the old buildings. Incidentally, a turbine was scheduled to be erected near the proposed mine site and after much debate, the whole scheme was eventually cancelled.

This corner of Southwell certainly has a very long history with buildings dating back to about 1810 and unmarked graves and fossils. To grant a license for a mine in the midst of the abovementioned factors without imposing very strict conditions, would be very irresponsible to say the least.

Attached, please find page 4 of the form, duly signed by me.

Kind regards,  
Rasile Glenville



**PUBLIC PARTICIPATION REPLY FORM FOR MINING PERMIT APPLICATION:  
THE REMAINDER AND PORTION 17 OF THE FARM LOMBARDS POST 289, BATHURST**

Please return by fax or registered post to:

Fax: 041-3672049

J. A. van As

Stellenryck Environmental Solutions

Postal address:

Stellenryck Environmental Solutions

4 Josephine Avenue

Lorraine

6070

Contact details of Interested & Affected Party

Name:

*Colin STIRK*

Property/Organization

Postal address

*P.O. Box 2003*

*GRAHAMSTOWN*

Telephone

*046-6367924*

Fax No.

Mobile

*0826592905*

E-mail

*cstirk@intekom.co.za*

Please list your comments on the project (Should you require more space use additional page):

1. I understand that Mr. Hendrik Pistorius was the previous operator of the mine and left the site. Rehabilitation was not carried out to my knowledge.
2. Mr. Pistorius absconded from his previous venture at this mine and left unattended debt.
3. Mr. Pistorius left a number of people waiting for promised lime which I believe was paid for.
4. Access roads were not maintained.
5. I have a problem with mining both sides of the boundary fence.
6. This venture would have to investigate the grave issue which might be a problem.

or

I have no comments on the proposed SA Lime (Pieddie) Pty Ltd mining venture.

I, *COLIN LYNN STIRK*

confirm that I have received the Public Consultation Notice from SA Lime (Pieddie) Pty Ltd regarding lime mining on the Remainder and Portion 17 of the Farm Lombards Post 289, Bathurst.

*[Signature]*  
Signature

*6111055009087*

ID Number

*19/3/2012*

Date

Name of any other person whom you think should be consulted

Name and Surname

Farm Name and Portion

Telephone

Fax

Address

Member: J.A. van As: B.Sc (Botany & Zoology), B.Sc Hons (Eco-Physiology), M.Sc (Plant Physiology)

## **Stellenryck**

---

**From:** "Stellenryck" <stellenryck@telkomsa.net>  
**To:** <cstirk@intekom.co.za>  
**Cc:** "Stellenryck" <stellenryck@telkomsa.net>  
**Sent:** 19 March 2012 10:37 AM  
**Subject:** Re: SA Lime (Peddie) Pty Ltd Mining

Dear Mr. Stirk

Thank you for your comments on the mining permit application of Mr. Pistorius.

With regards to our telecom the to above effect we wish to respond as follow:

1. We have decided on the locality of the mine area with the objective to rehabilitate a portion of the old workings and shall capture your response in the environmental management programme (EMP). Mr. Pistorius will have to comply with the conditions of the EMP and will be required to submit a financial guarantee to the DMR should he abscond again or fall behind with rehabilitation. With such scenarios at hand the DMR will have the right to suspend his operations and use the guarantee for rehabilitation of the site. Regretably, previously mining was done without these control measures in place. Rehabilitation will be dealt with in detail in the EMP and we shall consult you and Mr. Keeton on the matter.
2. Your comments on the existence of the trig beacon, hardness of material on your property and your observation of the negative impact of blasting are noted and will be considered when the impact assessment is performed. We shall further consult you in this regard.
3. Your comments on the potential existence of graves in the area are appreciated and will be conveyed to Dr. Binneman, who will performed the Heritage Impact Assessment.

