STELLENRYCK ENVIRONMENTAL SOLUTIONS

ENVIRONMENTAL MANAGEMENT PLAN

PREPARED FOR:

MARCOVEST

401 CAPE ROAD

COTSWORLD

6045

Tel. & Fax: 041 3672049 · Cell 0824140464/0824140472 · 4 Josephine Avenue LORRAINE 6070

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

Consultant: Natalie Sharp BSc (Botany & Zoology); BSc (Hons) (Limnology) & Magister in Environmental Management

TABLE OF CONTENTS

PERSONAL PARTICULARS OF THE APPLICANT

APPLICANT AND RESPONSIBLE PERSON

Macrovest CC Reg. Nr. 2004/006828/07

401 Cape Road

COTSWORLD

6045

Tel 041 992 4239 Fax 041 992 7538

MINE MANAGER

Mr Grant Ranger

34 Constitution Road

UITENHAGE

6229

Tel 041 992 4239 Fax 041 992 7538

SURFACE OWNER

Mr. Benecke

Florida Plaas

P O Box 17

DESPATCH

6219

ENVIRONMENTAL CONSULTANT

Stellenryck Environmental Solutions

4 Josephine Avenue

Lorraine

6070

Tel & Fax: 041 367 2049 Cell: 082 414 0464

Email: stellenryck@telkomsa.net

TITLE DEED DESCRIPTION

Portion 2 of the Farm Florida 321, Uitenhage.

REGIONAL SETTING

The proposed quarry is situated in the magisterial district of Uitenhage and is under control of the Nelson Mandela Bay Municipality. The quarry is situated approximately 600m north of Despatch city centre and a 150m north of the landowner, Mr Benecke's residence and 900m south of the R367. The site is situated south of the Swartkops River in a semi-rural area surrounded by small farms/plots and residential area of Despatch. There are no power lines, telephone line or road servitude in close proximity of the proposed quarry area, but the town's storm water channel runs to the south of the site.

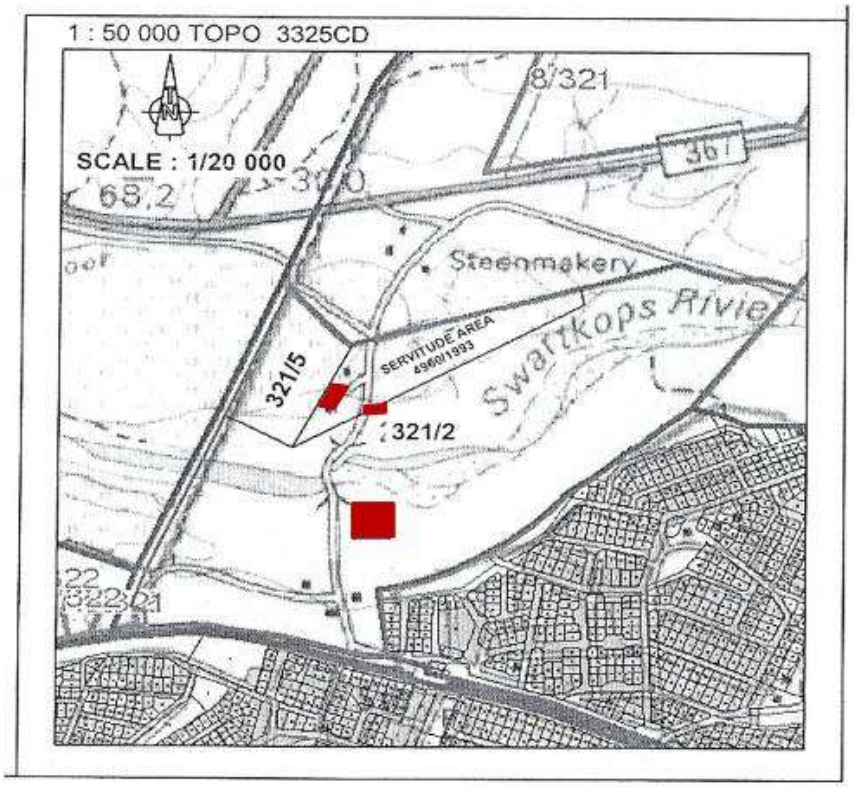


Figure 1: Mine location

LAND DESCRIPTION / INFORMATION

SURFACE INFRASTRUCTURE

SURROUNDING AREAS

Two mining permit areas lies west of the proposed mining site, one belongs to the land owner, Mr Benecke (further west and actively being mined) and the other to Mr Hurter (closer to the site and has been exhausted). The rest of the area is surrounded by transformed land. Further west of the property is old industrial areas and the rest of the site was severely transformed by old mining activities and scaring of the land, during the flood a few years ago. The landowner seldom uses this portion of land for grazing and for the most part, this portion of land is dormant in terms of agricultural use. The area is also mostly dominated by alien trees species.

To the north lies the Swartkops River and further north the R367 national road, which will be used to gain access to the market. The immediate area surrounding the proposed site is sparsely populated with only a few residences, working or renting from Mr Benecke who is the closest residence to the proposed site. Other residents from Despatch that are close to the site are about 200m away. The Despatch storm water drainage line is situated to the south of the proposed site, about 110m south of the site.

Figure 2: Mining area and surrounds – not to scale

MINE AREA

There is an existing access road to the sand and gravel deposit and it links up with R367, north of the proposed mining area and will not result in any inconvenience to any property owner. The property is fenced and a gate secures the site. The existing road does not need to be upgraded and can be used as is. If water is required for rehabilitation purposes it will be drawn from the Swartkops River, for which the applicant has acquired permission from the landowner who has rights from DWAF for irrigation of cash crops. No labour accommodation or campsite will be established on site.

The fluvial environment and regulations of the National Water Act will preclude the establishment of any fixed infrastructure on site. Toilet facilities consist of two toilets connected to a septic tank at the

plant area, to prevent the surrounds being used for ablutions. Material will be carted directly to the plant area, where it will be screened and crushed and carted directly to the markets. All vehicles will be parked overnight at the designated crushing site.

PRESENCE OF SERVITUDES

There are no servitudes registered in the proposed quarry area.

LAND TENURE AND USE OF IMMEDIATELY ADJACENT LAND

- West – Two existing mining permit areas owned by two different applicants, Mr Hurter and Mr Benecke.
- South – Despatch storm water drainage and Despatch residence.
- East –Riverine environment: flood area of the Swartkops River, which was previously disturbed through mining a long time ago and scaring through flooding. Further east in the Swartkops River, another mining site known as Sandman Quarries and more north-east inland, clay mining is found.
- North – Farmlands that are not cultivated, with some residents renting from Mr Benecke; a crushing plant and the R367 national road.

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

- Residences on smallholdings/farms causing limited visual interference and loss of aesthetic value.
- Extensive transformation of land through farming causing low-medium loss of terrestrial ecological integrity.
- R367 that carry medium to high traffic volumes causing increased air pollution and noise levels.
- Extensive spread of alien vegetation within the fluvial environment causing extensive degradation of fluvial and bank ecosystems as well as extensive buildup of gravel material within the riverbed.
- Extensive transformation from surrounding perimeters due to current and previous quarrying.

The proposed quarry area and the surrounds are severely transformed. In terms of the biodiversity and conservation potential, the fluvial ecosystem is categorized as critically endangered but at this particular site, the original fluvial ecosystem was transformed by human activities and consequently alien infestation. However, through the proposed mining process, the applicant could ensure that the affected land is rehabilitated properly and restored to better-quality than the pre-mining status. The mine area will be limited to 1,5 Ha.

ZONING

Current zoning is still 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 replaced the provisions of the Physical Planning Act.

DESCRIPTION OF THE ENVIRONMENT LIKELY TO BE AFFECTED

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 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 northeasterly

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 T3L and receives between 500-600mm per annum and precipitation is mostly restricted to the autumn and spring, which will stimulate plant growth and reduce dust generation to some extent. 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. The highest monthly historic rainfall occurred in July 1983, when 197mm of rain was experienced. The highest 24-hour historic rainfall occurred on 1 September 1968, when 149mm of rain was experienced.

However, over the past two years this area have been experiencing severe drought. To encourage rehabilitation, irrigation might need to take place obtaining water from the Swartkops River, as per agreement with Department of Water Affairs and the landowner.

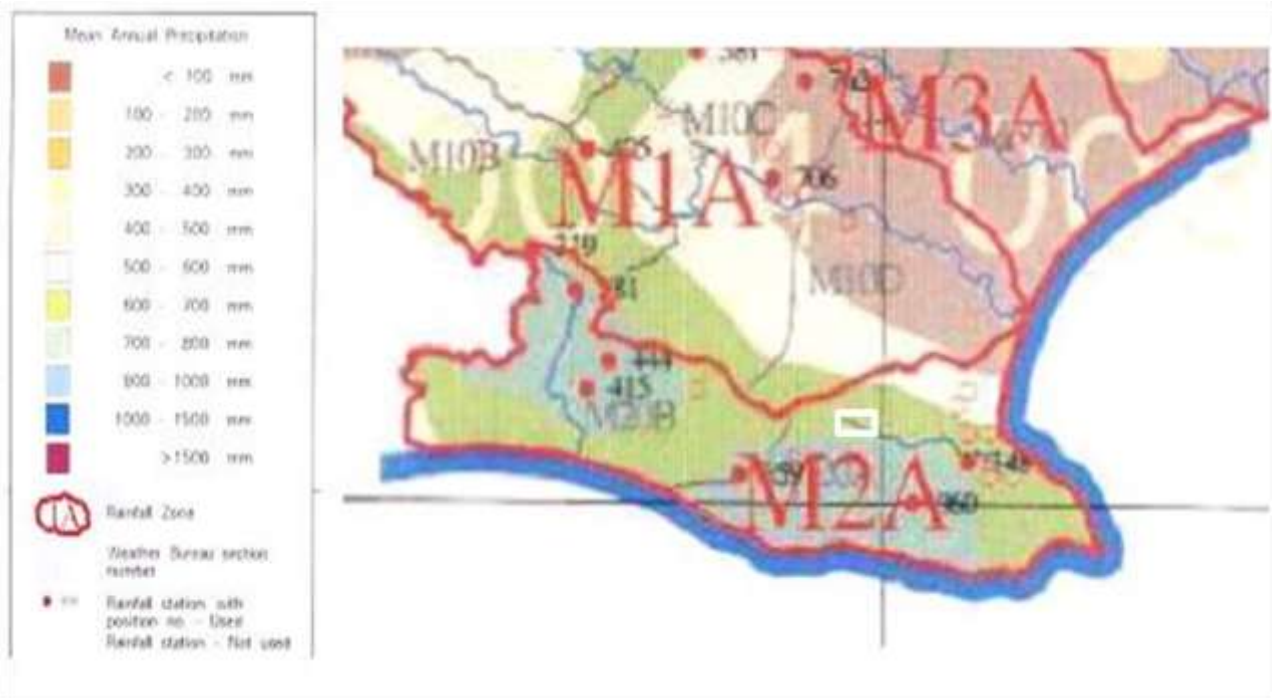


Figure 3: Mean Annual Precipitation

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 area falls within evaporation zone M20A and annual evaporation of the area totals approximately 1500-1600mm with the highest evaporation rates associated with the summer months resulting in a negative water balance.

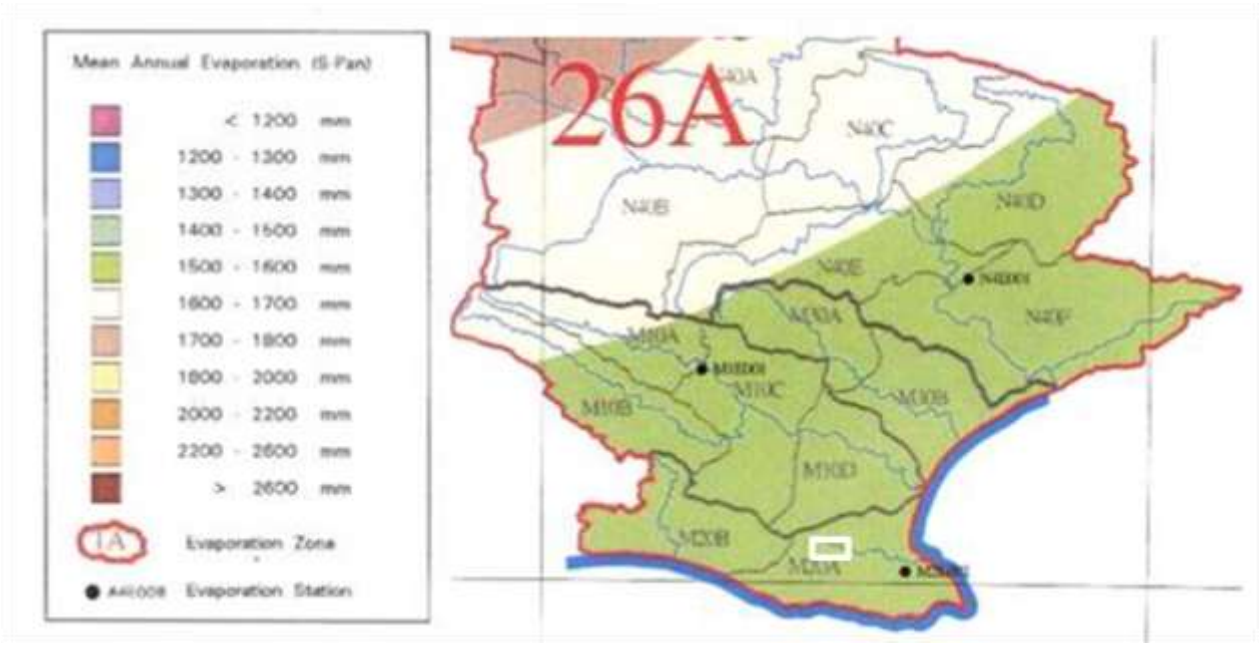


Figure 4: Mean Annual Evaporation

WIND REGIMES

The prevailing wind directions are predominantly west and south-east but with significant easterly and south-easterly components during the summer months. Strong winds above 5m/s occur in more than 30% of the year with calms approximately 20% 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.

TOPOGRAPHY

Uitenhage and Despatch falls within an topographical area that is a mixture of steep mountainous areas (Winterhoek range) to the far west, gentle rolling foothills closer to the river and flat floodplain areas alongside it, with the shallow and gentle incision of the Swartkops River the lowest point in the landscape. Because of the characteristics of the river, it tends to rework sediment extensively and riverbed material has subsequently a high erodibility index. This characteristic of the river resulted in a complex braided system displaying many channels and channel bars throughout the floodplain area.

GEOLOGY

Sand, gravel and stone fluvial deposits in the area are of quaternary aged and were transported from the Great Winterhoek mountains (Table Mountain Group) as well as from the Enon conglomerate in the catchment area of the river seawards by the perennial Swartkops River and resulted in the deposition of sand, stone and gravel by a combination of sinuosity and braided channel river facies types. The present day width of natural stream meanders is between 50 and 150m wide whilst during historic times it was approximately in the order of 500m-800m with historic river terraces clearly visible on the floodplain. As previously indicated, the proposed mining area falls within this filled in Swartkops Valley and is therefore mostly underlain by fluvial sediments.

The alluvium of the area grades randomly from fine-grained silty-sandy to very coarse quartzitic sandstone boulders and gravel sediments that are remnants of older river meanders and are mostly poorly sorted with clast types frequently dictated by the availability of material from parent sources.

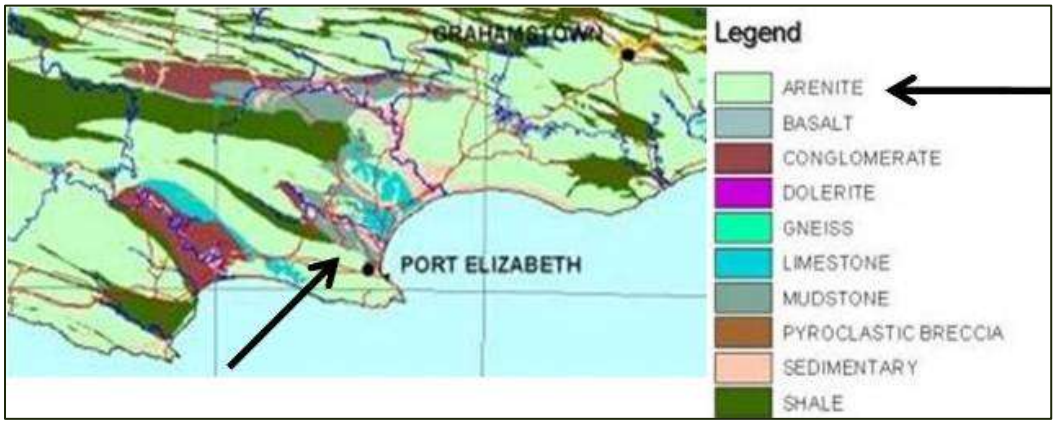


Figure 5: General geology of the area

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.

