



the dme

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REPUBLIC OF SOUTH AFRICA

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Reference:
Date:

(EC)30/5/1/3/3/2/1(0345)EM
18 August 2009

South African Heritage Resources Agency
P.O. Box 759
EAST LONDON
5200

Case ID: 2405

ATTENTION: MR. T. LUNGILE

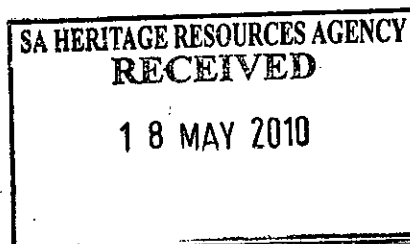
Sir

**CONSULTATION IN TERMS OF SECTION 40 OF THE MPRDA OF 2002:
ENVIRONMENTAL MANAGEMENT PLAN IN SUPPORT OF AN APPLICATION TO
MINE SAND ON REMAINDER PORTION 2 OF FARM 1046, DIVISION OF EAST
LONDON, EASTERN CAPE**

1. Mr. P A Hill has applied for a mining permit on the above-mentioned area.
2. Attached is the EMP for your comment.
3. Please forward any written comments or requirements your department may have on this application, to this office no later than 22 September 2009. Failure to do so will lead to the assumption that your Department has no objection(s) or comments with regards to the application.
4. Consultation on this application has been initiated with other relevant State Departments.
5. Kindly quote the relevant file reference number in all correspondence.

Sincerely,

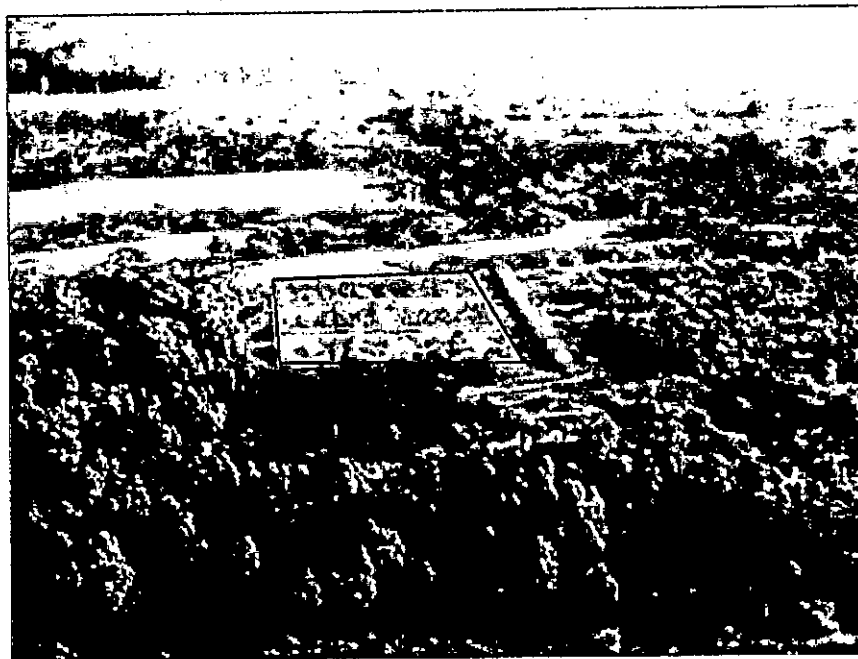

REGIONAL MANAGER
EASTERN CAPE





STELLENRYCK ENVIRONMENTAL SOLUTIONS

**HERITAGE IMPACT ASSESSMENT PROGRAMME
FOR SAND MINING ON PORTION 2 OF FARM 1046,
EAST LONDON**



PREPARED FOR:

**P. A. Hill
51 Candleberry Road
Nahoon Valley Park
5241**

July 2009

ENVIRONMENTAL MANAGEMENT PROGRAMME FOR NEW SAND QUARRY ON PORTION 2 OF FARM 1046, LILYVALE, EAST LONDON.

INTRODUCTION & MOTIVATION

The farm in question is mostly used for cash crop production and a number of vegetable tunnels are located on the farm. The area applied for hosts dilapidated tunnel infrastructure that the owner wishes to remove and replace it with new structures. Since the original topsoil in this area is covered by a 1m of sand layer, it results in excessive use of fertilizer solutions, low soil water potential and poor performance of plants. Mr. Partick Hill was appointed to remove the infrastructure as well as the layer of sand prior to the establishment of the new tunnels. Since Mr. Hill is also involved in the construction fraternity it was part of the agreement with the landowner to sell the sand instead of depositing it somewhere on the farm and this activity will therefore require a mining permit. The landowner agreed to the proposal subject to the land being reinstated to his specifications and that mining be done in accordance with the principles embodied in the Minerals & Petroleum Resource Development Act and an approved Environmental Management Programme as well as a royalty for the material removed to assist him in establishing the tunnels.