Regards

J.A. van As  
Stellenryck Environmental Solutions  
4 Josephine Ave  
Lorraine 6070  
Tel/Fax: 041 - 367 2049  
Cell: 082 414 0464  
E-mail: [stellenryck@telkomsa.net](mailto:stellenryck@telkomsa.net)



**PUBLIC PARTICIPATION REPLY FORM FOR MINING PERMIT APPLICATION:  
THE REMAINDER AND PORTION 17 OF THE FARM LOMBARDS POST 289, BATHURST**

Please return by fax or registered post to:

Fax: 041-3672049

J. A. van As

Stellenryck Environmental Solutions

Postal address:

Stellenryck Environmental Solutions

4 Josephine Avenue

Lorraine

6070

Contact details of Interested & Affected Party

Name: .....

Property/Organization .....

Postal address .....

Telephone ..... Fax No .....

Mobile ..... E-mail .....

Please list your comments on the project (Should you require more space use additional page):

1.....

2.....

3.....

4.....

5.....

or

I have no comments on the proposed SA Lime (Peddie) Pty Ltd mining venture.

I, Gregory Stanley Reed confirm that I have received the Public Consultation Notice from SA Lime (Peddie) Pty Ltd regarding lime mining on the Remainder and Portion 17 of the Farm Lombards Post 289, Bathurst.

Reed

Signature

5708015139085

ID Number

19/3/2012

Date

**Name of any other person whom you think should be consulted**

Name and Surname.....

Farm Name and Portion.....

Telephone..... Fax.....

Address.....

Member: J.A. van As: B.Sc (Botany & Zoology), B.Sc Hons (Eco-Physiology), M.Sc (Plant Physiology)

## To Whom It May Concern – Competency Report for a Mining Permit Application

My name is Heinrich Carl Wilhelm, ID 5303155065082 and I am a South African citizen residing in Port Elizabeth, in the Eastern Cape.

1) My exposure to AgLime and all that goes with it started when I was still at school. As the biggest AgLime producer in Africa my father involved me in every aspect of the quarry business on a continuous basis, e.g., product prospecting, quarrying, quality control, choosing & matching equipment to suit production requirements (production tonnage/hour), erecting the plant, safety standards, maintenance, security, product registration, market analysis, stock control, sales promotions, purchase & sales negotiations, marketing, price policy, commission policy, administration, distribution network & logistics, etc.

2) Calcium (Ca) is the single most common element on the planet and also the most important fertilization element of all plants. Ca when it is mined is “contaminated” with a series of other elements. The existence of these other elements as part of Ca, is either positive or negative and the correct balance is important to the land and crop you are growing.

3) As a member of the FSSA (Fertilizer Society of SA) for many years, I have served on numerous sub-committees which play a role in the AgLime industry. Production and product standards, industry regulation, product research, interaction with related industries (ongoing negotiations with large consumers of ‘dolomite/lime’ in the country to balance supply, logistics and quality also to find synergies in and with the cement, paper, paint, steel industries, refractory’s), was part of ‘positioning’ your company and industry.

4) The pivotal and fundamental role the AgLime industry plays in ‘sustainable agriculture’, can never be over rated.

5) My personal contribution to help define and implement a ‘sustainable life style’ for all (by all) and more specifically, ‘sustainability in agriculture’, is helping to take agriculture to a new level. (In 2010, SA Lime were co-presenter with the international SA company SYSPRO, of the “Soil to Pallet” and “Fundamental IQ” concepts, with Prof. Mervyn King as keynote speaker, held at the Radisson’s Hotel in Port Elizabeth.)

6) In 2011/12 the annual failures in agriculture by government, is targeted. With the co-operation of different role players in the public and private sector, more than 20,000ha has been identified in the Transkei for the start of “Large scale Commercial, NoTill” as well as “Subsistence, NoTill” farming. With DBSA (Dev. Bank of SA), all four the ECape universities are involved, Agri colleges, municipalities, the different levels of the Dept. of Fisheries&Forestry, local communities, school children and traditional leaders are involved. With the help from private sector the launch of the first of five, 20,000ha/annum NoTill projects will be started with the planting of ‘cover crops’ to prepare the soils in the Brazilian way. My involvement with AgLime and other bio-friendly agricultural soil fertilization applications to introduce and promote the production ‘sustainable farming’ has taken me outside South Africa, into sub-Sahara Africa. Projects with a ‘turn around time’/involvement of 20 years has been started.