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.

Soils on the floodplain consist of a poorly developed, slight acidic, orthic A-horizon of approximately 100-200mm thick, a regic E-Horizon of approximately 1-1.5m followed by a stony B-Horizon of several meters thick. The orthic topsoil layer is classified as a sandy loam with a low percentage of silt since the area is not often subjected to flooding conditions. This thin topsoil layer displays a low to moderate organic content. Because of the low organic and silt content but high quartzite content, the soils have a medium to high erodibility index and low fertility and are mostly nutrient deficient. The latter is caused by excessive leaching capabilities of the soil and poor mineral releasing capabilities of the parent material. Soils would therefore easily lose its positive nutrient cycles should it be disturbed and denuded of vegetation. Soils located away from the fluvial environment and

derived from the Kirkwood formation are brown to reddish and are classed as lime rich sandy clay loams. Since they contain a substantial amount of clay/silt particles, they are very suitable for agriculture due to its high fertility. Soil forms that could be present here include, according to Hartman (1988) Oakleaf, Fernwood and Hutton soils. It is essential that mining be done in such a manner that erosion will not occur unless reworked naturally under severe flood regimes.

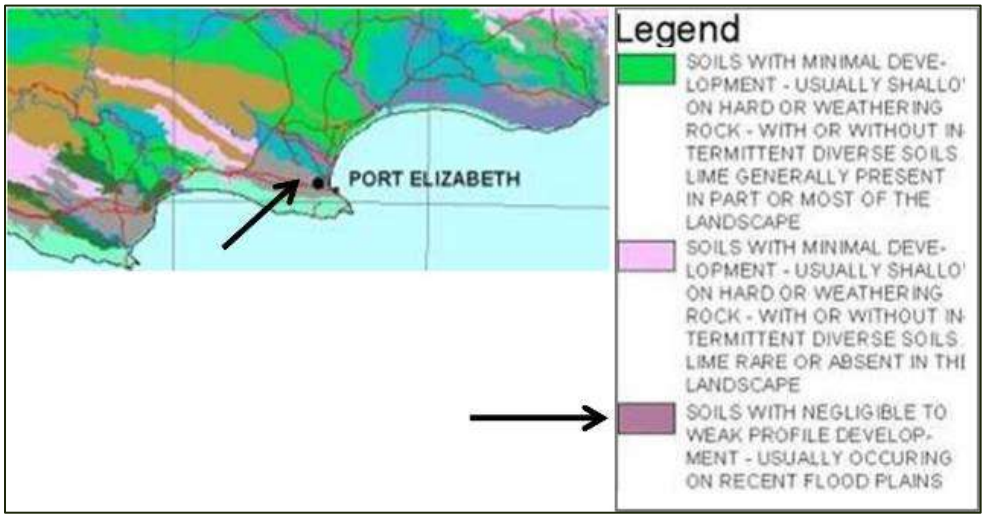


Figure 6: Soil Description

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. Soils are sandy, have low-moderate organic content and have excellent internal drainage, but are poorly structured. This will render the soil to be highly erodible and this statement is supported by the high erodibility index.

Figure 7: Erodability Index

SOIL POLLUTION

Alluvium pollution can only occur should hydrocarbon spills occur or when 1) used oils and lubricants are purposefully drained into the alluvium, 2) storage facilities are destabilized or 3) if ablution facilities contaminate soils. Some of these activities will take place at the site, thus precaution must be taken in handling and managing the hydrocarbons.

LAND USE AND LAND CAPABILITY

The land is zoned agricultural and used for grazing from time to time. In terms of the STEP programme and the NM MOSS the conservation status of the land concerned is rated 'Critically Endangered' and would not be able to withstand impacts related to any additional loss of surface cover or structural development. However, considering the secondary grass cover and alien vegetation infestation and the fact that there are no definite plans in place to restore the river environment, this rating would not be applicable to this section of the river. The surrounding areas do not form part of any STEP Corridor. It is the intension to restore all the land disturbed to an acceptable degree and in line with the previous vegetation types occurring in the fluvial environment.

Figure 8: Conservation Status of the area

Figure 9: Land use

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.

CONSERVATION STATUS AND VEGETATION ANALYSIS

With the start of mining activities in the river during the eighties this transformation process was enhanced and the area has now been totally transformed and has little to no conservation value and original vegetation types could be lost if re-vegetation practices are not implemented in the near future. This indiscriminate destruction of natural plant communities is not fully reversible and at best the embankments and braid bar areas in the river can be stabilized with a grass cover and possibly the establishment of shrubs and trees. Despite the classification of vegetation types that occurred in the area, alien infestation has out compete most of the natural vegetation in the mine area and surrounds and have therefore little ecological value. The impact on the original vegetation was therefore high, but now it has been severely disturbed and impact on the current vegetation will be low/moderate, depending on the activity.

The original area hosted according to the Acocks vegetation map the southern variation of Valley Bushveld. The influence of the Swartkops River has however caused a transition to inland forest along the river.

In terms of the National Biodiversity Strategy launched by the Department of Environmental Affairs and Tourism the study area forms part of the Albany Thicket priority area but no definite strategy is in place for conservation on private land. According to the STEP Programme, the mine area is located within the Albany Ticket biome and Albany centre of endemism.

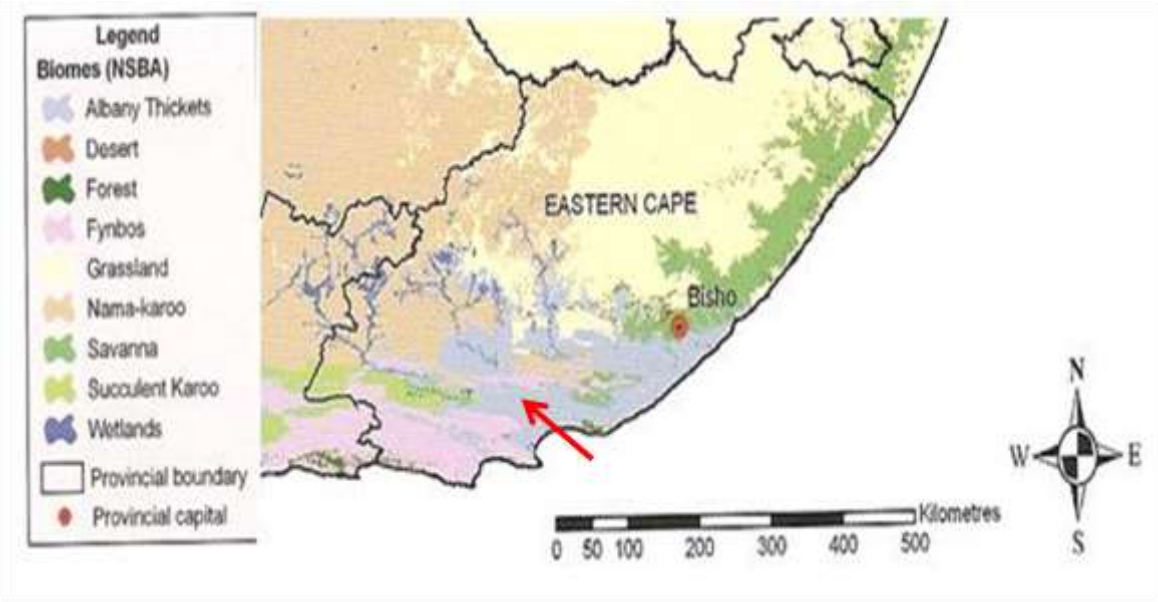


Figure 10: Biomes of the area

In terms of the NM MOSS the vegetation of the area is classified as Sundays Valley Thicket but further analysis classify it as a mixture of Sundays Doringveld Thicket (vulnerable) and Swartkops River Floodplain vegetation types. Dominant species are Gymnosporia buxxifolia, Olea africana, Schotia latifolia, Allophylus decipiens, Canthium inerme, Scotia afra, Euclea undulata, Scutia Myrtina, Cussonia spicata, Maytenus polycantha, Acacia karroo and Azima tetracantha. Grass cover is confined to Panicum stapfianum, Sporobolus africanus and climax specie Themeda trianda. Eragrostis curvula and Digitaria eriantha were also noticed. A few aloe species are also prominent namely Aloe africana, Aloe ciliaris, Aloe speciosa and Aloe variegata.

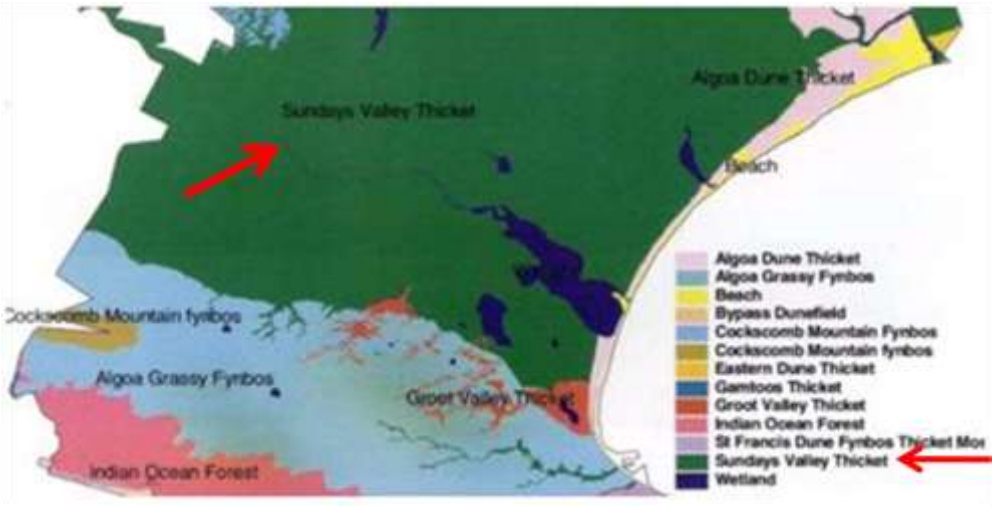


Figure 11: Vegetation according to NM MOSS

In terms of the NM MOSS the land host no species of special concern. The mine area is due to historic mining, alien infestation and flood scaring not a vocal point in the landscape anymore and therefore the area is not rated as a site of high visual character. However, proper rehabilitation of the disturbed mine area remains important.

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.

Figure 12: Sensitive mammal species in the region

Figure 13: Sensitive bird species in the region

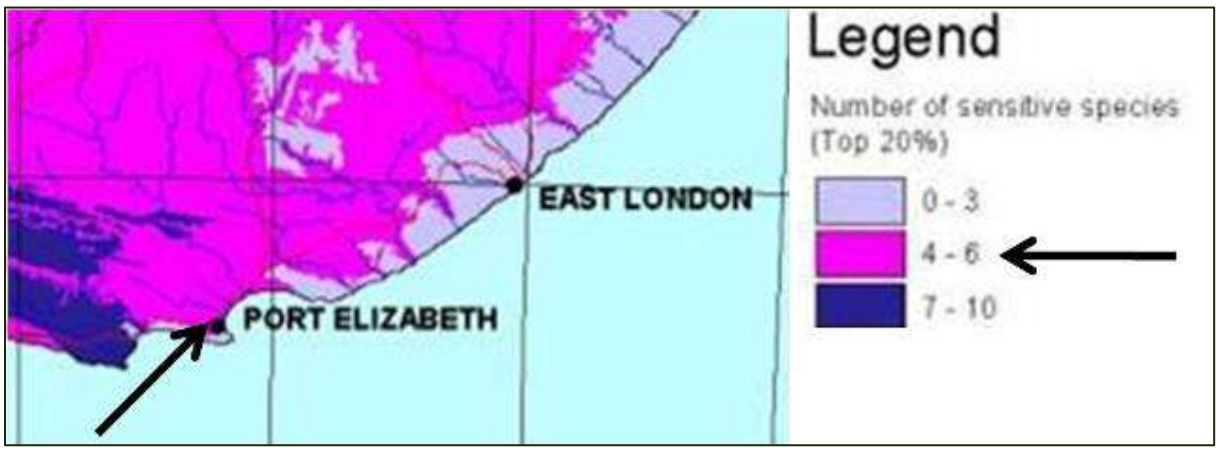


Figure 14: Sensitive reptile species in the region

Figure 15: Sensitive butterfly species in the region

SURFACE WATER

The study area falls within the Swartkops River catchment. According to hydrology maps, the area falls within the Primary Drainage Area M and more specifically within quaternary sub-catchment M20A and is administered under the Water Management Area: Fish River to Tsitsikamma.

Water abstraction points along the river are common and water is extensively used for agricultural purposes. The extent of the catchment area is approximately 1430 $km^{2,}$ falls within Hydro Zone V and displays a mean annual precipitation of 565mm, mean annual runoff of 71mm (approximately 80 million cubic meters) and mean annual evaporation of 1500-1600mm. A MAP-MAR response of 5 is applicable to this area. Runoff response is directly related to topography, vegetation cover, penetrability of soils and depth thereof. The larger part of the catchment falls within the Groendal State Forest and Groot Winterhoek mountains, which are characterized by undulating hills and steep mountainous areas with minimum soil depth, which causes runoff to be quick and explains the flash floods characteristic of the this particular river system. In addition, the steep gradient of the river (1:130) as well as extreme precipitation rates further contribute to these flood regimes.

Figure 16: Mean Annual Runoff

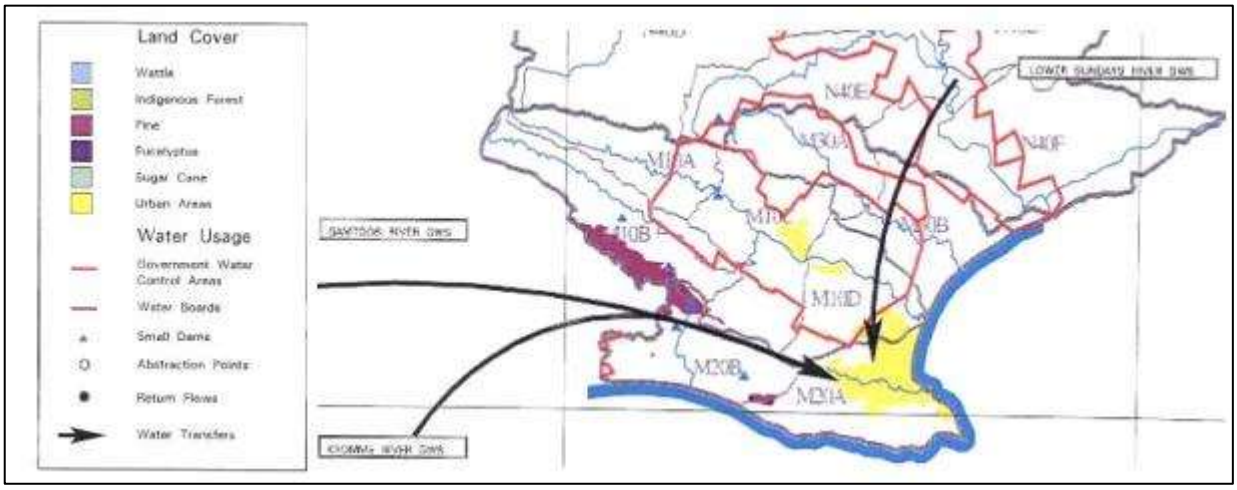


Figure 17: Water usage

The Swartkops River is perennial and during normal flow the water quality in the upper reaches is very good and the TSS and TDS are low. Due to the high energy nature of the river it causes extensive re-working of fluvial sediment and the TSS are high under flood regimes resulting in downstream sedimentation, which is clearly visible at the Swartkops estuary.

During high flows the entire gravel bed material is extensively reworked resulting in large displacement of silt, clay, sand and boulders causing extensive increase in TSS and TDS whether mining occurs in the riverbed or not. Since mining will not take place within the stream environment, it would not result in any increase in TSS and TDS values during low and medium flows. Effluent from sewages plants, tannery ponds, informal settlements and heavy industrial plants from the Uitenhage area causes the stream to almost become a 'treated sewage' stream before entering the Swartkops estuary.