From Mr Hill's perspective the selling of the sand creates an ideal opportunity to find a source of sand with limited environmental considerations since such areas have become very scarce in East London. In addition East London has experienced tremendous growth over the past five years with the East London Industrial Zone spearheading development. In addition the town itself has shown extensive growth through numerous new formal and informal cluster housing schemes, shopping centres and small businesses. This industrial and residential growth has created an extensive market for construction materials including sand which has led to the closure of a number of quarry concerns. In turn this has resulted in sand reserves in East London reaching critical levels and stimulating vast illegal mining activities. There is thus a requirement for additional sand quarries to sustain this growing demand for building sand. From a financial point of view, the extensive demand for construction materials as well as the financial resources available to Mr. Hill will result in a sustainable quarry development. It is anticipated that the proposed developments will be a short term venture on the property concerned hence environmental and social impacts will be limited.

In terms of the STEP Programme the conservation status of the area is categorized as least threatened and can withstand some loss of natural land through disturbance or development. In addition, the area also forms not part of any STEP corridor, therefore mining activities will not affect ecological processes in the area. It should be noted that the area concerned has been totally transformed by previous agricultural activities and very little environmental impact is anticipated. Development guidelines provided in this EMP will ensure that no post closure environmental degradation is experienced. In terms of the development proposal 1,5ha of land will be developed. There are no permanent infrastructure close to the proposed sand quarry whilst nearest residences are between 230m and 500m from it.

TERMS OF REFERENCE

The application to the Department of Minerals and Energy (DME) include the following:

1. Applications for mining permit, which has been provisionally accepted.
2. Compilation of an EIA & EMP for the proposed sand quarries.
3. The EMP would cover all biotic and abiotic components on basic assessment level.
4. A public participation process prescribed in terms of section 27(5) of the MPRDA was conducted and all abutting land owners were consulted. The outcome was submitted to the DME. No objections or requirements were received regarding the proposed quarry development.

5. Considering the environmental status of the area caused by previous agricultural activities as well as the status of the land in terms of the Amatola State of the Environment Report and STEP no detailed fauna and flora survey was conducted.

The findings of the EMP are based on information/requirements gathered from:

- Surveying done within the East London area.
- EMPs submitted to the DME for quarry operations in the East London area.
- Amatola State of the Environment
- STEP Programme, EMPAT, Mucina & Rutherford and SANBI,
- Quarry sites visited in the past that occurred in similar veld type.
- Recent studying of the greater area around the quarry sites.