**I hope the above, relating to the part of my experience closer related to quarrying and its further application will satisfy and will be proof of my capabilities to drive and manage a quarry and its related business to make it a success.**

**Kind regards,  
Henke Pistorius  
Cell: 082 881 1119  
E-mail: [henke@salime.biz](mailto:henke@salime.biz)**

SA Line (Puddle) PTY Ltd  
Balance Sheet for Period Ending October 2011

	Feb 11 Closing	Mar 11 Actual	Apr 11 Actual	May 11 Actual	Jun 11 Actual	Jul 11 Actual	Aug 11 Actual	Sep 11 Actual	Oct 11 Actual	YTD Actual
<b>CAPITAL EMPLOYED</b>										
Share Capital	-	100.00	-	-	-	-	-	-	-	100.00
Retained Income	-	158,337.36	116,763.53	174,517.92	73,565.55	16,272.34	(22,410.97)	67,335.88	66,292.67	117,134.10
Shareholder Loan	-	7,833.55	(51.53)	165,739.84	16,000.00	12,520.52	11,879.23	(2,350.00)	105,338.36	236,676.29
Long Term Borrowings	-	-	-	-	-	-	-	-	-	-
Other Long Term Liabilities	-	-	-	-	-	-	-	-	-	-
	-	186,170.91	119,825.00	299,435.36	89,565.55	(3,918.32)	126,299.23	44,835.68	91,278.18	35,437.25
<b>EMPLOYMENT OF CAPITAL</b>										
<b>FIXED ASSETS</b>										
Fixed Assets	-	-	-	-	-	-	-	-	-	-
Investments	-	-	-	-	-	-	-	-	-	-
Other Fixed Assets	-	-	-	-	-	-	-	-	-	-
<b>CURRENT ASSETS</b>	-	90,410.41	(19,853.20)	15,127.71	67,363.15	111,674.71	(26,854.18)	64,271.58	103,453.49	3,733.41
Inventory	-	-	-	-	-	-	-	-	-	-
Accounts Receivable	-	-	-	-	-	-	-	-	-	-
Bank	-	100,410.41	119,083.21	157,127.71	67,303.15	111,674.71	(26,024.10)	64,271.98	100,453.49	2,783.41
Other Current Assets	-	-	-	-	-	-	-	-	-	-
<b>CURRENT LIABILITIES</b>	-	64,732.13	1238.12	117,091.43	1677.40	(2,745.38)	(1,637.86)	(83.70)	1,377.34	236,548.19
Accounts Payable	-	-	-	-	-	-	-	-	1,948.40	1,949.41
Taxation	-	-	-	-	-	-	-	-	-	-
Other Current Liabilities	-	64,732.13	(236.12)	(17,421.43)	(677.40)	(2,745.38)	(1,637.86)	(83.70)	(372.66)	128,238.12
<b>NET CURRENT ASSETS/LIABILITIES</b>	-	25,678.28	(7,028.12)	(101,963.72)	66,685.75	114,419.09	(28,153.41)	64,355.28	99,876.15	32,132.20