RIVER MORPHOLOGY

The perennial Swartkops River represents a proximal, braided system with numerous channels and vegetated braid bars. This nature of the Swartkops River was previous interpreted incorrectly as a channel system silted up resulting in flood damage along the banks. Any exercise to channel the system would therefore be somewhat futile since with future floods the meandering system will be recreated through gravel and sand deposition. The system mainly carries a gravel load but during high energy flows medium to large boulders are displaced and transported. With such events flow will spread out over the entire fluvial zone and will cause in certain cases the river to burst its banks, which has often occurred in the past. The system is characterized by long periods of a dry riverbed with no alluvium movement and low flow restricted to the main channel. During low flows, the

water is clear, but overgrown with water hyacinth which is a clear indication of organic enriched water.

Mining is situated in this dry riverbed system which is also referred to as the floodplain. The main river channel is located about 100m to the north and since mining will not take place within the stream, water quality of the river will not be affected.

GROUND WATER

Above the aquiclude, the Swartkops River has deposited over the years thick alluvium material consisting of sand, gravel and boulders in the order of several meters thick. Within these deposits, a perched water table occurs of which the depth is determined by high & low flows. Mining will not affect this aquifer as mining will be restricted to at least one meter above surrounding 'fluvial ground level' and because the perched aquifer at lower level is not linked with the main aquifer the former is not responsible for the recharge of the latter aquifer.

AIR QUALITY

The air quality of the immediate surroundings is fair due to its semi-rural status. During windy periods the abutting agricultural areas and the upstream quarry operations will liberate a limited amount of dust into the atmosphere causing a slight rise in air pollution levels. 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.

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 semi-rural setting of the area causes the ambient noise levels to be low and possibly below 45dB. However, traffic and especially trucks on the R367 will intermittently increase noise levels to approximately 70dB along these roads. Small farming activities and Despatch residence in the area would also cause constant background noise levels. The tranquility of the area has to a large extent been affected by increased non-farming related business activities such as mining near the site and the neighboring urban site.

WASTE

Mining can generate various different kinds of waste, depending on the mine activity. These include: building rubble, industrial waste, domestic waste, mine residue, sewage, hydrocarbons, and scrap metal. Some or all of these could potentially impact on the environment if mitigation measures are not followed, since mining activities will result in the storing of hydrocarbons, establishing a scrap yard, servicing of vehicles and generally generating domestic waste due to the number of people on site, mine residue and scrap metal.

VISUAL IMPACT AND AESTHETIC ACCEPTABILITY

Originally, the landscape would have been described as very attractive and of high aesthetic quality because of the meandering status of the river and unique riverine environment. However, due to alien infestation, mining and farming activities on the floodplain and structures erected, the current landscape can be described as low-moderately attractive with low aesthetic quality. Urban development, industrial growth, roads, telephone and power lines and residences on farms further reduced the aesthetic value of the surrounds. Onsite assessment of immediate landscapes revealed

that the proposed mine is bordered by semi or completely transformed land. The south and east side of the site is completely surrounded by alien vegetation.

TRANSPORT IMPACT

The existing access road from the R367 north of the mining area will be used. This is a private gravel road belonging to the landowner, Mr Benecke, who has given permission for the use of this road. The R367 road is a national road and will be used to cart material to the relevant markets as there are no alternatives available. Additional impact on the structural integrity on these roads might increase once mining commences and impacts are investigated further in the document.

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. Economically, mining may provide some form of economical growth in the area, but socially may increase the impacts listed above, which could result in nuisance factors suffered by the community members.

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. If the mining site is situated within an archaeological rich area, the impact could potentially be high. If the mining site is situated within a cultural rich area, or community members utilize this area for medical or ritual purposes, the impact could also be high.

PARTICIPATION OF THE COMMUNITY/LANDOWNER/IAP'S

The landowner, all the abutting neighbours, the Local Municipality, Department of Roads and Public Works as well as the Department of Rural Development and Land Reform were consulted with

registered letters, providing back ground information regarding the project. During this consultation process opportunity was provided to the parties to provide any concerns, objections or statements they might have regarding this development.

Only the Department of Roads and Public Works responded and indicated that the applicant must erect the warning road signs at the entrance of the R367 road and it must comply with the SARTSM specifications. The landowner also replied and indicated that they do not object to the proposed operation.

A full detailed report and outcome of consultation can be viewed in Appendix B of this document. The listed concern was incorporated within this document to ensure that the applicant comply with the specifications of the Department of Roads. Since mining has been an ongoing activity in this area, the surrounding people have grown accustom to this and on the basis of this, it can be presume that this is the reason why the reaction and participation of the community was very low.

MAIN MINE DEVELOPMENT ACTIVITIES/PLAN

The total mine area comprises an area of 1,5ha which is divided into three areas: 1 Ha will be the excavation area, which links to the plant area and settling ponds area which in total is 0.5Ha in total. Excavation will only take place at the excavation area and mining depth will not be deeper than ± 2m and limited to just above the water table. The potential 20 000 cubic meters of sand (loose) will be extracted over a period of ± 12-18 months with the aid of an excavator and hauled to the plant area, with 8 cubic meter truck, from where sale will be made.

Buffer zones of approximately 100m and 50m respectively between the excavation and the Swartkops River on the northern border and Despatch storm water drainage on the southern perimeter will be maintained to prevent the mining activities to negatively impact on the water quality of the river as well as the river morphology, and to prevent possible negative impact to the storm water infrastructure through mining activities.

Material will be loaded onto $10m^3$ dumper trucks and hauled to the crushing plant where it will be screened. Once it is screened, gravel will be crushed and sold or carted directly to the relevant markets. Sand mine will also be screened and washed to improve the sand quality. Sand washing equipment is already located on site and will continue to be used for this application. During the sand washing process, the slurry feeding, which is discharged by a vibrating screen or as an overflow effluent when it's delivered by the bucket-wheel, in the fine sands recovery cases, is conveyed to the Pumping Group from which it is pumped out to the Hydrocyclone, which eliminates undesirable particles (clay, silt, etc.). The hydrocyclone overflow containing rejected particles is evacuated to settling ponds situated at the settling pond area, north of the Swartkops River, or reprocessed in the subsequent clarification and filtering stages, thus minimizing environmental impact and reusing the water employed in the process.

There are two settling ponds at the process area, the first pond act as a settling pond with overflow into the second pond. Once particles have settled out, water can either be pumped back to be recycled in the sand washing process or allowed to overflow back into the Swartkops River, into the secondary wetland north of the excavation site. During the sand washing process, no chemicals are added, thus the quality of the water will not be influenced.

Stockpiles will be stored at the designated plant area. All extracted material would be utilized and no residue would be generated.

At the excavation area, mining will take place from west to east in three phases of approximately 0,3ha each. Since the terrain is flat, the result of material extraction will be a small depression in the landscape. Phase 1 will be developed first and a setback line of 6m from the mine boundary must be kept to provide sufficient room for a cutback to create a 1:3 gradient boundary face. This setback line will be applied to the all the boundary walls of the quarry, in order to create the 1:3 gradient faces.

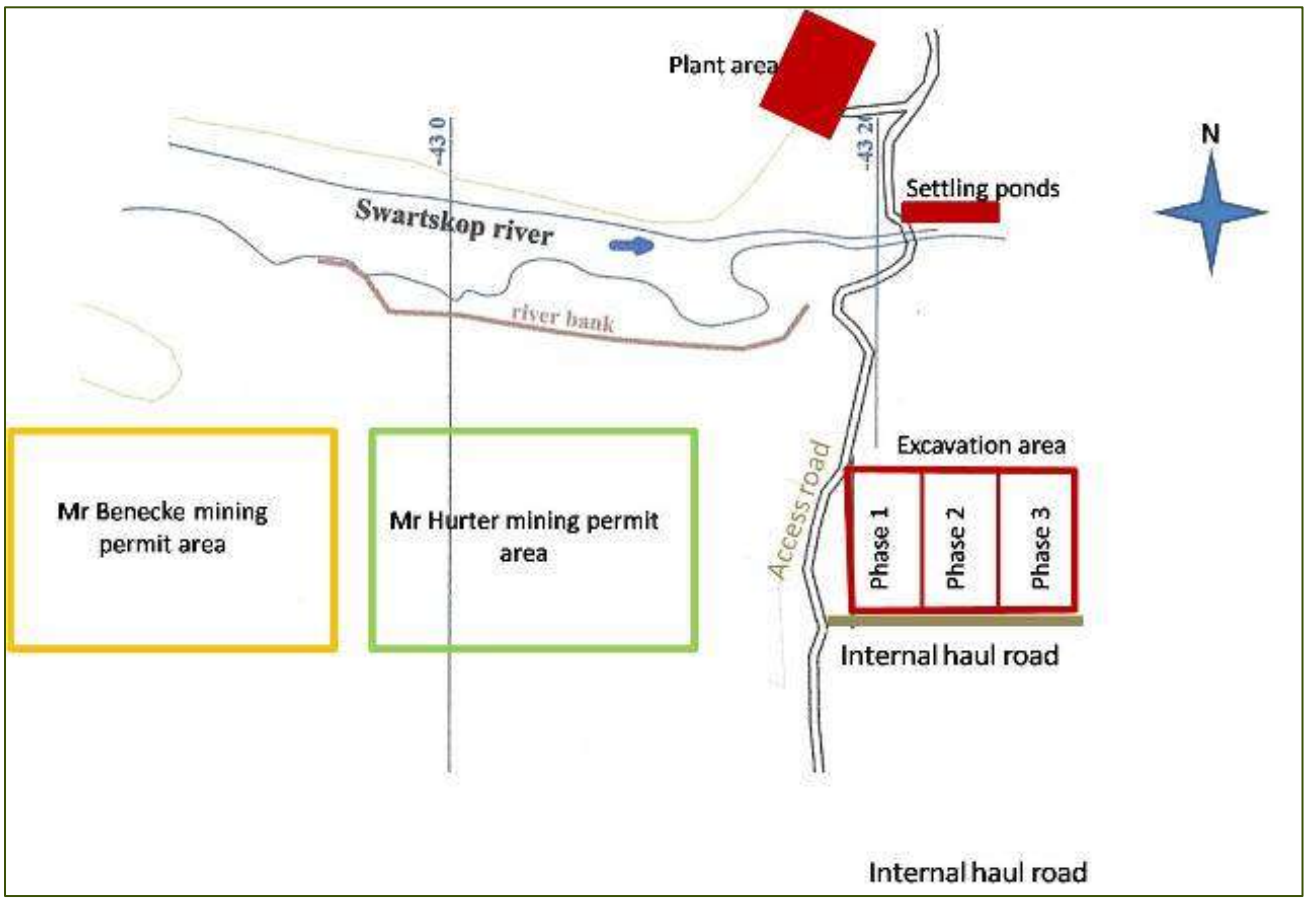


Figure 18: Mine development

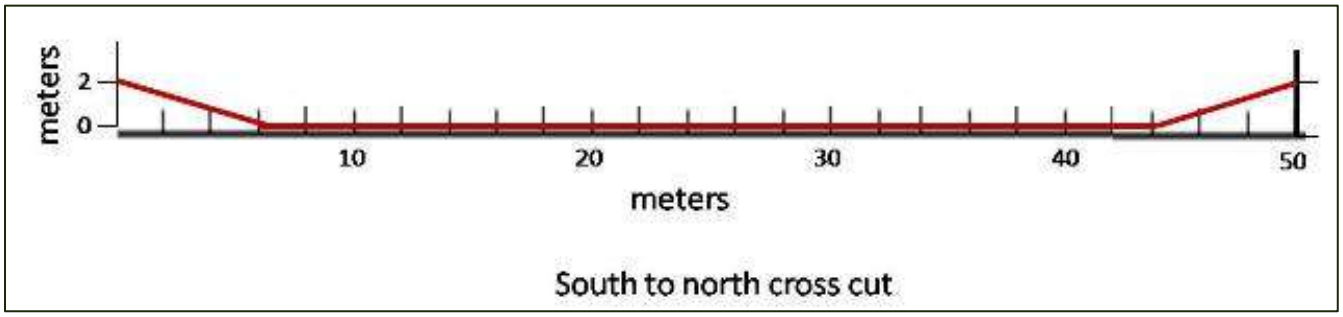


Figure 19: Cross profile from south to north after extraction of material.

Mining will advance to phase 2 while phase 1 is being rehabilitated simultaneously. Thus rehabilitation of phase 1 will coincide with the development of the second phase by sloping the boundary wall/face to a 1:3 gradient, backfilling with any overburden material (pebbles & root mass) that might become available, followed by the reintroduction of topsoil to disturbed areas and finally, seeding. The same scenario would apply to phases 2 and 3. Complete rehabilitation of phase 1 will be achieved prior to the development of phase 3. Production faces will not exceed 2m. One access road to the quarry will be used to prevent rehabilitated areas being disturbed by haul trucks.

As previously indicated, the slopes created will be profiled by cut & fill method to a 1:3 gradient to ensure the post closure stability of the area. Prior to disturbance, the topography of the site is almost flat with very gentle slope towards the Swartkops River. Mining will however result in a depression in the landscape with a flat quarry floor that will not be free draining but due to the high porosity of the soil in this area, draining will take place by means of sub-surface sheet flow towards the river, thus water drainage will not be influence by mining activities. It is only anticipated that water accumulation will take place within the exaction for short periods during heavy precipitation.

Potable water would be obtained from the property owner or brought to site daily. The workforce would not reside on the mine, but will commute to work every day.

Considering the limited amount of people on site, no waste disposal site is required. A container with a lid would be placed near the plant area for the storage of any household waste. Toilet facilities consist of two toilets connected to a septic tank. The mining area will incorporate the existing office and workshop area, north of the site, above the flood plain. No other additional infrastructure will be erected on site. A dust suppression system could be used when necessary. Minor maintenance on vehicles and machinery will take place at the onsite workshop in the plant area, but more serious repairs would be dealt with offsite at Despatch. The proposed operation would be continuous and

working hours will be from 7.30 to 5pm five days a week with cessation of activities at 1pm on Saturdays if market demand require.

Since the material will be relatively course with very low silt and clay content no dust suppression system will be used, but a water pump and pipeline from the Swartkops River is available for such purpose. An average extraction rate of ± 1200 -1500 cubic meters per month will be maintained which relates to approximately 6-10 loads daily.

The proposed quarry will be a private concern licensed by the Department of Mineral Resources. Sand and subordinate gravel and stone would be extracted by means of excavator to a depth of approximately 2m. Mining will commence as per mine development plan and will be executed in 3 phases. Material will be carted to the plant area off site where it will be screened and crushed and carted to the markets.

MINERAL DEPOSIT & MINE PRODUCT

Fluvial sand, gravel and stone.

ESTIMATE RESERVES

Estimated reserves on the property concerned are in excess of about 20 000 cubic meters. It is estimated that the reserves would be mined out within one to one and a half years, provided that the current market demand is retained.

PROSPECTING/ALTERNATIVES

The Swartkops River and its floodplain has been a popular source for construction material and are hosting a number of quarry concerns for over two decades now along the length of the river. The Nelson Mandela Metropole has greatly benefitted from this in terms of construction material being easily accessible to build and maintain infrastructure.

To the west mineral extraction has taken place as well as further east, extraction is taken place by Sandman Quarries; all of which is indicative of the mining potential of the area and the adequacy/quality of sand and stone reserves in this particular area. The study area hosts exactly the

same quality sand material that was mined on the abutting land by Mr. Hurter and Mr Benecke. The availability and quality of the sand reserve is therefore not in doubt and negates the need for prospecting to motivate the proposed venture.

The Swartkops River has provided over the years a very good quality of sand and gravel for construction purposes, when compared to fluvial deposits of e.g. the Coega River, which is normally of poor quality and cannot be used for construction purposes. Other sources of sand in the Metro are confined to inland Aeolian deposits along the coast, which normally have higher impacts, due to the topography, the sensitivity of sand dunes, and harsher climatic conditions. In addition, fluvial habitats have a tendency to rehabilitate easier/more rapidly due to sufficient availability of water and soil properties.

Currently the MPRDA renders it possible to mine on any landowner's property, which makes it possible to focus on areas with less ecological value and hence cause less environmental degradation, as is the case with the study area.

PLANNED PRODUCTION RATE

A conservative initial production rate of approximately 1200-1500 cubic meters per month is anticipated throughout the lifespan of this mine.

PLANNED LIFE OF MINE

At the proposed production rate the life expectancy of the quarry is approximately 12-18 months, depending on the market.

CONSTRUCTION PHASE

Although this is an existing crushing site, there is still some construction that needs to take place, which previous mining did not address such as the construction of the bund walls for the storage of used oils, lubricants, filters, etc. and concrete pads for emergency vehicle maintenance with a sump. Therefore cement residue, brick residue, ceramic waste and PVC residue will be generated but in small amounts.