PROJECT DESCRIPTION

APPLICANT'S PARTICULARS

Applicant and mine manager

P. A. Hill
51 Candleberry Road
Nahoon Valley Park
5241
Tel: 043-7369686

I. D. 6304135006088

Cell: 0832841812

Fax No: 043-7369743

Surface owner

W. H. Rutherford
P.O. Box 96
Kidds Beach
5264

Holder of mineral rights

State

Title deed description

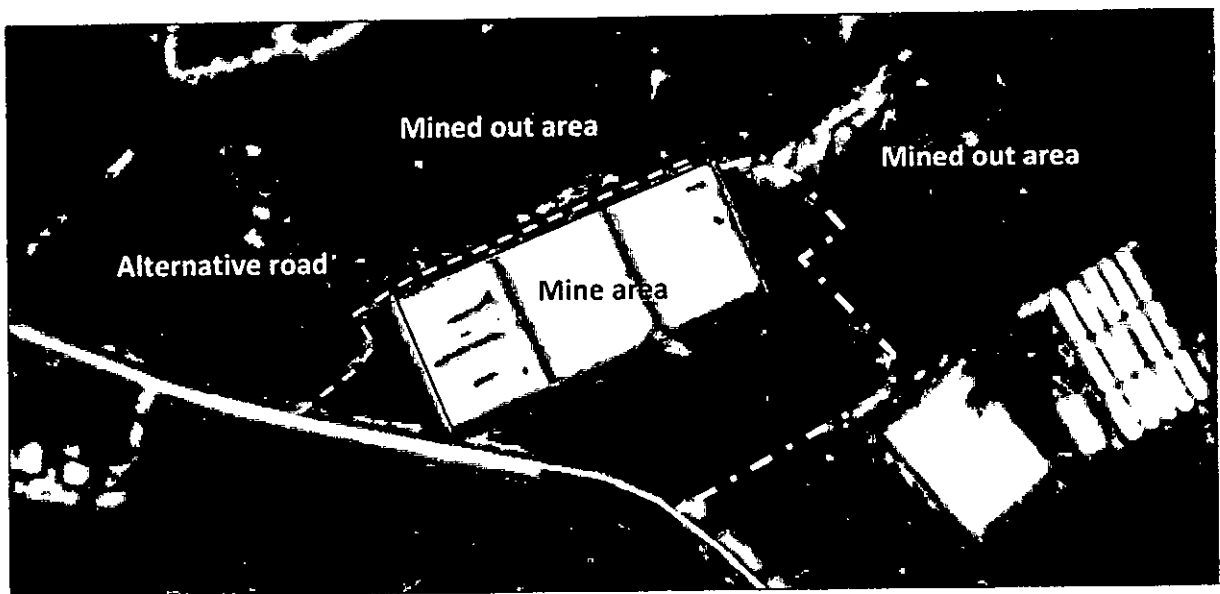
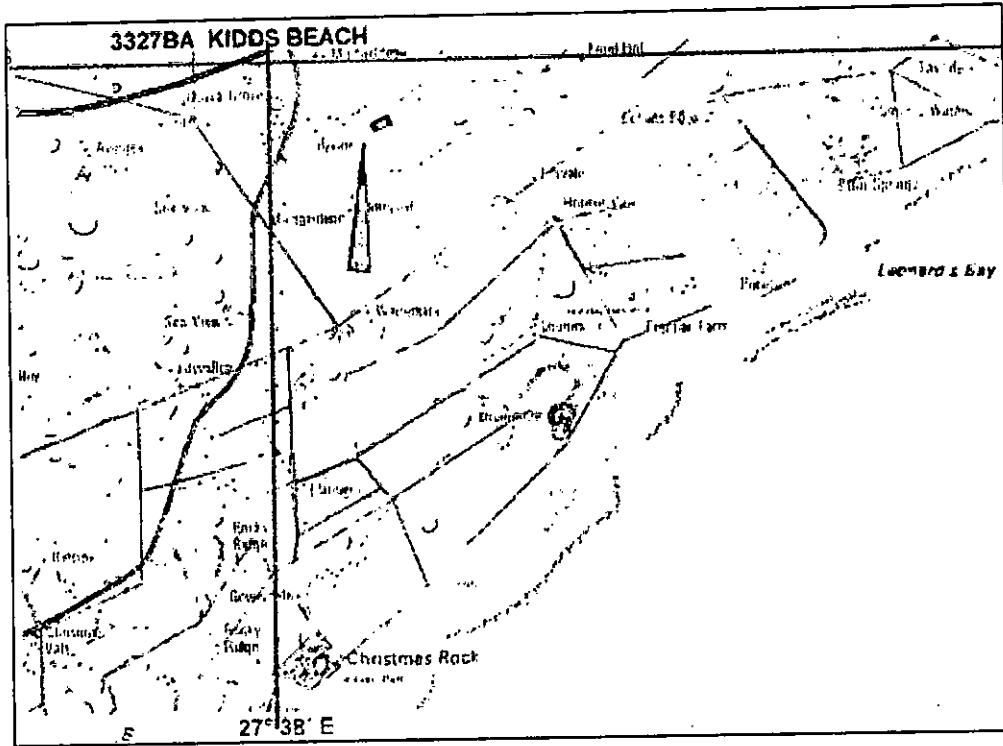
Portion 2 of farm 1046, East London

Regional setting

The proposed quarry is situated in the magisterial district of East London and is under control of the Buffalo City Municipality. The quarry is situated approximately 40 km (direct) south-west of East London and less than 1km east from the R72 along the Kaizer's Beach-Lilyvale road. The site is situated in a semi-rural area surrounded by small farms used for crop production. No power line or telephone line

Lilyvale Sand Quarry: P. A. Hill

servitudes are registered in close proximity to the property. The Lilyvale road is approximately 20m from the south-western corner of the proposed sand mine.



PROJECT DESCRIPTION

Surface infrastructure

Surrounding areas

The quarry surrounds are sparsely populated with only a few residences on the various farms. There are farm residences approximately 230m to the west, 500m south-south-west and one 500m to the north-north-east. No power line servitude is registered close to the site. The N2 is located approximately 700m to the north of the property and will be used as main haul road to the relevant markets in and around East London. The Lilyvale road is located 20m from the western end of the quarry area.

Mine

There is an existing farm road to the quarry that will be used to access the Lilyvale road and will not impact on the activities of the farm since agricultural activities are taking place more to the east. The road(s) to be used will be upgraded with a 30cm-wearing course of red gravel to be imported from a legal source near Kidds Beach. Considering the rainfall of the area as well as the availability of the farm reticulation network for irrigation or dust suppression it is not anticipated that a borehole will be sunk on the property to obtain water for these purposes. No labour accommodation, fuel tanks or campsite will be established on site.

A chemical toilet/pit toilet will be positioned at the eastern end of the quarry area. Should it be required that the sand be screened a single stage screen will be erected at the quarry. In such case an onboard generator will be used as power source but considering that the sand reserves of the area seems generally clean it might not be necessary. Stockpile area of 200m² will be required next to the production face or screen depending on the nature of the sand reserves.

Presence of servitudes

There are no servitudes registered in the proposed quarry area. A 9m road servitude will be registered along the Lilyvale road, but will be observed.