SA Lima (Piedra) PTY Ltd  
Profit and Loss for Period Ending October 2011

	Mar 11 Actual	Apr 11 Actual	May 11 Actual	Jun 11 Actual	Jul 11 Actual	Aug 11 Actual	Sep 11 Actual	Oct 11 Actual	YTD Actual
<b>Sales</b>									
Service / Fee Income	-	38,225.38	21,878.69	283,237.35	47,878.85	-	66,777.41	-	378,788.97
	-	38,225.38	21,878.69	283,237.35	47,878.85	-	66,777.41	-	378,788.97
<b>Cost of Sales</b>									
Operating Costs / Cost of Sales	74,027.87	46,045.80	144,298.53	110,377.60	15,297.37	2,803.00	13,550.00	2,008.68	407,968.05
1% Loss on Foreign Currency Exchange	74,027.87	46,045.80	144,298.53	110,377.60	15,297.37	2,803.00	13,550.00	2,008.68	407,968.05
	74,027.87	46,045.80	144,298.53	110,377.60	15,297.37	2,803.00	13,550.00	2,008.68	407,968.05
<b>GROSS PROFIT / (LOSS)</b>	(74,027.87)	(7,819.42)	(120,589.53)	92,860.75	32,581.48	(2,803.00)	53,227.41	(2,008.68)	(27,179.08)
	(74,027.87)	(7,819.42)	(120,589.53)	92,860.75	32,581.48	(2,803.00)	53,227.41	(2,008.68)	(27,179.08)
<b>Expenses</b>									
Accounting Fees	19,319.28	10,963.94	34,582.38	19,794.89	38,952.31	20,416.97	6,441.73	4,262.59	144,725.61
Bank Charges	24.56	97.89	327.72	249.44	443.13	289.96	433.39	1,110.00	2,710.00
Lab Expenditure	-	473.71	-	-	151.70	339.16	212.78	-	1,917.84
Carrier & Postage	-	8.00	-	-	283.16	175.44	21.93	-	646.49
Electricity & Water	219.30	-	43.86	300.00	280.00	808.06	1,080.66	131.88	521.89
Entertainment Expenses	1,500.00	-	1,000.00	2,500.00	2,700.00	-	1,000.00	-	833.34
Legal Fees	6,377.44	1,696.57	12,062.41	964.85	2,496.82	1,602.50	2,950.91	-	2,496.79
Motor Vehicle - Petrol & Oil	1,573.30	544.47	141.68	95.74	540.78	77.88	44.50	-	6,000.00
Motor Vehicle - Repairs & Maintenance	91.32	273.68	-	-	687.43	681.01	-	-	9,027.44
Printing & Stationery	53.55	-	-	-	-	-	-	-	23,707.34
Rent Paid	2,400.00	1,883.40	119.74	10,000.00	14,993.37	1,297.45	-	-	1,743.57
Repairs & Maintenance	-	-	-	-	-	1,500.00	-	-	1,796.44
Royalty Expenses	-	-	-	-	-	542.88	376.74	-	2,400.00
Staff Welfare	-	-	105.26	4,564.30	7,807.02	9,014.44	-	-	26,423.37
Telephone & Fax	-	-	-	-	6,038.12	-	-	-	2,874.58
Travel - Local	5,877.41	7,508.72	8,385.72	1,090.47	-	-	-	-	23,714.00
Travel - Overseas	-	-	-	-	-	-	-	-	34,531.47
<b>Other Income</b>									
Discount Received for Cash	-	-	-	-	-	-	-	-	-
Sundry Income	-	-	-	-	-	-	-	-	-
<b>NET PROFIT / (LOSS) BEFORE TAX</b>	(93,337.30)	(18,763.58)	(145,171.92)	73,065.95	(6,372.83)	(22,416.97)	47,335.68	(8,262.67)	(171,944.89)
	(93,337.30)	(18,763.58)	(145,171.92)	73,065.95	(6,372.83)	(22,416.97)	47,335.68	(8,262.67)	(171,944.89)
<b>Tax</b>									
Normal Taxation	-	-	-	-	-	-	-	-	-
Deferred Taxation	-	-	-	-	-	-	-	-	-
<b>Dividends</b>									
Dividends Declared / Paid	-	-	-	-	-	-	-	-	-
<b>NET PROFIT / (LOSS) AFTER TAX</b>	(93,337.30)	(18,763.58)	(145,171.92)	73,065.95	(6,372.83)	(22,416.97)	47,335.68	(8,262.67)	(171,944.89)
	(93,337.30)	(18,763.58)	(145,171.92)	73,065.95	(6,372.83)	(22,416.97)	47,335.68	(8,262.67)	(171,944.89)

The report is being finalised and will be submitted to the DMR once completed.