The R367 Road will be the national road used as a service road to gain access to the different markets. The access road on the mine property leads from the landowner's residence, past the proposed site, through the river, through the crushing site and leads from there to either the R367 or other residents renting from the landowner. The access road is in a fairly good condition and does not necessarily need to be upgraded, however maintenance could be carried out throughout the lifetime of the mine for the impact of the heavy vehicle traffic and material will be obtained from the mining area.

Other construction activities anticipated will be the construction of the temporary haul road to gain access to the excavation area. This will entail the clearing of vegetation and upgrading the haul road with a proper wearing course with material obtained from the quarry. Once the phases are mined out, the haul road will be rehabilitated. Other minor construction activities will involve the clearing of the vegetation on the phases and the removal of topsoil on the identified phases.

The mobile office infrastructure is already established in the plant area. A gate assistant could be appointed to account for the amount of gravel that is leaving the property.

Construction activities will involve the removal of a limited amount of topsoil and grass cover on the site prior to mining that will be stored on the eastern boundary of each phase. This will facilitate easy access to topsoil for concurrent rehabilitation.

No Eskom and Telkom service points are required. The crushing plant is powered by a generator. Hydrocarbon storage facilities could be constructed, but mostly refueling will be in town. Should the applicant decided to store hydrocarbons on site then the storage of oil/used oil will be contained in large oil drums. Diesel fuel could be stored in 50000L bunded tanks. The construction of bund walls must be constructed with adequate capacity and an apron could improve this scenario. The area at the workshop was hydrocarbon free and used oils and lubricants are neatly stored in receptacles in the workshop.

Household waste disposal will be through depositing waste in strategically positioned containers fitted with scavenger proof lids. Littering on site will be marginal.

OPERATIONAL PHASE

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 no deeper than 2m. Mining will commence as per mine development plan described above, and will be executed in 3 phases and material will be removed phase by phase and catered to the crushing site.

Basically, material will be loaded onto $10m^3$ dumper trucks and hauled to the crushing plant where it will be screened. Once it is screened, gravel will be crushed and sold or carted directly to the relevant markets. Sand mine will also be screened and washed to improve the sand quality. Sand washing equipment is already located on site and will continue to be used for this application. During the sand washing process, the slurry feeding, which is discharged by a vibrating screen or as an overflow effluent when it's delivered by the bucket-wheel, in the fine sands recovery cases, is conveyed to the Pumping Group from which it is pumped out to the Hydrocyclone, which eliminates undesirable particles (clay, silt, etc.). The hydrocyclone overflow containing rejected particles is evacuated to settling ponds situated at the settling pond area, north of the Swartkops River, or reprocessed in the subsequent clarification and filtering stages. No residue will be produced and thus no disposal measures will be required.

A few small stockpiles will be created at the crushing plant area and within the excavation area, which will include the topsoil stockpiles as mining progresses. Concurrent rehabilitation will also take place as mining progress and advancing the phases will be done with the final closure profile in mind. Once mining has exhausted all the material, the closure phase will be entered.

DECOMMISSIONING PHASE

Since concurrent rehabilitation will take place, the final phase will be the only phase left to rehabilitate. Once the benches are sloped and profiled. Mining will ultimately cause a small depression with the relatively flat landscape.

Decommissioning will entail the following:

- The mine area will be rehabilitated back to a sustainable riverine environment. The ecology of the area will be improved by establishing scrubs and trees (thicket) within the area and thereby creating an improved niche for animal species.
- Production faces of the quarry will be profiled to 1: 3 slopes by cut & fill method with the top edge rounded off to create a flowing landscape.
- Faces will be profiled in such a manner that soft lines are created and sharp corners are prevented in order to blend the quarry with surrounding fluvial landscape.
- 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 fluvial 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.
- Some animals will be able to return safely to the site.
- The mining sites will not become prone to unauthorised dumping.
- The proposed land-use will be achieved within 1 year after rehabilitation has been completed.
- Nearby residents will not be subjected to any post closure social or environmental impacts.

The crushing plant area will not be rehabilitated, as the crushing area will continue to be used for future mining ventures. Thus this area will not be subjected to the decommissioning phase.

LISTED ACTIVITIES IN TERMS OF NEMA

This mining operation will trigger the following listed activity:

- R.544 18 June 2010: **Activity 20:** Any activity requiring a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act nr 28 of 2002) or renewal thereof.

ENVIRONMENTAL IMPACT ASSESSMENT CRITERIA

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)

Cumulative Impact: None, Very Low, Low, Low-Medium, Medium, Medium-High, High, Very High

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 *ad hoc* 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

Most of the current and historic mining activities at the Swartkops River took place within this braided system because material is so abundantly available and signs of disturbance are clear all along the Swartkops River channel.

During the construction phase, no activity will lead to the transformation of the topography of the site, except in a very small extent the removal and storage of the topsoil. The crushing plant will not cause any large visible change to the landform area, since it is already established. The impact on the topography during the construction phase is rated very low.

Thus, currently the plant area is situated above the floodplain, elevated from the main river channel and can be described as a flat area. The plant area is about 5-6m above the main river channel and was previously disturbed by agricultural activities.

The area to the south of the propose site, constitutes fairly flat areas where the city of Dispatch is situated, whilst the area to the north display a more undulating topography caused by the low rolling

hills on the outskirts of Dispatch. However, areas to the west and east of the proposed excavation area fall within the floodplain area and although in general can be described as flat, it is very uneven and because these areas were previously mined (whether recently or historically) the depressions are clear. This uneven appearance of the site was further aggravated by scaring caused by the flood a few years ago.

At the excavation site, which obviously also falls within this floodplain area, also displays a relative flat topography with unleveled areas due to old mining and flooding, which caused the area to be reworked and deposition of riverbed material.

Figure 20: Unleveled area and scaring clearing visible at the site

The proposed mining contemplates another depression to be created in the floodplain with the leveling and lowering of the mine floor to about 2m. Low flow dynamics of the river would not be affected due to the distance of the site from the river.

Mining will be done in phases as per the mine plan to ensure a continuous rehabilitation approach. The potential of scouring during major flash floods will be reduced by ensuring that at all times there will be definite buffer zones of approximately 100m and 50m respectively between the excavation and the Swartkops River on the northern border and the Despatch Stormwater drainage line to the south of the mine. Should a moderate flood event been experienced, the area under application would not become inundated. With 1:100 year floods the area could be flooded but flow velocities in this area would be slower and non-erosive with some turbulence in the excavation causing rather

deposition of gravel material than scouring of the top of the bar. This will result in an unleveled topography of the site, which will be similar to the current state.

This area of land is host grass mostly thorn trees and alien trees. Very little original vegetation is found at the site prior to disturbance. Lowering the floor and clearing of vegetation would be noticeable, but with profiling and rehabilitation after mining; it could be an improvement on the area, depending on the aggressiveness of the rehabilitation. 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 or cause erosion due to the relatively flat topography of the land in question and because of the good internal drainage of the soil.

The placement of infrastructure is restricted to the plant and process area and would not be permissible within the extraction area and from this perspective; no impact on the topography will take place. All haul roads to be created within the excavation area will within the mine area, will be temporary, and will be rehabilitated as prescribed in the mine plan, thus no impact is expected.

Since mining would be restricted to a depth of approximately 2m, the area will not become a permanent pond and possible would only show temporary surface water during very high flood events. Upon rehabilitation of the area, it would entirely blend in with the surrounding area provided it is re-vegetated properly with a grass cover and an alien control program is followed.

There are no prominent environmental features in the immediate surroundings. Mining would change the topographical appearance of the area, but with infill planting it could display a rougher texture, which would fit in with the fluvial environment. A number of residences and other structures on the surrounding farms had to some extent, affected the topographical appearance of the greater area.

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 slight topographical changes brought about would, however be irreversible but might be remedied by future flood action through deposition of sand and silt within the excavation. The impact is rated as low with mitigation measures.

In terms of the cumulative impact, the area around the mining site is surrounded with other mining excavations. Some of the previously mined areas were rehabilitated, while others were not and left in a degraded state. Theoretically, in the event of a major flood sand and gravel could be deposited within these excavations, thus reversing the impact on the topography. However, recent floods did not fill the other mining sites completely; but on the other hand, helped mitigate the flood impact on the neighboring residence due to the enlargement of the flood plain through mining. Since the larger area was mainly disturbed previously and will continue to be subjected to flood actions the cumulative impact is rated low-moderate.

Impact on floodplain topography.

	CONSTRUCTION	**WEIGHT**	**OPERATIONAL (no mitigation)**	**WEIGHT**	**OPERATIONAL (with mitigation)**	**WEIGHT**	**CLOSURE**	**WEIGHT**
Extent	Site Specific	1	Site Specific	1	Site Specific	1	Site Specific	1
Duration	Short Term	1	Medium Term	2	Short Term	1	Short Term	1
Intensity	Low	2	Low-Medium	3	Low	2	Very Low	1
Probability	Likely	3	Definite	4	Definite	4	Definite	4
Cumulative Impact	Low		Moderate		Low-Moderate		Low	
Status	Negative		Negative		Negative		Negative	
Confidence	High		High		High		High	
Significance	**Very Low**	**12**	**Low Moderate**	**24**	**Low**	**16**	**Very Low**	**12**

GEOLOGY

During the construction phase, no activity will lead to the permanent transformation of the geology and the impact on the geology during the construction phase is rated insignificant.

However, mining the sand and stone of this area will temporarily affect the geology of the area but a major 1:100 year flood will rework gravel material within the river system and might replenish the removed material over the long term. Sand deposits in the Port Elizabeth area are not deemed to be a strategic mineral and the mining thereof can be rated as of low significance.

The cumulative impact might increase in terms of the geology, since mining in the surrounding areas upstream and downstream from this site, has reduced the amount of available sand, gravels and stone and could prolong the replenishing process. Since sand and gravel are not considered strategic minerals, the cumulative impact is rated low-moderate.

Impact on geology

	CONSTRUCTION	WEIGHT	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Site Specific	1	Local	2	Site Specific	1	Site Specific	1
Duration	Short Term	1	Medium Term	2	Short Term	1	Short Term	1
Intensity	Very Low	1	Low-Medium	3	Low	2	Very Low	1
Probability	Probable	2	Definite	4	Definite	4	Definite	4
Cumulative Impact	Very Low		Moderate		Low-Moderate		Low-Moderate	
Status	Negative		Negative		Negative		Negative	
Confidence	High		High		High		High	
Significance	**Insignificant**	**6**	**Moderate**	**36**	**Low**	**16**	**Very Low**	**12**

SOILS

SOIL PROPERTIES

Due to the intermediate percentage vegetation cover in the study area, the soils show a medium organic component of less than 2,5%. Due to intermediate microbial activity and high soil temperature the organic component will be broken quickly once the system is disturbed hence topsoil storage time must be restricted to the minimum. Since the organic matter is relatively fine, it will also result in expediting the breakdown of organic matter. Soils need to be used within three months after it was removed. 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. It is anticipated that low nitrogen, phosphate and trace element levels would prevail and hence soils should be upgraded to reinstate and maintain nutrient cycles in the soil. High internal drainage capacity and low adsorption capacity due to the low clay content will cause during the

summer periods that these soils will display low field capacity values, which will have a negative effect on biomass accumulation. This could require at certain stages that seeded areas be irrigated, if an agreement with the landowner can be reached.

During the construction phase the topsoil on the first phase and temporary haul road will be removed and stored. Unfortunately, soils of the excavation area have high leaching capabilities hence the soils will not remain fertile after clearing and prolonged heavy precipitation. It would, therefore also not re-establish its positive nutrient cycles over the short term and re-vegetation process will require the necessary attention and dedication. Even if used shortly after stripping inorganic upgrading would be necessary. This will be applicable to the operational phase too, since mining will progress to the following phases. Once reinstated, quarterly upgrading of soils will be necessary and light application of fertilizers will be required if rainfall permits. The impact on soil properties during the construction- and operational phase is rated low with mitigation, but it should be understood that soil fertility, humus content and the ability to sustain plant life would be affected negatively. It is the small size of the mining activity that lessons this impact.

Alternatively water from the Swartkops River could be used as a source of organic fertilizer, when used during irrigation. Since the Swartkops River water quality is regarded highly organically polluted the water could serve as an organic fertilizer to the soil. The vegetation will absorb the organic matter and effectively serve as a filter for the water. Access water will simple drain back to the river and would have been naturally filtered.

The plant and process area will not increase in size for this operation and therefore no further disturbance will take place. Since the applicant wishes to apply for a mining right in the near future, this area will most likely be enlarged and rehabilitation of the area will therefore be incorporated in the mining right application. However, in the event that for some unforeseen reason the mining right application does not continue, this plant area must be rehabilitated. This area was previously disturbed due to agricultural activities and then mining and very little topsoil was stored. Thus at closure, once all the infrastructure is removed, soil must be upgraded with fertilizer and seeded, since the distance from the open water is sufficient not to cause organic pollution and the soil would be sterile if not upgraded. It is important to fertilize when necessary and controlled irrigation to establish vegetation soon after infrastructure clearance. The latter can be easily achieved by pumping from the river.

The potential of soils to rehabilitate is defined by its depth, structure, texture, and sequence of soil horizons. Since the in situ soils at hand are limited in terms of the above, mining will further impact

on these characteristics, reinstated soils will have poor texture and structural features and will cause re-vegetation to be difficult. It would from a fertility point of view be pertinent that all organic matter removed from site is reintroduced to profiled areas to increase the humus component of reinstated soils. The subsoil (sand deposit) is even less structured, has no texture and limited nutrient levels and would not be able to sustain plant life on its own.

The topsoil in the excavation area is also limited, as already indicated. The topsoil will be removed from the area and will be temporarily stored on the eastern boundary of each phase 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 it and if possible irrigate it as soon as possible. The latter can be easily achieved by pumping water from the river, for which the applicant has the necessary permission obtained from the landowner, who has authorization.

Other mining areas do not show great success on re-vegetating the sloped areas, which might be a result of poor topsoil management and rehabilitation or the lack of soil nutrients to sustain vegetation. Most of the floor areas of the surrounding quarries do however have wetland vegetation cover, which is a positive impact. The site to be excavated is small, but cumulatively will enlarge the total areas disturbed, however once the site is rehabilitated, the cumulative impact will be lessened. Also, keeping in mind that these areas are constantly subjected to floods, thus reworking of soils in the flood plain is a natural occurrence. The cumulative impact is rated low.

Impact on soil properties

	CONSTRUCTION	**WEIGHT**	**OPERATIONAL (no mitigation)**	**WEIGHT**	**OPERATIONAL (with mitigation)**	**WEIGHT**	**CLOSURE**	**WEIGHT**
Extent	Site Specific	1	Local	2	Site Specific	1	Site Specific	1
Duration	Short Term	1	Medium Term	2	Short Term	1	Short Term	1
Intensity	Low	2	Medium	4	Low-Medium	3	Low	2
Probability	Likely	3	Definite	4	Definite	4	Likely	3
Cumulative Impact	Very Low		Low		Low		Very Low	
Status	Negative		Negative		Negative		Negative	
Confidence	High		High		High		High	

Significance	**Very Low**	**12**	**Moderate**	**32**	**Low**	**20**	**Very Low**	**12**

SOIL EROSION

The topsoil (A horizon) of the mining area is course textured with less than 5% clay content and can be generally described as a very sandy loam. Since the soil is very sandy, erosion gullies within the sand reserve could easily develop in the event of any disturbance. It is therefore important that mining does not result in erosion.

Stripping of topsoil at Phase 1 and the temporary haul during the construction activities is small scale and will not increase the soil erosion impact. In addition, the placing of wearing course on the access roads and constructing the cross drains to prevent erosion on the roads will be a positive impact.

During the operational phase, the spreading of the topsoil on the steeper slopes of the excavation will cause it to become more susceptible to erosion. It is therefore imperative to use all available organic matter 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 mining walls to become destabilized during major flood events.

The floor of the excavation will not normally experience any erosion due to the flat slope to be created and the porosity of the strata. However, major erosion down to the gravel bed could occur if the area is flooded. A proper re-vegetation strategy is of utmost importance. Material eroded will be fanned out on the quarry floor and could be retrieved, but in most cases eroded topsoil seems to vanish therefore, erosion must be curbed immediately. If left unattended, with time, gullies will be partially filled in due to slumping of the slope in an effort to regain the original angle of repose but only is applicable under a no flood regime. This natural process should not be entertained onsite by authorities. Under normal circumstances, no impact outside the mine area is anticipated since vegetation within the buffer zone will curb any water and sand movement.