Land tenure and use of immediately adjacent land

North – Land degraded by historic mining and further afield grazing and crop production

West – Road and further afield grazing

South – Grazing & Crop production

East – Grazing & Crop production

Existing land uses that impact on the environment in/outside the proposed mining area

1. Residences, farm outbuildings and tunnels on smallholdings causing limited visual interference and loss of aesthetic value.
2. Transformation of land through bush clearing and grazing causing extensive loss of ecological integrity.
3. The N2 that carries substantial traffic volumes causing increased air pollution and noise levels.
4. Extensive invasion of land by alien vegetation on almost all properties causing deterioration in ecological integrity and aesthetics.

5. Historic mining that caused loss of topsoil and vegetation cover.

Based on the above the proposed sand quarry will only marginally affect farming activities. In terms of the biodiversity and conservation potential, the land is classified as least threatened and developed. That means the land can accommodate development and/or withstand limited loss of natural areas through disturbances. Notwithstanding this rating, the applicant will ensure that the affected land is rehabilitated properly and restored in such a manner that no post closure impacts are imposed on the natural and social environment.

Name of the river catchment in which the quarry is situated.

There are no rivers or secondary watercourse in the immediate area. The site falls within the Chalumna River catchment. Water quality of this river will not be affected due to the extensive distance involved and soil properties of the area.

Zoning

Current zoning is agriculture but 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 substituted the provisions of the Physical Planning Act.

Mineral Deposit & Mine Product

Aeolian calcareous marine sand.

Estimate reserves

Estimated sand reserves are approximately 15000 cubic meters (tight) which 30 000 will be mined within the next 12 months provided that market demand is retained.

Prospecting/Alternatives

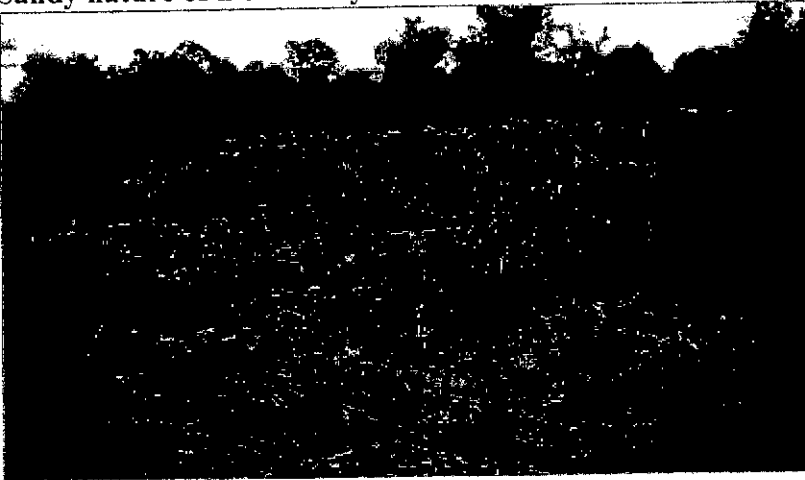
Prospecting

The surrounding areas to the immediate north and west were mined out long ago and the faces left behind clearly indicate a sand reserve of approximately 1m thick. In addition the high leaching capabilities of the soils is also indicative of the extent of the sand reserves. These field observations are, in conjunction with the geological information, deemed adequate to prove the mining potential of the area as well as the economic sustainability of the proposed project. The study area hosts the same quality material that was mined to the west on the farm Guava Grove, located opposite the Lilyvale road and currently mined to the south-west of the property concerned.

Sand deposits in the East London area are confined to the older dunes system and inland aeolian deposits. The former is normally covered with indigenous or semi-indigenous vegetation or is situated near the coast, which renders it a less sustainable option. The visual impact of such operations are also considerably higher than mining horizontal orientated deposits and are much more difficult to rehabilitate due to the steep slopes that are involved. The former scenario was thus eliminated.

The area within which the mining areas are situated is sparsely populated hence, the social impact would be reduced. In addition the land concerned is located within a totally transformed area with large pasture areas and alien tree infested areas and from a conservation value point of view the ideal area to develop. Therefore, no alternatives were considered

Sandy nature of historically mined out areas



Construction phase

At the proposed quarry the following construction activities will take place:

- 1) removal of vegetation and topsoil and storage on the southern and northern side of the mine area. excavation. All runoff from the quarry will be captured in the quarry void hence no special structures is required to divert water away from quarry or to settle out suspended solids. Since the quarry is not in close proximity to any river, no special consideration is required in terms of preventing surface water pollution.
- 2) the dilapidated tunnel infrastructure needs to be removed prior to the commencement of extraction. This process will include the removal of plastic covers, wooden poles and wire, of which the latter two will be used in the construction of the new tunnels whilst the former will be disposed at the nearest approved waste site in Kidds Beach or Kaizers Beach.

A weighbridge is not required, as sand will be sold by volume. If a screen is required it will be positioned in the quarry area and since it is mobile, will not result in any construction activities. No hydrocarbon storage facilities will be constructed on the property. No office construction activities will take place that could result in littering, cement mixing and generation of building rubble. Household waste disposal will be through depositing waste in strategically positioned containers fitted with scavenger proof lids. No Eskom and Telkom service points are required.