The existing haul roads leading to the mine area will be used and due to the gentle gradient thereof erosion would not be a consideration. To reduce any potential surface flow within the mining area it is important that removal of vegetation ahead of the production faces is limited to the minimum.

It should be mentioned that the surrounding alien trees provide some protection against wind erosion. The impact is rated low with mitigation.

PROCESS AREA

The process area is situated on a very flat area and soils have already been disturbed due to previous mining and agricultural activities and no signs of erosion occur at this area. Since this area will not be excavated no depressions will be formed and no slopes will be created. Topsoil stockpiles might be susceptible to wind erosion, but if the soil is upgraded and re-vegetated while in store the impact on wind erosion will be mitigated. If necessary, it should be protected by windbreaks.

The cumulative impact at the site is rated low, considering that the area is constantly subjected to floods and reworking of gravel material. Once the site is rehabilitated, the cumulative impact can be rated as very low.

Impact on soil stability.

	CONSTRUCTION	**WEIGHT**	**OPERATIONAL (no mitigation)**	**WEIGHT**	**OPERATIONAL (with mitigation)**	**WEIGHT**	**CLOSURE**	**WEIGHT**
Extent	Site Specific	1	Local	2	Site Specific	1	Site Specific	1
Duration	Short Term	1	Long Term	3	Medium Term	2	Short Term	1
Intensity	Very Low	1	Medium	4	Low-Medium	3	Low	2
Probability	Probable	2	Likely	3	Likely	3	Probable	2
Cumulative Impact	Very Low		Low		Very Low		Very Low	
Status	Slightly positive		Negative		Negative		Negative	
Confidence	High		High		High		High	
Significance	**Insignificant**	**6**	**Low-Moderate**	**27**	**Low**	**18**	**Very Low**	**8**

SOIL POLLUTION

As previously indicated, alluvium pollution can only occur should hydrocarbon spills occur or when 1) used oils and lubricants are purposefully drained into the alluvium, 2) storage facilities are

destabilized or 3) if ablution facilities contaminate soils. At the process area of the mine the risk for hydrocarbon pollution is more pronounce due to vehicular activity, the servicing of vehicles on site, storage of fuels, and oils and lubricants.

Also, the high penetration capabilities and low adsorption capacity of the alluvium could cause pollution plumes to be migrating vertically and laterally to reach surface water, but will only be applicable to very large spills.

However, the mining area to be excavated will not host any hydrocarbon storage facilities, workshop, scrap yard, office facilities, or toilets. All of these facilities will be situated at the allocated plant and stockpile area, north of the excavation area, outside the flood plain. Therefore, at the excavation area of the quarry, none of these impacts is anticipated since trucks and earthmoving equipment will be well maintained and oil leaks will not be expected.

HYDROCARBONS

Storage of all oils and lubricants as well as servicing of vehicles will be restricted to the process area. The crushing plant and mining equipment will require large quantities of diesel fuel, oils and hydraulic fluids and in return it produces 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.

Minor service and repairs can be done on site but 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, which must be built during the construction phase. Emergency repairs will be done over drip trays within the fluvial environment hence no impact on alluvium is anticipated. Major services can be done at workshops in Despatch. 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 immediately and will percolate to lower levels. Sandy soils will result in a more extensive but less concentrated plume and with the higher oxygen levels (less compacted and more air space) characteristic to these soils, will result in accelerated bio-degradation of hydrocarbons. Use of fertilizers could assist in breaking down limited spills in short

space of time but the extent of alluvium would preclude it from reaching surface water. Due to the proposed setback line from open water the intact gravel material will absorb contaminants caused by small spills and water pollution is not anticipated. If a major spill in some way or another manner has to occur it will lead to extensive alluvium pollution and in such case a specialist approved by DWAF will be called in to remedy the impact.

The generator to be used for operating the crusher will be mounted within a steel tray. Destabilizing the diesel tank of the generator and spilling the entire contents will result in medium adverse impacts especially during dryer periods. It will severely affect soil fertility through impaired nutrient imbalances and pH values as well as reduced water retention capacity and will affect soils and vegetation over longer periods and needs to be bio-remedied. It is therefore essential that 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.

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

SEWAGE

Two toilets connected to a septic tank are provided at the process area. Due to the small number of people (10-20) 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. The toilet facilities include ablution facilities and all effluent will be captured in the septic tank and will not cause pollution of soils and groundwater sources. Since the study area is within a fluvial environment, the risk involved with the use of the septic tank system will be slightly higher but the septic system will be positioned at the plant area above the flood mark and the depth of the alluvium in this area will preclude any soil or water impact. The anticipated soil pollution risk is rated low under worst-case scenario conditions and insignificant under controlled conditions.

WASTE

Domestic waste will be produced at the quarry but the waste streams (tins, paper, food) will be rather limited (0,5-1m^3 per month) and will be removed to the nearest approved waste facility at Uitenhage. Even in limited amounts, uncontrolled storage of waste could lead to littering of the surrounds through wind action, which could affect livestock, the stream environment and aquatic

fauna. Therefore, provision for waste receptacles with scavenger proof lids must be made. Handling of waste will be included in an environmental awareness programme to be developed for workers but it should be noted that this is not a requirement for mining permit applications.

Storage of cement bags during the construction phase in particular must be properly controlled, when the bund walls are built. Cement contaminated waters and residue cement will be contained in the sludge pit and could affect soil and subsoil negatively and the correct operational procedures need to be implemented. However, the impact is still rated low, considering the very small scale of activities.

Waste production will be limited at the quarry site and the impact on soils and surrounds is rated very low with mitigation.

Most of the immediate mining activities have ceased and all used the same crushing site. Thus the only area that would be subjected to possible soil pollution will be the new excavation area, and a continuation of the plant area. Considering that it is a small area, with impacts that will be mitigated in terms of waste management, the cumulative impact regarding waste is rated very low.

Impact of pollution on soils.

	CONSTRUCTION	**WEIGHT**	**OPERATIONAL (no mitigation)**	**WEIGHT**	**OPERATIONAL (with mitigation)**	**WEIGHT**	**CLOSURE**	**WEIGHT**
Extent	Site Specific	1	Local	2	Site Specific	1	Site Specific	1
Duration	Short Term	1	Short Term	1	Short Term	1	Short Term	1
Intensity	Medium	4	Low-Medium	3	Low	2	Very Low	1
Probability	Probable	2	Likely	3	Probable	2	Unlikely	1
Cumulative Impact	Very Low		Low		Very Low		None	
Status	Negative		Negative		Negative		Negative	
Confidence	High		High		High		High	
Significance	**Very Low**	**12**	**Low**	**18**	**Very Low**	**8**	**Insignificant**	**3**

As previously indicated, the land is zoned agricultural but in terms of the STEP programme and the NM MOSS the conservation status of the land concerned is rated 'Critically Endangered', but considering the secondary grass cover and alien vegetation infestation and the fact that there are no definite plans in place to restore the river environment, this rating would not be applicable to this section of the river. Through the proposed re-vegetation process, there is a chance to restore the original ecology to some extent hence it would focus on restoring a portion of the natural riverine environment.

Construction activities that might impact on the land use will be limited to the removal of topsoil at the excavation area for the temporary haul road as well as for Phase 1 of the development. The impact during the construction phase is rated very low, considering that the topsoil will be stored and upgraded concurrently with mining, which will assist in re-establishing vegetation.

Furthermore, the excavation area is currently not really used as an agricultural unit. This is due to the previous disturbance of the area destroying the original vegetation and causing the carrying capacity of the site to be low due to the secondary vegetation cover, thus it cannot be fully utilized as a grazing unit. The landowner has also made no attempt to cultivate this portion of land, the reasons are not certain but can be presumed it is due to flood risks and the prospecting right application held on the property and the potential application of a mining right.

Mining the area according to the principles set out in the EMP, could improve the grazing potential of the mining area compared to the current state. 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. Lowering of the ground levels could also result the land in question to show shallower water table due to a decrease in the natural sponge capacity of the soil and the subsequent improvement of grass cover during the dryer periods. The areas would therefore be profiled correctly to ensure proper drainage and a certain portion of the E-horizon must be maintained to ensure some absorption capacity.

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, however no complete remedy is anticipated over the short term. Some species could be temporarily lost in the development process but over time will migrate back to the disturbed areas. Since this is not a conservation area, the need

to maintain biodiversity is not a prerequisite. Since no increased in flow volumes of runoff are anticipated increased sediment transport and subsequent loss of topsoil is not anticipated. The area falls outside the medium-high flow range and would not be readily affected by floodwater.

Due to the high level of alien vegetation present on the excavation area and in the surrounding area and a few thorn trees and bushes present at the site, forage areas and nesting places for avian species do occur, but could find refused in the surrounding trees outside the mine area. No wild animals were found at the site. Considering the low conservation status of the property, mining would not detrimentally affect the economical or ecological value of any property concerned. The ecological status of surrounding land is rated as non-restorable. It is the applicant's view that this particular development can be integrated with the surrounding land uses, which currently is farming without endangering sensitive natural and cultural resources or abutting land uses. Development of the quarry would also not compromise the needs and the well being of future generations and with the proposed rehabilitation strategy it will to some extent meet the aspirations that the NMBM and future generations might have. Since this habitat is not sensitive, it is from an economical and ecological point of view the correct strategy to develop it and not the areas with high ecological status or cultivation potential.

The Plant Area:

0.5Ha of the proposed process area will be used for the permit application as a plant site and stockpile area. The plant area is currently bare and host the crushing plant and stockpiles, but the immediate surrounds are covered with secondary grass, which has established through natural succession after the land was cultivated. Thus, with the proposed rehabilitation plan, this site will be upgraded to a proper grass cover and improve on the field capacity of this small portion.

The proposed mining will not have any impact on the land capability or land use of abutting properties. There are no crop production in the immediate vicinity of the quarry thus no real threat to the livelihood of landowners is anticipated.

Considering the ecological and agricultural status of the mine area the impacts on land use and land capability could be rated as negligible during mining with mitigation measures, but low positive once rehabilitated.

Currently the immediate mining sites are dormant and cannot be used by the landowner as a grazing unit since it does not have a proper vegetation cover yet. Therefore in the event that this new area is not rehabilitated, the landowner will not be able to use these portions of land for grazing, but considering that the landowner has not farmed commercially over the past 10 years the cumulative impact at this site is rated low.

Impact on land capability and land use

	CONSTRUCTION	**WEIGHT**	**OPERATIONAL (no mitigation)**	**WEIGHT**	**OPERATIONAL (with mitigation)**	**WEIGHT**	**CLOSURE**	**WEIGHT**
Extent	Site Specific	1	Site Specific	1	Site Specific	1	Site Specific	1
Duration	Short Term	1	Short Term	1	Short Term	1	Medium Term	2
Intensity	Very Low	1	Low	2	Very Low	1	Low-Medium	3
Probability	Likely	3	Probable	2	Unlikely	1	Likely	3
Cumulative Impact	Very Low		Low		Very Low		None	
Status	Negative		Negative		Negative		**Positive**	
Confidence	High		High		High		High	
Significance	**Very Low**	**9**	**Very Low**	**8**	**Insignificant**	**3**	**Low**	**18**

FLORA

The excavation area is situated within the river environment or flood plain area and the plant area of the site is established outside the flood plain on the river bank heading inland.

During the construction phase, only the first phase's grass cover will be stripped, as well as the temporary haul road, to make way for the development and all other activities associated with the construction will be done on areas already stripped of vegetation at the plant area. The impact is rated very low.

ANALYSIS OF THE PLANT AREA

The plant area was originally created with the development of Mr. Hurters permit applicant a few years ago to establish the crushing plant and offices, which was stripped of topsoil and vegetation to host the plant, stockpiles, office and workshop, and earthmoving vehicles. Thus currently on the plant area there is no vegetation cover and the site is bare. This plant area will simply be adopted by Macrovest for their permit application and possibly right application.

The surrounding vegetation around the plant area used to host crop productions but commercial farming ceased many years ago and as previously indicated the landowner has shown very little interest in establishing crop lands and the area is mostly surrounded by lands covered in secondary grass and weeds. In terms of conservation, this part of the mining area has no conservation value. Nevertheless, at closure the limited stored topsoil will be upgraded and re-vegetated.

Figure 21: Secondary grass cover with weeds on the process area still to be cleared

ANALYSIS OF THE EXCAVATION AREA

Currently the area hosts a number of grass species, thorn trees and some valley bushveld shrubs. The surrounding area hosts massive alien stands. Mined out areas need to be controlled otherwise rehabilitated areas could be subjected to infestation which would jeopardize the sustainability of the project and land capability at closure. At the two other mining permit areas west from this proposed site, rehabilitation has fallen behind schedule and the applicants of those mining areas must be given instruction from the DMR to complete rehabilitation. It is not a good example to new applicants if current mining areas are not rehabilitated or regulated by government in this regard. It could set a president and lead to non-compliance with environmental laws. And at the proposed mining site, if post mining re-vegetation procedures are not implemented the mine area will become infested with species such as Blue Gum, Pines, Sesbania, Wattle and Port Jackson that currently occur within the channel environment.

Figure 22: Unrehabilitated permit areas west of the proposed site

Figure 23: Vegetation at the site

In order to achieve effective re-vegetation of the mine area grass species should be planted as per phase development and the rehabilitation plan proposes. This will improve the stability of the mined out area and prepare the soil for successful succession of vegetation. It is imperative that a phased approach be followed to ensure that environmental degradation 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. Although lack of soil structure is a possible hindrance for the establishing of vegetation; the lowering of the ground levels and the shallower water table would provide effortless provision of water to plants and improve the growth especially during the dryer periods. Also due to the lowering of the ground levels, the vegetation that will succeed will most likely resemble a wetland vegetation type instead of the Valley bushveld, which will also be a valuable vegetation type. Of cause alien vegetation will benefit from this as well, therefore care must be taken to control the infestation.

Since the entire fluvial environment is infested primarily with Eucalyptus species (Blue gum) and to a lesser extent by Acacia longifolia, Acacia mearnsii (Black Wattle), Acacia saligna (Port Jackson) and Sesbania pudicae, spreading of these plants is identified as a major risk. Once re-vegetation of disturbed areas starts this impact could emerge as a significant impact and the necessary control measures need to be implemented.

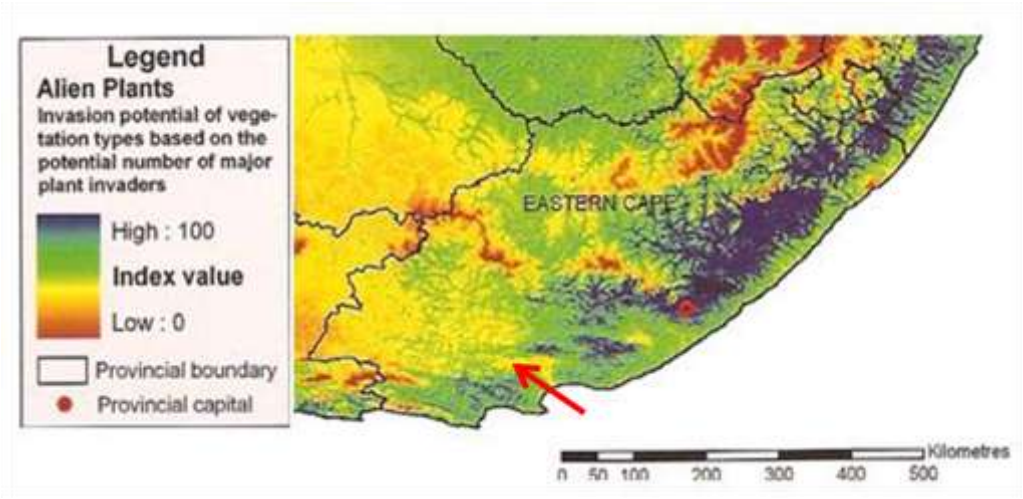


Figure 24: Alien vegetation invasion potential

Although the current vegetation cover is a secondary cover, it is an established unit of vegetation, but it is classified as having a low conservation value. Therefore, considering the vegetation to be removed during this mining process and the limited area to be affected, the impact is rated of low significance with mitigation. If the proposed re-vegetation strategy is implemented, the impact at closure can be rated low positive.

The immediate other mining areas have not really been rehabilitated and in the event that the new mine area is not rehabilitated; the cumulative impact will still remain low, considering the very low conservation value of the site. However the site will be re-vegetated and infill planting will also take place, thus mitigating the overall cumulative impact further.

Impact on the flora

	CONSTRUCTION	WEIGHT	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Site Specific	1	Local	2	Site Specific	1	Site Specific	1
Duration	Short Term	1	Medium Term	2	Short Term	1	Short Term	1
Intensity	Low	2	Medium	4	Low-Medium	3	Low	2
Probability	Likely	3	Likely	3	Likely	3	Definite	4
Cumulative Impact	Very Low		Low		Very Low		Low	

Status	Negative		Negative		**Positive**		**Positive**	
Confidence	High		High		High		High	
Significance	**Very Low**	**12**	**Low-Moderate**	**24**	**Low**	**15**	**Low**	**16**

FAUNA

PLANT AREA

Since the crushing plant and related infrastructure already exists at the plant area and since all the vegetation was cleared for these purposes previously, no construction activity at the plant area will have any impact on the fauna, which have already, vacated this area.

This area cover an area of about 0.5Ha within an open area already disturbed. Normally, if this section was not disturbed, the thicket habitat would have provided a definite ecological niche for animal species since the canopy provides adequate forage, nesting place and protection for avian fauna whilst the under storage provide adequate protection and forage for browsers. However, all the vegetation providing these ecological niches was removed, due to reasons stated above. The plant area in current state does not provide any habitat nesting for the wild animals, except maybe for small rodents and some reptiles and insects.

Most of the rare animals are associated with riverine environs, which are situated next to this area and is part of the mining area. Once mining cease and the mining right does not proceed, then this area will be rehabilitated and a better grass cover will be provided. It will provide a better carry capacity for cattle and will provide a denser grass cover for the return of the small rodents, reptiles, etc. Thus post effects of mining could have a low positive effect on this area.

Limited hydrocarbon spillages would not detrimentally affect fauna on site and would also not pose a danger to aquatic fauna due to the setback line from open water proposed as well as the vertical extent of the fluvial deposits that would trap any small to medium spills. Storage of hydrocarbons and the servicing of vehicles will be done according to explicit specifications, which lower the risk of contamination.

At the settling pond area: gauze or a fine grid structure must be placed in front of the inlet pipe, pumping water to the sand washing machine, to prevent any fish or aquatic animal being sucked into the pump and being killed.

THE EXCAVATION AREA

The river environment is an obvious niche for a whole range of animal species such as fish, amphibian species, avian species, reptiles, rodents, insects and a number of buck species. However, this part of the river has been severely transformed substantially by agricultural activities and mining, hence the ecological value of this environment for animal species is rather low. In addition the water quality of this river has been rated as very poor, due to the high levels of organic pollution which is mainly due to raw sewage flowing into the river system and failure from local government to control and manage this and with no immediate plans to upgrade sewage treatment plants to increase the capacity and stop sewage to overflow into this river system.

The alien trees pose a limited but definite ecological niche for animal species since it provides for adequate nesting place and protection, but very limited food resources. Due to these limited resources that this area offers, original species diversity is low. In addition, the surrounding areas have been partially transformed to grazing and cultivation land resulting in wild animals becoming increasingly scarce. In addition, the close proximity of urban development and residents would cause most wild animals in this area to move towards areas which are more secluded. At the time of the site visits, no wild animal was spotted.

Construction activities pertaining the clearing of vegetation prior to developing phase 1 and the haul road in the excavation area would be restricted to limited areas and the slow extraction rate would provide adequate time for slow migration from the affected area and be sustained in the similar adjoining habitats. The impact of construction activities on the fauna is rated insignificant.

The post mining shrub and tree thicket will, from an ecological point of view, provide improved protection, forage and nesting place and would constitute an improved ecological niche, which will improve the value of the riverine corridor. Since only 1 Ha will be mined, migration patterns of animals within the will not be detrimentally affected, however current and previous mining activities might already have cause wild animals to migrate to better habitats. The proposed re-vegetation process would provide small opportunity for animals to return to the rehabilitated riverine environment, but considering the surrounding activities, this is unlikely to happen. 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 riverine degradation in neighboring and other sections of the river and since this approach will result in riverine degradation, it should be abolished.

As site visits revealed no small or large animals removal of the grassland will not result in the extinction of any specie. Mining would be restricted to limited areas and the slow extraction rate would provide adequate time for migration of any animals remaining on site to be sustained in similar adjoining habitats. In addition, noise generated by vehicles 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.

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 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.

Limited hydrocarbon spillages would not detrimentally affect fauna on site and would also not pose a danger to aquatic fauna due to the setback line from open water proposed as well as the vertical extent of the fluvial deposits that would trap any small to medium spills. In addition, storage of hydrocarbons and the servicing of vehicles will be done off site. Since movement of vehicles will also be restricted to outside the stream environment, except for at the proposed crossing it will also not impact of aquatic fauna.

Since there are very few remaining wild mammals on site, no detailed faunal survey was conducted. It needs to be mentioned that according to the NM MOSS the site does not hosts rare or red data species.

It is anticipated that some avian fauna species may be disturbed through destruction of nesting sites but none should be killed in the mining process. It is anticipated that these animals will return to the disturbed areas once rehabilitated. It is also the opinion that these species will not visit the site during mining operations hence the impact of the quarry can be rated as very low. A fair number of avian fauna was observed on site but no formal survey was done since mining would not necessarily impact on them.

Fish species would be restricted to the low flow stream environment and to the deeper pools found within the braided river system. Since there are no pools within the proposed mining area and since a large setback line of at least 100m from the stream would be imposed no impact on fish species is anticipated.

During the operational phase, the impact of mining on fauna is rated very low with mitigation measures. Rehabilitating the quarry site would provide an improved ecological niche and the opportunity for animals to re-colonize the area. The impact at closure is rated to be of low positive significance.

As previously indicated, this general area have suffered severe disturbance in the past and due to this, this site and the previously mined sites have not hosted any significant fauna species and most wild life have vacated the area. Thus by excavating an additional 1Ha area within an area that host no fauna specie of importance, will not cause any cumulative impact on fauna. The impact is rated very low. Once the areas are rehabilitated, the site will be utilized for grazing.

Impact on fauna.

	CONSTRUCTION	**WEIGHT**	**OPERATIONAL (no mitigation)**	**WEIGHT**	**OPERATIONAL (with mitigation)**	**WEIGHT**	**CLOSURE**	**WEIGHT**
Extent	Site Specific	1	Local	2	Site Specific	1	Site Specific	1
Duration	Short Term	1	Short Term	1	Short Term	1	Medium Term	2
Intensity	Low	2	Medium	4	Low	2	Low	2
Probability	Unlikely	1	Likely	3	Probable	2	Probable	2
Cumulative Impact	None		Low		Very Low		None	
Status	Negative		Negative		Negative		**Positive**	
Confidence	High		High		High		High	
Significance	**Insignificant**	**4**	**Low**	**21**	**Very Low**	**8**	**Very Low**	**10**

SURFACE WATER

During the construction phase, cement contaminated waters would be generated during the construction of the bund walls and concrete floors, but will be contained on site at the plant area in a sludge pit, thus no impact is anticipated. Stripping of topsoil and vegetation in the excavation area will not impact on surface water.

Furthermore, mining should not impact on water quality and this status would be achieved by keeping the buffer zones of 100m and 50m respectively between the excavation and the Swartkops River on the northern border and the Despatch Storm water drainage line to the south of the mine. As well as not lowering the floor to the depth of the water table as described earlier in the document.

Only extreme flooding will inundate the mining area. Should floodwater enter the depression, it will fill up and because of reduced stream velocity and quick waning of peak flood regimes result in deposition of silt and sand within these shallower water depths thereby replenishing some of the material removed.

The biggest threat to the aquatic life in these sections of the Swartkops River is the highly organic polluted water. Organic polluted waters encourage the growth of multiple algae and water hyacinths, which depletes the water of oxygen and covers the surface of the water. This leads to sunlight not penetrating the water to encourage the growth of submerged water plants to release oxygen in the water through the process of photosynthesis, thus further depleting the water of oxygen. Therefore, submerged plants, fish and other aquatic life starts dying, which leads to decay and further depletion of oxygen and the down spiral cycle continues. Mining will not impact the quality of the water and in the small event of a pollution plume migrating to the river because of mining; it is completely out compared with the already existing problem.

Nevertheless all precaution must be taken and because of the low, perched water table, maintenance of vehicles should be a high priority and not take place within the fluvial zone to ensure that water quality is not affected by hydrocarbons spills. No mining will take place within the stream environment. Since rain events can occur at any time, stockpile volumes will be restricted to one day's supply as determined by market demand. In case of a flood, it is anticipated that sand and topsoil stockpiles will simply be flattened and spread inside the excavation. During such flood events,

the Swartkops River carries an extensive amount of reworked sediment and any additional loose material produced by mining will not result in any cumulative impact related to sediment load or water quality.

Potable water will be brought to site and will not exceed 1,5m^3 per week. If it is required to irrigate vegetated areas during extreme dry periods, consumption will not exceed 30m^3 per week and considering the small area involved at any particular time, will not impact on the ecological reserve related to low flow. The impact is rated very low with mitigation.

At the plant and process area, the sand will be washed as part of the processing to improve the sand quality, because of all the vegetation roots and matter, clays and silt, the sand mined is impure and not usable for the construction industry. Sand washing equipment is already located on site and will continue to be used for this application. During the sand washing process, the slurry feeding, which is discharged by a vibrating screen or as an overflow effluent when it's delivered by the bucket-wheel, in the fine sands recovery cases, is conveyed to the Pumping Group from which it is pumped out to the Hydrocyclone, which eliminates undesirable particles (clay, silt, etc.). The hydrocyclone overflow containing rejected particles is evacuated to settling ponds situated at the process areas north of the Swartkops River, or reprocessed in the subsequent clarification and filtering stages, thus minimizing environmental impact and reusing the water employed in the process. There are two settling ponds just south-east of the plant area: the first pond act as a settling pond with overflow into the second pond. Once particles have settled out, water can either be pumped back to be recycled in the sand washing process or allowed to overflow back into the Swartkops River, via the secondary wetland north of the excavation site. This is preferred to spill the overflow into the secondary wetland, should the water contains some silt, and it will be absorbed by the wetland and filtered.

During the sand washing process, no chemicals are added, thus the quality of the water will not be influenced. Since the sediment settles out in the ponds, the overflow back into the river will not contain silt, thus no impact on the TDS of the water quality is expected. The impact is rated low with mitigation.

There will be no cumulative impact on the surface water of this mining, since all immediate other mines are either closed or in the process of closure and used the same crushing plant area proposed in this project. Thus with the closure of the other mines and the continuation of this mine the impact would remain the same.

Impact on surface water quality & flow dynamics

	CONSTRUCTION	WEIGHT	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Site Specific	1	Local	2	Local	2	Site specific	1
Duration	Short Term	1	Long Term	3	Long Term	3	Short Term	1
Intensity	Very Low	1	Medium-High	5	Medium	4	Low	2
Probability	Unlikely	1	Likely	3	Possible	2	Unlikely	1
Cumulative Impact	None		Low		Very Low		None	
Status	Negative		Negative		Negative		Negative	
Confidence	High		High		High		High	
Significance	**Insignificant**	**3**	**Low-Moderate**	**30**	**Low**	**18**	**Insignificant**	**4**

GROUNDWATER

As previously discussed, mining will not affect the aquifer since mining will be restricted to at least one meter above surrounding 'fluvial ground level' and because the perched aquifer at lower level is not linked with the main aquifer the former is not responsible for the recharge of the latter aquifer. This will also prevent any impact on groundwater quality or yield of boreholes in the larger area. It is therefore also evident that infiltration of sediment and hydrocarbons into the alluvium will not affect the primary aquifer.

GROUND WATER QUALITY

SEWAGE FACILITIES

The two toilets connected to a septic tank could cause an increase in coliform levels of perched aquifers if the tank is not well maintained and monitored. The septic tank is a small-scale sewage treatment system used if there is no connection to the main sewage system, as in this case at the site. The septic system is a type of On-Site Sewage facility. The term "septic" refers to the anaerobic bacterial environment that develops in the tank and that decomposes or mineralizes the waste discharge into the tank, which is the primary treatment of sewage. Preventative maintenance requires the removal of the irreducible solids that settle and gradually fill the tank, reducing its efficiency. The environmental risk increases when this maintenance is ignored and will result with

solids that can escape the tank and destroy the clarified liquid effluent disposal and pollute soil and possibly water resources.

It needs to be taken into account that the effluent stream would not exceed 0,2m^3 per week. Riverbed gravels are also not the main water bearing strata and only poses a secondary or perched aquifer and is generally not used for human consumption. In the event of a small spill, the high internal drainage may cause increased vertical percolation of contaminants. If the septic tank is well maintained and the French drain is constructed, the potential for spills will be limited. In the event of a small spill the depth of the alluvium above perched water tables at the process area will further reduce the pollution impact.

In relation to the potential impact of large tannery and sewage ponds in the Uitenhage area upstream, the impact would be negligible. The main aquifer is located within the Table Mountain Sandstones, which will be protected through the aquiclude and adsorption capacity of alluvium.

HYDROCARBONS

Handling and storage of hydrocarbons onsite will be controlled as previously 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 process area all spillages will tend to percolate into the soil and with the high internal drainage it may cause increased vertical percolation of contaminants. If vehicles are well maintained and vehicle servicing is restricted to areas allocated at the workshop area with concrete floors, this impact will be effectively mitigated.

Furthermore, in the process area, limited daily spills caused by oil leaks will not affect the main aquifer due to 1) the depth of the alluvium above perched water tables at the process area and 2) small volumes of hydrocarbons involved. It should also be recognized that hydrocarbons are biodegradable and small spills will be naturally remedied over time. In the excavation area, the limited spills will be mitigated since only one excavator and the loading trucks will be allowed in the area, and by servicing the vehicles on a regular basis to keep the engines in a good condition leak free.

However, if a fuel tank is inadvertently destabilized it could lead to extensive impact on soils. Considering the likelihood that the storage areas will be 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.

WASTE

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 Uitenhage. 'Industrial waste' will be restricted to scrap metal and machine parts, which will not be stored and immediately disposed of at a registered recycling facility. Considering the above, no treatment facilities are required for the site. The impact is rated negligible.

WATER CONSUMPTION

No reticulation system will be established on site. Water dust suppression and re-vegetation process will be supplied by means of a water tanker to be filled from water obtained from the river. Drinking water would be kept in a clean PVC container and topped up on daily basis. Water to be used will not exceed 10 000L per day.

There will be no cumulative impact on the ground water of this mining, since all immediate other mines are either closed or in the process of closure. Thus with the closure of the other mines and the continuation of this mine the impact would remain the same.

Impact on ground water quality & reserves

	CONSTRUCTION	WEIGHT	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Site Specific	1	Local	2	Site Specific	1	Site Specific	1
Duration	Short Term	1	Medium Term	2	Short Term	1	Short Term	1
Intensity	Very Low	1	Low-Medium	3	Low	2	Very Low	1
Probability	Probable	2	Likely	3	Probable	2	Unlikely	1

Cumulative Impact	None		Very Low		Very Low		None	
Status	Negative		Negative		Negative		Negative	
Confidence	High		High		High		High	
Significance	**Insignificant**	**6**	**Low**	**21**	**Very-Low**	**8**	**Insignificant**	**3**

AIR QUALITY

The gravelly material per *se* is not a harmful substance and should not cause any discomfort to people except for being a limited nuisance factor, if at all. The amount of dust generated on a mining area is directly linked to the type of material that is extracted, mechanical processes involved, traffic volumes, wind speed 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 topsoil must be replaced, seeded and irrigated as soon as possible.

Construction activities that might impact on the air quality will be related to the clearing of vegetation on the first phase and haul road, but since mining in this area is a common phenomenal the presence of a small dust plume is common and the impact during the construction phase is rated very low.

It must also be considered, that enquiries made at the DMR revealed that no apparent dust problems were conveyed to the regional office because of mining ventures upstream or downstream. Since there were no complaints the impacts of these operations will be used as a benchmark in evaluating the impact of the proposed quarry.

At the excavation area silt content of the stone and gravel deposits is very low and would not cause excessive dust when excavated and loaded onto the trucks. The deeper layers, when handled, are even more course, might be even moist, and will further reduce the effect of dust emission. Crushing of stone at the process area will increase dust generation, but since this activity has been in operation for the past few years, the expected dust levels will not increase but remain the same. Installing dust sprays on the crusher will reduce this impact. If dust generation becomes a serious problem, the area can simply be irrigated once or twice per day. During extreme climatic conditions, dust generation would still be very low.