Mining methodology

The total mine area comprises about 1,499 ha and will be mined to an average depth of 1m. Approximately 15 000 cubic meters of sand will be extracted with the aid of a front-end loader. Extracted material will be hauled to the identified markets with three tip trucks.

Mining will be done in three phases as depicted on the mine plan and will commence from the north-east and be extended towards the south-west in slots of 70m x 70m. On completion of the first phase, rehabilitation of this phase will coincide with the development of the second phase and will include profiling and backfilling with limited amounts of orthic topsoil/organic material. The same scenario would apply to phases 2 and 3. The floor of the mine area will be aligned with the level of the historic mining areas to the north and west. The site, except for the minor slopes, will not be rehabilitated as new tunnels will be established as soon as phase 1 has been completed.

In each phase the southern and eastern production faces will be profiled through cut & fill method to 1:3 slope and vegetated.

Potable water would be provided by the property owner and brought to site daily by workers. The workforce would not reside on the mine, but will commute to work every day. Considering that at most two persons would be on site for short periods, no waste disposal site is required. A container with a lid would be placed within the mining area for the storage of any household waste. The sewage system will comprise a pit toilet on the northern side of the site. No additional infrastructure will be erected on site.

A dust suppression system consisting of a sprinkler system connected to the farm's water reticulation network will be put in place. As a rule sand deposits do not contain large quantities of fines/silt but windblown sand is a common phenomenon in the area and might require dampening to prevent unnecessary air pollution. No vehicle maintenance will be conducted on site. The proposed operation would be conducted from 7.30 am to 5pm five days a week, with cessation of activities at 1pm on Saturdays if market demand requires.