At the plant area the crushing and screening processing of material will occur which could increase dust levels, but the site is further than 500m away from any resident, thus residents will not be exposed to any crushing dust. In addition the property boundary is covered with alien trees which will screen any visual, dust and noise impact.

Topsoil stockpiles with its higher silt and clay content will cause more dust liberation into the air 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.

The existing access road will be used, therefore no additional access roads needs to be constructed. However the haul road to be constructed to obtain access to the different phases could generate some dust but this haul road will be rehabilitated after phase 3 has been exhausted, thus the impact is rated very low. Also considering the haul road would not be longer then a 100m, thus limited dust could be generated from this small section of exposed soil.

Vehicular traffic will not increase; since Mr Hurter's quarry is exhausted and Mr Benecke's quarry is in the final stages of development, therefore the impact, if any, experience by any nearby residents will remain the same as in the past experienced. The worst case scenario is a small dust plume that may appear on this portion of the road 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 alien vegetation and would filter out most of the dust generated. The author is confident that very little dust will be deposited at any residence and if such deposition occurs it will be below 20-30mg/m^2 per day. With any rain, dew, or mist, which the area is frequently exposed to, the dust liberated into the air will decline drastically. In terms of the Mine Health and Safety Act, the silica content can be established to determine whether any special precautionary measures are required. Under normal circumstance respirable counts at sand quarries are very low since material is not processed and fines generated.

Vehicular emissions will be related to one excavator, one frond-end loader and a number of trucks. 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.

Since dust generation is also determined by speed in conjunction with axle number it is imperative, that the contractor reduces haul speed to 40km/h and enforce that strictly. If dust levels are elevated above acceptable levels, a sprinkler system could be implemented along the road, however this has not been necessary in the past and it is likely not going to be necessary in the future.

No odours will be generated by the mining operation. The amount of dust to be produced would not be adequate to affect turbidity or siltation of the stream. The overall impact on air quality is rated as very low (calm days) to low (windy days), with mitigation measures, 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.

The cumulative impact on air is depended on the disturbed areas. As mining progress and clears the first phase the total disturbed area will become larger and potentially could increase the source of dust generation during periods of high winds. However as already indicated the silt content in stone and gravel deposits are very low and would not cause excessive dust when excavated and loaded onto the trucks. Since the other immediate mining areas are in the process of closure there will be no cumulative impact. In addition, mining will be conducted in phases and concurrent rehabilitation will take place, once the entire site has been rehabilitated all sources of dust will be eliminated. The cumulative impact is rated very low.

Impact on air quality

	CONSTRUCTION	WEIGHT	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Site Specific	1	Local	2	Local	2	Site Specific	1
Duration	Short Term	1	Medium Term	2	Short Term	1	Short Term	1
Intensity	Low	2	Low-Medium	3	Low-Medium	3	Low	2
Probability	Likely	3	Likely	3	Probable	2	Unlikely	1
Cumulative Impact	Very Low		Low		Very Low		None	
Status	Negative		Negative		Negative		Negative	

Confidence	High		High		High		High	
Significance	**Very Low**	**12**	**Low**	**21**	**Very Low**	**12**	**Insignificant**	**4**

NOISE

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 of late at night. In order not to cause any unacceptable disturbances, noise levels at the mine boundary should be kept below 60 decibels during the day, which would be well within reach of the machinery and trucks used in the mining process, provided that they are well maintained. Sources of noise will be the excavator and trucks at the mine area and noise levels will be raised to between 60dB and 75dB at source. Within 100m from the quarry, noise levels will abate too approximately 50-60dB and within 200m to approximately 50dB. Noise levels at the nearby residence will therefore not be raised by more than 5dB.

The crushing plants that would be hosted on the process area could also add to the noise impact and will rise to 75dB at source. However this impact is rated low: taken the distance from the crushing site to nearby residence into consideration; the fact that the crushing activities are already in operation and would just be a continuation of crushing if this application is approved - thus the impact is already experienced and to date no complaint has been received. Work over weekends may cause a noise nuisance and should be limited from 8am to 1pm on Saturdays.

Seeing that no camp would be established on the mining area, no noise would be generated at night that could become a nuisance. 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.

Adverse conditions such as low cloud cover or strong winds blowing towards recipients could increase noise levels between 3 & 7dB, but considering the residence not being in the wind path and because of the vegetation screens in place, the impact is still rated of low significance.

Construction activities that will generate noise will involve earth moving machinery to strip the topsoil layers of the first phase and prepare the site for excavation. This action will continue into the operational phase, since the site will expand to the next phases. Trucks on the service road will cause noise disturbance of approximately 75dB all along the road. Considering that the distances to residences are in excess of 150m, it will be reduced to approximately 55-60dB, which is acceptable but will approximately be experienced every 15 minutes. Reduction of vehicle speed should therefore be enforced. It needs to be mentioned that the property owner had no objection to the project in the past.

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.

Since most of the mining ceased on the other mining areas and all sites used the same plant area, there is no cumulative impact. The cumulative impact is rated very low.

Noise Impact

	CONSTRUCTION	**WEIGHT**	**OPERATIONAL (no mitigation)**	**WEIGHT**	**OPERATIONAL (with mitigation)**	**WEIGHT**	**CLOSURE**	**WEIGHT**
Extent	Local	2	Local	2	Local	2	None	0
Duration	Short Term	1	Short Term	1	Short Term	1	Short Term	1
Intensity	Low-Medium	3	Medium-High	5	Medium	4	Very Low	1
Probability	Probable	2	Probable	2	Probable	2	Unlikely	1
Cumulative Impact	Very Low		Low		Very Low		None	
Status	Negative		Negative		Negative		Negative	
Confidence	High		High		High		High	
Significance	**Very Low**	**12**	**Low**	**16**	**Very Low**	**14**	**Insignificant**	**2**

BUILDING RUBBLE

Although this is an existing crushing site, there is still some construction that needs to take place, which previous mining did not address such as the construction of the bund walls for the storage of used oils, lubricants, filters, etc. and concrete pads for emergency vehicle maintenance with a sump. Therefore cement residue, brick residue, ceramic waste and PVC residue will be generated but in small amounts. This material will be generated during the construction phase will on a weekly basis be removed from site to the local waste facility. The impact during the construction phase is rated very low due to the small operation.

At closure the crushing plant and sand washing machine will be removed and all foundations and brick structures such as bund walls need to be removed, if the applicant fails to apply for a mining right. Building rubble needs to be deposited at the approved waste facility and will not be allowed to be dumped in the excavation area.

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

INDUSTRIAL WASTE

Currently at the site scrap and dysfunctional equipment is stored, but not in a neatly order. Containers provide some shelter against rain for the storage of equipment but in general the area is messy. During the operational phase the area will be neatened up and once the area is tidied up and dysfunctional equipment removed, the impact will be 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 the entrance to the property and northern boundary of the study 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 or impacts on aquatic fauna. 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.

MINE RESIDUE

The geology of the area restricts the type of residue to oversize boulders and root mass. The clearing of the vegetation on the phases and the removal of topsoil on the identified phases will generate this residue. The oversize boulders will be returned to the excavation and be covered with gravel on a weekly basis whilst the root mass will be stockpiled and worked into the topsoil as organic matter.

The construction of the temporary haul road to gain access to the different Phases will also generate soil stockpiles and root mass, since it entails the clearing of vegetation. Once the phases are mined out, the haul roads will be rehabilitated as per mine plan and topsoil and root mass can be returned to the identified slope areas for rehabilitation purposes. The impact during the construction phase is rated insignificant.

At the plant area, the sand washing will produce slurry effluent containing root mass, clays and silt. The overflow containing rejected particles is evacuated to settling ponds situated at the process areas north of the Swartkops River. Once particles have settled out in the ponds the overflow spills into the secondary wetland north of the excavation site. The secondary wetland will filter the overflow and should the water still contain some silt, it will be absorbed by the wetland. During the sand washing process, no chemicals are added, thus the quality of the water will not be influenced. Since the sediment settles out in the ponds, the overflow back into the river will not contain silt, thus no impact on the TDS of the water quality in the Swartkops River is expected. The impact is rated low with mitigation. The removed sludge can be worked into the topsoil and used during rehabilitation, thus no sludge residue will remain on site.

Guaze or a fine grid structure must be placed in front of the inlet pipe, pumping water to the sand washing machine, to prevent any fish or aquatic animal being sucked into the pump and being killed.

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

SEWAGE SYSTEM

The sewage system will consist of two toilets connected to a septic tank and due to the limited number of people on site, the effluent stream will be limited to approximately 0,2m^3 per week and

no impacts on soils, groundwater, surface water, air and humans are anticipated. See discussion under the heading “Water” for full disclosure regarding the impact of this sewage system.

HYDROCARBONS

The mine area would not produce any waste whilst the servicing of equipment and vehicles would generate a substantial amount of hydrocarbon waste such as used oil, lubricants and hydrocarbon-contaminated filters. The latter and other dysfunctional parts are placed in receptacles in the workshop from where it is periodically removed to a hazardous waste site, either Koedoeskloof or Aloes.

Minor servicing of equipment and vehicles would take place at the workshop and it is 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 where hydrocarbons are drained with funnels into steel containers and constitute an excellent manner to deal with hydrocarbons. From this storage point, the containers are either moved off site to a recycling company or stored onsite in a 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 must take place in a wash-bay area fitted with an oil trap, but will most probably be done offsite at the garage. The impact is rated low.

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 low.

Very limited mining is taking place on the other mine areas and the sites did not become prone to illegal dumping, thus there will be no cumulative impact related to waste. At closure all the waste will be removed and the site will be rehabilitated.

Impact of waste on the environment

	CONSTRUCTION	WEIGHT	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Site Specific	1	Local	2	Site Specific	1	Site Specific	1
Duration	Short Term	1	Long Term	3	Medium Term	2	Short Term	1
Intensity	Low-Medium	3	Medium	4	Low-Medium	3	Low	2
Probability	Likely	3	Definite	4	Likely	3	Unlikely	1
Cumulative Impact	None		Low		Very Low		None	
Status	Negative		Negative		Negative		Slightly negative	
Confidence	High		High		High		High	
Significance	**Very Low**	**15**	**Moderate**	**36**	**Low**	**18**	**Insignificant**	**4**

VISUAL IMPACT AND AESTHETIC ACCEPTABILITY

The excavation area would have been visible from the landowner's house, but due to the high Blue Gum tree stand, the site is screen effectively. Due to the elevation of the site, the site is not visible from any public road.

The fact that the western area bordering the mine was previously 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 and whether the site is visible to the

public or not. 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, which will improve the current state of the area and must be seen as a positive.

During the construction and operational phase, 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. This impact will be temporary. Since the land displays a flat topography, the newly established depression with limited slope heights will be readily absorbed in the landscape.

At the plant area the infrastructure on site already exists and will not change the visual intrusion already experience by surrounding residence and passing road users and people has grown accustomed to this site however this does not permit the applicant not to take every possible action to mitigate the impact. Once mining cease, the rehabilitation of the crushing plant site will take place and the area will be dressed with topsoil and seeded.

Dust generation on the internal haul roads and crushing plant will be experienced, resulting in only a limited visual dust plume to hang in the air above the road, however the haul roads can be watered down which will lower the impact. The mining operation *per se* will liberate insignificant dust volumes into the air and the visual impact is rated of low significance.

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

Figure 25: Northern view of the site

Figure 26 Eastern View of the site

Figure 27 Southern view of the site

Figure 28 Western view of the site

Figure 29: Both pictures were taken from the R367 and it is clear that the process area is vaguely visible, as this picture was taken while the process area is in operation with crushing plant and stockpiles.

The cumulative impact will only increase if the new mine site is not rehabilitated, thus obviously increasing the area disturbed. Once the site is rehabilitated the area will be have a grass cover and be readily absorbed into the surrounds. Thus the cumulative impact is rated low.

Visual Impact

	CONSTRUCTION	WEIGHT	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Site Specific	1	Local	2	Local	2	Site Specific	1
Duration	Short Term	1	Medium Term	2	Short Term	1	Short Term	1
Intensity	Low	2	Low-Medium	3	Low	2	Very Low	1
Probability	Likely	3	Likely	3	Probable	2	Unlikely	1
Cumulative Impact	Very Low		Low-Moderate		Low		None	
Status	Negative		Negative		Negative		Negative	
Confidence	High		High		High		High	
Significance	**Very Low**	**12**	**Low**	**21**	**Very Low**	**10**	**Insignificant**	**3**

TRANSPORT IMPACT

The existing access road from the R367 north of the mining area will be used. The impact on this road would remain as experienced in the past, due to fact that traffic volumes will more or less remain the same since this road is already being made use of by other mining concerns. Should it be needed, material from the mine could be used for maintenance of the access road and a wearing course of at least 30cm thick will be placed. Once mining is terminated, the access road will be retained for future use.

The R367 is a national tar road with double lane and shoulders and would be use to cart material to the relevant markets. The quality of the road is in a good status since there are no signs of potholes and corrugated surface and edge breaking. Safety risks for motorist would not increase but remain the same, since the proposed development will just be a continuation of existing mining activities previously taking place by other applicants. Cyclists and pedestrians will experience a similar risk and truck drivers will be sensitized on the matter and provided with the necessary transport training. This road is a major service road to the suburbs of Uitenhage and Despacth and is being used as all purpose roads and has been built for this purpose. Farmers and businesses also use the road to cart merchandise to the relevant offset points and into town. It is understood that heavy vehicles will slow down vehicles on these roads but since they are relatively short and show low traffic counts, the impact would be limited. Line of sight entering into the R367 to the west and east is good. Drivers

will, nevertheless be sensitized on safety procedures. The necessary heavy vehicle signage must be erected on both sides of the R367 near the access point, as per the specifications of the District Roads Engineer. During periods of high hauling rates, a flagman should secure the access.

The upgrading and maintenance of the R367 road rest solely with the District Road Engineer (DRE) for the western region. The impact on the road structure of the R367 road is rated low-moderate considering the contribution to the overall freight (cumulative to neighboring quarries) that is hauled on this road. 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. As already indicated, road safety for motorists is of importance and truck drivers will be informed accordingly and be sensitized towards displaying proper road etiquette.

Development of the quarry will not result in increased safety risks and traffic impact since this will mostly be a continuation of an existing concern; the impact is therefore rated low with mitigation.

Impact on Traffic

	CONSTRUCTION	**WEIGHT**	**OPERATIONAL (no mitigation)**	**WEIGHT**	**OPERATIONAL (with mitigation)**	**WEIGHT**	**CLOSURE**	**WEIGHT**
Extent	Regional	2	Sub Regional	3	Sub Regional	3	Site Specific	1
Duration	Short Term	1	Short Term	1	Short Term	1	Short Term	1
Intensity	Low-Medium	3	Medium	4	Low-Medium	3	Low	2
Probability	Likely	3	Likely	3	Likely	3	Unlikely	1
Cumulative Impact	None		Low-Moderate		Low		None	
Status	Positive		Negative		Negative		Negative	
Confidence	High		High		High		High	
Significance	**Low**	**18**	**Low Moderate**	**28**	**Low**	**21**	**Insignificant**	**4**

SOCIO -ECONOMIC IMPACT

The quarry will play a low-moderate role in the development of the Nelson Mandela Bay Metro's infrastructure. Shortage of sand is encountered due to limited reserves at existing commercial concerns hence the development of the quarry will be of value to the building sector. In addition, the quarry will generate permanent and casual work for a number of people and must be seen as a positive contributor to upliftment of inhabitants of the Metro. Establishing the concern will also result in certain downstream employment and other spin-offs in the building industry. During the construction phase a few additional workers will be employed to build the bund walls which will be a very small positive impact, since unemployment is high in the area.

The establishment of the concern will have limited impact on surrounding agricultural activities. It potentially could pose some social impacts on residents in terms of safety and security issues, limited air pollution in the form of dust & noise as well as visual impact especially during periods of high winds but with the mitigation measures described elsewhere, these impacts could be reduced to acceptable levels and also baring in mind that immediate residents rents is the land owner who owns one of the quarries and are well acquainted with the mining activities. 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

	CONSTRUCTION	**WEIGHT**	**OPERATIONAL (no mitigation)**	**WEIGHT**	**OPERATIONAL (with mitigation)**	**WEIGHT**	**CLOSURE**	**WEIGHT**
Extent	Local	2	Local	2	Local	2	Local	2
Duration	Short Term	1	Short Term	1	Short Term	1	Long Term	3
Intensity	Very Low	1	Very Low	1	Low	2	Low	2
Probability	Likely	3	Definite	4	Definite	4	Definite	4
Cumulative Impact	Very Low		Low		Low-Medium		Very Low	
Status	**Positive** (economic attributes outweigh the negative social impacts)		**Positive** (economic attributes outweigh the negative social impacts		**Positive** (economic attributes outweigh the negative social impacts		Negative (Loss of jobs and income and less spin-offs)	

Confidence	High		High		High		High	
Significance	**Very Low**	**12**	**Very Low**	**12**	**Low**	**20**	**Moderate**	**28**

HERITAGE RESOURCES

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.