Western tunnel side



Inside of tunnel



Eastern tunnel side



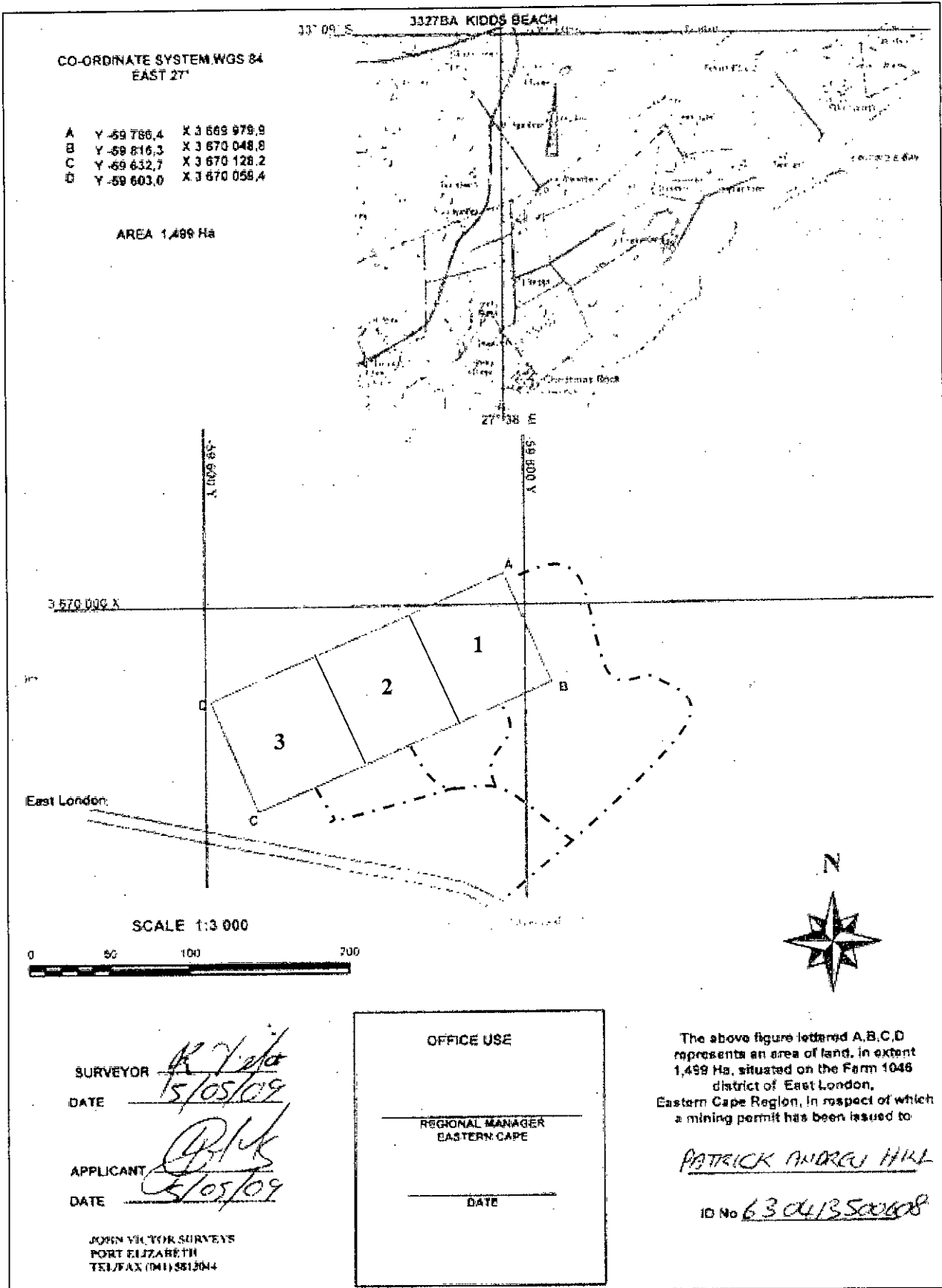
Planned production rate

Approximately 1250 cubic meters sand will be extracted per month but dwindling sand reserves at other sand quarries in the East London area could result in a higher extraction rate.

Planned life of mine

At the proposed production rate the lifespan of the quarry is approximately 12 months.

Lilyvale Sand Quarry: P. A. Hill



REGIONAL CLIMATE

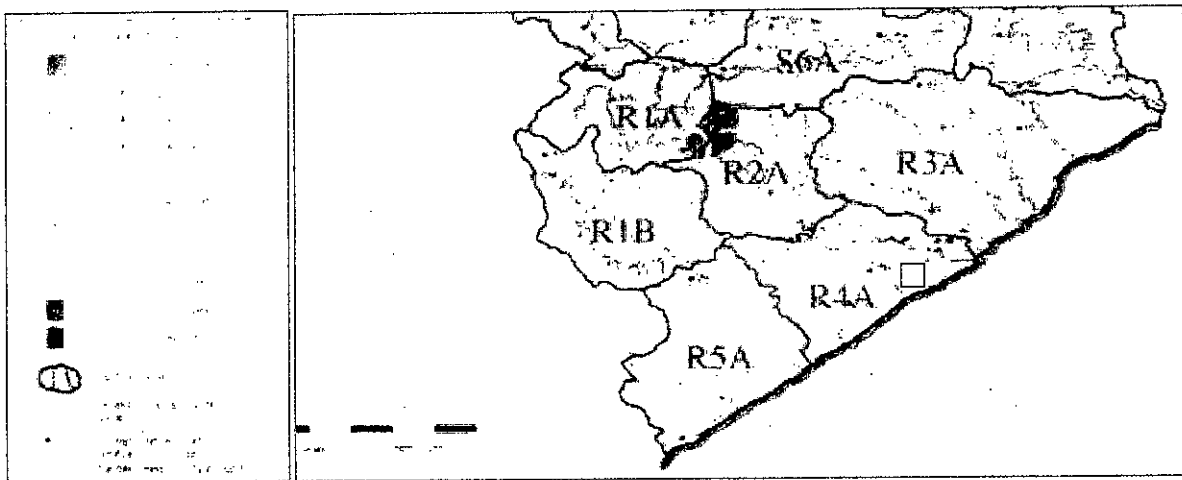
Climatic conditions such as temperature, rainfall and wind velocity influence for example plant growth, erosion levels of disturbed areas, dust generation and air pollution levels as well as social impact in terms of quality of life. Climatic conditions can therefore influence the significance of impacts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

Climatic data was obtained from Schultz and Kopke as well as from the institute of Soil Climate and Water. The study site falls into the Southern Temperate Climatic Zone and can therefore be considered mild with strong winds and occasional periods of high humidity during the high summer months.

Rainfall

The Eastern Cape Province experiences a bimodal rainfall pattern with pronounced wet seasons coinciding with spring and autumn. These rain periods are frequently associated with north-easterly winds. 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 average annual rainfall for the Province is approximately 873mm.

The area falls within rainfall area R4A and receives between 700 and 800mm per annum, which will stimulate plant growth and reduce dust generation to some extent. However, it will increase erosion on disturbed and uncovered mine areas and the necessary storm water control measures need to be implemented. Seeding must therefore coincide with early spring and early autumn to ensure a successful re-vegetation phase. Hail, frost or snow is not common phenomena in this area and will not affect the re-vegetation process.



East London: Nahoon Dam – Average data 1966-1980

Month	Average	Minimum	Maximum
January	40	15	109
February	83	11	180
March	67	4	183
April	51	7	155
May	36	3	160
June	26	2	65
July	33	0	165
August	106	6	671
September	54	3	174
October	71	4	210
November	85	12	184
December	67	19	155
YEAR	719	355	1177

Temperature

The area experiences warm to hot summers with maximum temperatures in February and minimum temperatures July. Hot north-westerly berg winds may occur in winter 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 annual evaporation of the area totals approximately 1400mm with the highest evaporation rates associated with the summer months.

East London

Month	Average	Ave. Max.	Ave. Min.	'S' pan evap.
January	22.0	25.5	18.2	168
February	21.1	25.7	18.4	144
March	21,3	25	17.6	122
April	19,5	23.6	15.1	96
May	17,7	22.7	12.8	81
June	15,9	21	10.4	73
July	15,6	21	10.1	76
August	15,9	21.1	11	91
September	16,7	21.2	12.3	102
October	17,7	21.5	13.9	127
November	19,1	22.8	15.5	146
December	20,7	24.3	16.8	174
YEAR	18,7	22,9	14,4	1400

Wind Regimes

The prevailing wind directions are predominantly west and east-north-east but with significant easterly, north-easterly, south-westerly and northerly components. Winds are mostly aligned with the coast during

the summer months. The north-easterly winds decreases from April when the south-westerly winds become more pronounced.

Wind direction and speed
Yearly average wind speed 5.61 m/s



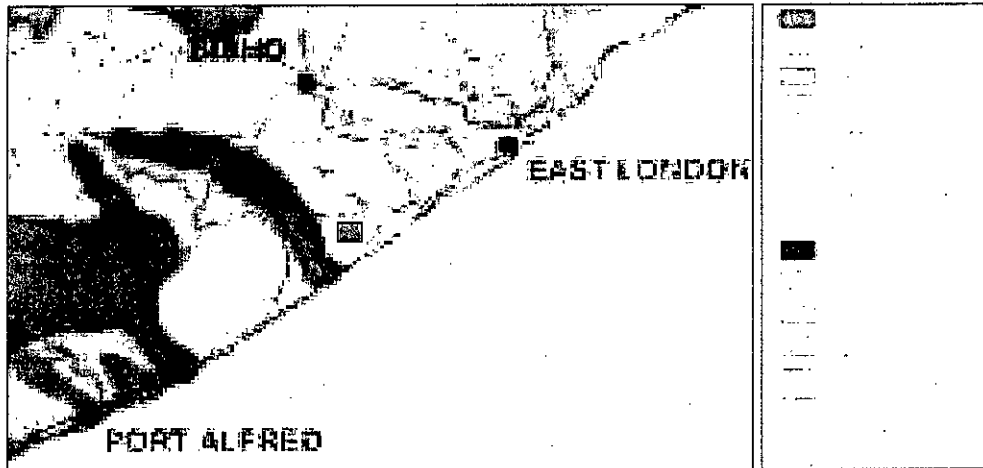
Wintertime is dominated by south-westerly winds and north-westerly winds. Strong winds above 5m/s occur in more than 30% of the year with calms approximately 10% of the year. The calms are mostly restricted to the summer months and then well to nighttime. The average wind speeds are moderate with 50% of the winds reaching speeds between 1.5-5.5m/s. The calms can for example result in the concentration of dust near ground level at night. Wind erosion is also an environmental parameter that needs to be controlled when sandy soils are predominant, whilst it would have a lesser effect when well-developed soils such as weathered dolerite soils are predominant.

TOPOGRAPHY

The study area and surrounds are characterized by the flat coastal platform with occasional deep incisions where watercourses drain the coastal platform. The primary and secondary dunes (4-10) are located parallel to the coast and covered with indigenous Coastal Thicket. The sand dunes and partially the inland sand deposits originated from earlier wind action along an ancient coastal platform when sea levels were substantially higher than the present levels. In addition, sand was blown in from the coast to add to these deposits. The receding sea levels led to the consolidation of the sand dunes, which later on became vegetated to finally give birth to coastal forest. The study areas lie at an altitude of approximately 102m a.m.s.l. The proposed mining area comprises the inland portion of the coastal platform that is covered by horizontal relic sand deposits apparently the result of strong wind action in the past. Topographically the landform is categorised as table lands. The area displays a very gentle slope towards the south-east where undefined watercourses drain the coastal platform. The mining area and immediate surrounds does not display any watercourse and drainage takes mostly place by means of internal drainage because of the high porosity of the soil and sub-soils.

To the west the land becomes undulating with low mountains and deep incisions giving origin to the Tyolomnqa River whilst to the immediate north, east and south the land remains relatively flat.

The original structural topography of the greater area has not been disturbed significantly and it is only farming activities that to some extent affected the topographical appearance of the greater area marginally.



Mining any of this portion of the coastal platform and particularly because the land to the north and east was mined out, will not have a major impact on the topography. It will simply result in this remaining island of sand being removed and the land being levelled to surrounding soil levels. A shallow depression of approximately 1m deep might develop on the southern side of the mine area. The newly established landform will blend in with surrounding landscape provided it is either vegetated properly with climax species found on site or as intended be used to establish a new tunnel unit. The quarry area will not be free draining since the little runoff that might concentrate in the pit will be retained in the southern part of the excavation.

Changing the topography would not change run-off patterns or cause erosion due to the relatively flat topography of the land in question and because of the good internal drainage of the soil. It could however cause the area to become temporarily waterlogged during periods of heavy precipitation. On cessation of the mining process the floor area would still be relatively flat with the south-western sides the only indication of the previously mentioned process. Upon rehabilitation of the area, it would entirely blend in with the surrounding area.

Currently the land concerned displays a heterogeneous coarse texture due to the various surface covers that ranges from grassland, windscreens, alien infested areas and tunnel structures that would easily absorb the slight change in topography. There are no prominent features in the immediate surroundings and are reveals no large-scale erosion that could potentially affect the long-term relief of the site.

The mining area is not a major focal point in the landscape and will therefore not enhance the impact brought about by mining. Mining would in the end not change the texture of the proposed mining area since it could not be completely rehabilitated back to its current status. Since mining is restricted to at most 2 below the original land profile, adequate sponge capacity would be retained to curb large-scale erosion from developing provided that an adequate vegetation cover is established or new tunnels are established.

Since the access roads have already been established, no road construction is required that could influence the topography of the site.

Considering the above, the impact on the topography is rated as permanent, local and of negligible significance. This minor impact to the topography of the site will be almost invisible after rehabilitation was completed.

GEOLOGY

The area reflects two rock types namely the mudstones/sandstones of the Beaufort Group and dolerite intrusions. The Beaufort Group in this area comprises of the Adelaide Subgroup and the Katberg Formation. The Adelaide Sub-Group is represented by Balfour Formation (Pb) (alternating units of grey, moderately to well sorted, fine to very fine-grained ultra-lithofeldspathic sandstone and greenish-grey to grayish-red massive mudstone). Sandstone generally forms 20-30% of the total thickness. The thickness of the Adelaide Subgroup in this area is about 2000m. The sandstone and mudstone litho-units normally form fining-upward cycles, each comprising sandstone with a sharp, erosive base, which grades upward into the overlying mudstone. These cycles vary from a few meters to a few tens of meters in thickness. The thickness of individual sandstone units ranges from a few meters to 60m. They are sub-tabular to moderately lenticular with extensive lateral extent. Flat bedding, trough cross-bedding and micro-cross-lamination are the most abundant primary structures in the sandstone. The Adelaide Sub-Group appears to have been transported by north-west flowing meandering rivers. The sandstone component through historic scouring will have some influence on the sand deposition in the study area but due to its distance from the site the influence will be limited.

The Katberg Formation (TRk), the target area, consists of light brownish-grey, moderately sorted, fine- to medium-grained, lightly pebbly, lithic to lithofeldspathic sandstone with a thickness of approximately 900m. the sandstones are characterized by flat bedding and trough and planar cross-bedding. Some beds are superficially massive, but even these are probably not actually structureless whilst deformed cross-bedding is occasionally present. The sandstones are generally coarse-grained and is indicative of deposition in a braided stream environment. Scouring of the sandstone has resulted in the deposition of the target mineral. However, with regression of sea levels a fair portion of the sand deposit has presumably also derived through weathering of the Nanaga Formation located along the coast.

The sedimentary rocks of the area were intruded by dykes, sills and inclined sheets of dolerite during the Jurassic. Dykes are normally not more than 10m wide and extend for a few kilometers. The dolerite is normally tholeiitic in composition. Dolerites are poorly represented in surface outcrop in the East London area.



Some times at lower levels immature calcrete layers with planer aeolian cross bedding wind ripples, up to 30m in extent with thickness up to 1m occurs or alternatively calcrete nodules may contaminate the sand.

However, historic mining did not reveal any of the previously mentioned calcrete forms. Should it occur onsite sand will be screened and calcrete being returned to the excavation.

The area displays no fault lines. The site is not a geo-site and is therefore of less importance.

The impact on the geology is site specific and permanent. The small section of land to be mined as well as the occurrence of similar geological features throughout the western part of the East London area renders the impact as very low. Since there are currently no other mining activities in the area, cumulative impacts are not a consideration.

SITES AND STRUCTURES OF ARCHAEOLOGICAL AND CULTURAL INTEREST:

These sites represent the heritage of communities and are therefore protected in terms of current legislation. There is no known natural heritage or cultural sites close to the study area. The area around the study area has been severely affected by historic mining activities and the study area, which is mostly located inside vegetable tunnels, has been affected by cultivation activities. No areas of social, cultural or historic value were identified onsite and the impact is rated insignificant. Considering that there is no indigenous vegetation left in the study area, local communities will not visit the site to obtain plant material for medicinal use.

Fragments of marine organisms and shell middens may be hosted onsite since the area represents old seabeds. However, only recent sand deposits will be mined and the potential for any significant finding is limited. According to data captured for the Amatola District Municipality, there are no structures of archaeological and cultural interest in the area. Nevertheless, Dr. Johan Binneman of the Albany Museum will be appointed to perform a phase 1 investigation and will be submitted to the DME in due course.

Although no impact is envisaged, the operators of earthmoving equipment will be informed of the company's obligation in this regard and to inform management when anything of interest is noted on the site. Operators will be informed what they have to look out for. SAHRA's offices in East London and if necessary, Dr. Binneman at the Albany Museum in Grahamstown will be contacted immediately. If any object that might have historic or cultural value is observed, operations will be suspended immediately and the area fenced off. In such event a formal assessment will be conducted and operations will only continue on receipt of approval from SAHRA.