At the site there is no known natural heritage or cultural sites close to the study area. No areas of social, cultural or historic value were identified onsite and the impact is rated insignificant in this regard. Also, since mining will be done in a fluvial environment; a system which reworks itself on a regular basis, it would not be necessary to complete a heritage impact assessment. This assumption is based on the fact that no important material or sites were observed during mining of riverbed material upstream and downstream.

Thus, during the construction phase no activity will cause any impact on the heritage resources due to the reasons stated above and the impact is rated insignificant and there will be no cumulative impacts.

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. Dr. Binneman at the Albany Museum in Grahamstown and SAHRA office in East London will be contacted immediately if any object of importance is observed and all operations would be suspended immediately.

Impact on Archaeological and Cultural Resources

	CONSTRUCTION	**WEIGHT**	**OPERATIONAL (no mitigation)**	**WEIGHT**	**OPERATIONAL (with mitigation)**	**WEIGHT**	**CLOSURE**	**WEIGHT**
Extent	Sub Regional	3	Sub Regional	3	Sub Regional	3	Site Specific	1
Duration	Short Term	1	Short Term	1	Short Term	1	Short Term	1

Intensity	Very Low	1	Low-Medium	3	Low	2	Very Low	1
Probability	Unlikely	1	Probable	2	Unlikely	1	Unlikely	1
Cumulative Impact	None		None		None		None	
Status	Negative		Negative		Negative		Negative	
Confidence	High		High		High		High	
Significance	**Insignificant**	**5**	**Very Low**	**14**	**Insignificant**	**6**	**Insignificant**	**3**

POTENTIAL IMPACTS ON COMMUNITIES, INDIVIDUALS OR COMPETING BUSINESSES

As previously discussed, the impacts the community will experience due to this mining venture will be limited to those listed under the heading “Socio-Economic”. No neighbor lodge any concern and the landowner gave consent for the proposed project.

In terms of competing land uses in close proximity: the immediate other mine areas are either closed or in the final development stages and the new mine operation will take over their clientele. Further from the site, downstream is another mining company, Mr Sandman, which will provide direct competition for this application. However, Mr Sandman, already has an established clientele, thus there is no risk that this new mining venture will cause the closing of Mr Sandman and market competition is healthy to ensure that monopoly over the industry is not created. Through establishing this concern, will grant the opportunity for the industry and other businesses in the area to have access to affordable gravel and sand and thus help grow the local economy.

This mining concern will not impact any land use, as mining is temporary and after rehabilitation will be restored to a grazing unit, thus the landowner will be able to use this small portion of land for grazing again after mining.

This site also host secondary vegetation with no vegetation of medical concern that local communities might benefit from.

REMEDIAL MEASURES: TOPOGRAPHY

- The impact on the topography of worked out areas will be remedied by means of profiling and stabilizing production faces.
- Mining shall not progress beyond the approved mine area.
- The production faces to be profiled to a minimum slope of 1:3 in such a way that sharp angles are prevented but that flowing curves are formed instead that blend with the surrounding landscape.
- Each area shall be fully profiled within 14 days after mining in a particular phase ceased and will be fully vegetated within 9 months.
- 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.
- The depth of the excavation will be restricted to 2m to ensure adequate sponge capacity.
- The buffer zones of 100m and 50m respectively between the excavation and the Swartkops River on the northern border and the Despatch Stormwater drainage line to the south of the mine area will be maintained.
- No stockpiles shall remain at closure.
- Stockpiles will be kept as small as possible and must be inside the mine area.
- The post rehabilitation topography will result in gentle overland flow with no evident erosion processes that could scar the land and cause changes to the topography.

REMEDIAL MEASURES: GEOLOGY

- 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.
- No activities will be permitted outside the approved mine area and demarcated phase.
- All oversize stones will be returned to the excavation or used in profiling the production faces. In such case this material will be neatly stacked, covered with sand and gravel, compacted and vegetated if possible.
- Quarry development will take place with final rehabilitation objectives in mind.

REMEDIAL MEASURES: SOILS

- The plant area will not be enlarged.

- All in situ soils (at least 30cm) at the excavation area will be removed and conserved during future development stages and will not be sold. It will be stored along the eastern perimeter of each phase and it will be piled to a maximum height of 1m. 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 areas.
- 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.
- Removed topsoil will not be mixed with sub-soils.
- If topsoil from other development areas is sourced it must come from areas with zero alien plant infestation.
- Topsoil will be reintroduced to disturbed areas, keyed-in slightly with lower horizons by ripping it lightly along the contour and fertilized as follow:
    - Initially at a rate of 200kg 2:3:2 (22) Zn and 150kg 4:1:1 per hectare before seeding.
    - 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.
    - All vegetation removed from the excavation area will be stockpiled, protected against wind erosion and re-introduced as mulch to seeded areas.
    - 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.
- In the event that the applicant does not apply for a mining right – then the plant area must be rehabilitated:
    - Topsoil at the plant area can be fertilized as follow: initially at a rate of 200kg 2:3:2 (22) Zn and 150kg 4:1:1 per hectare before seeding.
    - 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.
- If needed soils will be analysed by a competent laboratory and the nutrient requirements determined.
- Vegetation within the buffer zones will not be disturbed to curb erosion processes on site.
- All erosion gullies on the faces and floor, if any, would immediately be filled in and compacted and erosion-monitoring programme will be implemented as a cradle to grave process.

- Storm water, if any, shall not drain freely from the excavation but shall be retained in the excavation to reduce erosion potential.
- 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.
- Once the alluvium 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 from west to east as per the mine plan provided.
- The excavation area will be developed and rehabilitated in 3 phases as proposed in the development plan to reduce the extent of the disturbed area and prevent erosion of the fluvial environment. The buffer zones of 100m and 50m respectively between the excavation and the Swartkops River on the northern border and the Despatch Storm water drainage line to the south of the mine will be maintained.
- Only approved 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, alluvium could be irrigated using water obtained from the river.
- 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.
- Oil and lubricants will 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.
- All emergency vehicle maintenance and servicing will be done on a concrete pad provided with a sump.
- 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.
- Spills will be prevented by properly maintaining vehicles and restrict servicing of vehicles to the offsite workshop.
- No other hazardous chemicals will be used on site without authorization granted by the DMR and other regulating authorities.
- Emergency repairs will be done over drip pans.
- Major maintenance of vehicles will be done at the offsite workshop.
- The toilets will be maintained according to Municipal bylaws or specifications issued by a local Health Inspector. Drains must be monitored to ensure that it does not overflow. Can be replaced with chemical toilets.
- For emergency cases, a receptacle will be provided for used filters and oil contaminated vehicle parts and will be respectively dispose of at a registered waste facility and scrap yard immediately.
- The diesel tank of the generator will be leak-free and the generator and fuel receptacle will be placed inside a steel tray that will provided for 110% capacity of volume stored.

REMEDIAL MEASURES: LAND USE

- 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 areas 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 will be done concurrently with mining and in phases as proposed by the mine plan as soon as the floor has been lowered by the proposed 2 meters. Progress will be monitored and audited against proposed rehabilitation schedule to improve land use options and land capability.
- If the applicant fails to apply for a mining right the plant area will be rehabilitated and seeded as previously discussed.
- 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.
- At closure, all the infrastructure will be removed and the internal haul road will be rehabilitated.

It will not be possible to restore the original riverine vegetation. A negative factor is that the mine is abutted by heavily infested areas that could act as a seed bank for infestation of newly rehabilitated areas. With a vigorous re-vegetation programme, certain species might re-colonize rehabilitated areas and the specie composition and diversity will slowly improve but will never revert back to the original status again. The success rate of re-vegetation will however, depends on concurrent rehabilitation and post closure eradication 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.
- 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 indigenous plant species that can be transplanted will be removed from mine areas, potted and be used during the rehabilitation phase.
- Only the approved haul road will be used and vehicles will not traverse virgin land or in the buffer areas between the river, the storm water drainage line and mine.

Plant Area:

- Topsoil will be reintroduced to the site as described under the heading "Soil". Preparation for re-establishing vegetation will entail the removal of all containers, waste, concrete floors, equipment and stockpiles, the ripping and preparing of soil for seeding.
- The process area be reclaimed to a grass cover supplemented with indigenous trees through infill planting and will be re-vegetated with a grass cover by seeding with: *Eragrostis curvula*
  Themeda trianda *Sporobolus africanus* *Digitaria eriantha*
  Panicum maximum
- None of these grasses poses any threat of proliferation. Seeding would take place in the spring from August to October and in autumn from March to middle April at an application rate of 3-5kg/ha of each specie mentioned be handled.
- Seeds 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.
- Juvenile alien trees will be pulled and removed to the process area, onto an area cleared for crop production where it will be burnt when it is dry.

Excavation Area:

- All slope areas will be properly stabilized through compaction to ensure proper establishment of riverine vegetation.
- The mining area will be reclaimed to a grass cover supplemented with indigenous trees through infill planting. Disturbed areas will be re-vegetated with a grass cover by seeding with:

  Eragrostis curvula Themeda trianda Sporobolus africanus
  Digitaria eriantha Panicum maximum
- None of these grasses poses any threat of proliferation. Seeding would take place in the spring from August to October and in autumn from March to middle April at an application rate of 3-5kg/ha of each specie mentioned. It could also path the way for reintroduction of some of the other riverine species.
- 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.
- Juvenile alien trees will be pulled and removed to the southern embankment 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 herbicides may be used in the fluvial environment. Specific attention will be directed to Sesbania pudicae Acacia mearnsii, Acacia longifolia and Blue gum. No 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 on the floodplains 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 river.
- Should re-vegetation fail due to climatic conditions it will be repeated the following growing season. If major flood events reworked the alluvial of the mining area it will be reseeded.

REMEDIAL MEASURES: FAUNA

- 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.
- Guaze or a fine grid structure must be placed in front of the inlet pipe and regularly checked and cleaned up.
- 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 herpentofauna 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.
- Pesticides and other poisons will not be used in the riverine environment.
- Mining will not impact on any open surface water area and the restricted setback lines will be maintained.
- No fishing will be done in the abutting river.

REMEDIAL MEASURES: WATER

- The toilets will be maintained to Municipal specification, will be inspected on a regular basis and be located within the process area.
- Removal of the irreducible solids that settle and gradually fill the tank must be removed on a regular basis and disposed of at a register waste treating facility. The tank must be inspected on a weekly basis.
- The silt dams already constructed in the process area must be scooped out regularly and the fines incorporated in the topsoil and used during rehabilitation. The dams will reflect profiled and vegetated sides. 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 clean spill must continue to be directed to the secondary wetland north of the site. The spill may never pour into the Swartkops river directly.
- The following water efficiency practices will be applicable regarding the settling ponds:

- The settling ponds will be regularly inspected. A deeper, narrower pond will lose less water to evaporation.
- Remove settling sludge routinely.
- Regularly inspect earthen water containment structures for leaks and degradation and repair failing structures.

- At closure the settling ponds will be allowed to dry up, all sludge will be removed and used in the rehabilitation of the process area and the ponds can be filled up with gravel material, covered with topsoil and rehabilitated.
- Water dust suppression and re-vegetation process will be supplied by means of a water tanker to be filled from the Swartkops River.
- Drinking water will be brought to site daily.
- 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, only at the process area.
- The excavation area will not be free draining to reduce the impact on the stream environment to the minimum.
- Mining will be restricted to the proposed depth and footprint.
- No foreign or unapproved material/substance will be dumped or stored within the footprint of the mine or office areas.
- Stockpiles will be stored at the process area and will not be placed outside the mine area or within the buffer zones.
- Vehicles will not use alternative roads or damage vegetation outside the approved mine boundary.
- Waste will be contained in receptacles stationed at appropriate areas within the process area and be removed from the quarry area on a weekly basis or whenever necessary. No household or industrial waste will be burnt or buried on the site.
- Refueling of vehicles will be done offsite.
- Only emergency repairs will take place within the mining area and must be done over a drip pan.
- Vehicles/equipment shall be maintained to a high standard and shall not display any major leaks.
- Any contaminated spares, oil filters and gaskets will be placed in a suitable receptacle and immediately removed from the property to an approved facility.
- If spills do occur, the affected soil will be removed to an approved waste site. Super absorbing material such as Peatsorb or Spillsorb or alternatively sawdust will be kept onsite and used to contain any potential spills.
- In case of large, critical spills the Departments of Water Affairs and DMR 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.

- 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'.

REMEDIAL MEASURES: AIR QUALITY

- Vehicles to be maintained properly and fitted with standard exhaust systems and will not be left idling unnecessary.
- Wearing course of haul roads in process area will be upgraded when necessary to reduce dust generation.
- Gravel haul roads, if necessary will be dampened whenever dust generation reach unacceptable levels.
- An irrigation system will be installed in the process area to curb dust generation with specific emphasis on the areas in-between aggregate stockpiles and the crusher dust stockpile.
- 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.
- 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.
- 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 northern boundary of the site and removed regularly to the Uitenhage Municipal waste site. The waste stream will be limited and be removed from site weekly to prevent odours from occurring.
- 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 toilets shall be regularly serviced as per Municipal guidelines.
- Should the service road liberate unacceptable dust volumes into the air a sprinkler system will be erected along applicable sections of the road.
- No stockpiles will be retained 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.

REMEDIAL MEASURES: NOISE

- Mining will progress as per mine plan and concurrent rehabilitation followed.
- 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.
- Normal working hours will apply for weekdays (7am-6pm in summer and 7.30am-5pm in winter) and Saturdays (8am-1pm) if necessary (will liaise with property owners and residents) – No work on holidays or Sundays.
- Workforce and contractors will be properly managed in terms of noise generation and be informed on acceptable behavior.
- Truck drivers will be tasked to use exhaust brakes sparingly.
- No campsite will be established in the mine area.
- Protective ear devices will be provided to all operators of machinery/vehicles generating noise above 50dB at source.
- Vegetation screens outside the mine area will not be removed.
- This potential impact should be addressed in an environmental awareness programme.

REMEDIAL MEASURES: WASTE

- 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 Uitenhage 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 the Koedoeskloof 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 slap 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.
- The toilets will be maintained according to Municipal specification and as discussed under the heading “Water”. If it produces foul odors, it shall be remedied according to available guidelines. Where necessary components of it will be regularly disinfected. If there is any doubt on the impact of the system on surface or groundwater, water analysis shall be performed.
- 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.
- No day to day repairs or servicing of vehicles or equipment will take place on site.
- Effluent from the ponds 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 sand, gravel and stone 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.

REMEDIAL MEASURES: VISUAL IMPACT

- No vegetation clearing will take place outside the proposed mine area during the mining operation.
- Reduce visual impact through proper re-vegetation and retaining tree screens.

- 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 rounded off through a cut and fill action to create a minimum slope of 1:3.
- 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.
- 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.

REMEDIAL MEASURES: TRAFFIC IMPACT

- 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 R367 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.
- 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. 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 R367 near the entrance point of the access road to the R367.
- If poor visibility or slow access of vehicles onto the R367 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.

- 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.
- 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.

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.

Figure 30: Aerial extent of the main mining activities during the construction and operational phases.

ANALYSIS OF REHABILITATION COSTS: PRIVATE RATES

GENERAL

Tendering process & advertisement = **R4000**
Transport of equipment = **R3000**
Supervision fees and reporting = **R7000**
Aftercare – erosion, alien eradication, seeding/planting and monitoring = **R15 000**
Closure documents = **R5000**
Contingencies = **R5000**

Sub-Total = R39 000

MINE AREA (PHASE 1 – SIMILAR AMOUNTS WOULD BE REQUIRED FOR EACH ADDITIONAL PHASE)

Cut and fill of production faces (1:3) 800m^3 @ R7/ m^3 = **R5600**
Profiling of quarry floor = **R2000**
Seeding and fertilising of 0,5ha –@ R3000 per ha = **R1500**
Removal of waste, scrap metal and redundant equipment etc = **R1000**
Erosion control measures = **R5 000**

Infill and erosion control if floods cause damage – **R10 000**.

Spreading of oversize material on riverbed **= R1000**

Sub-Total = R26 100

Total = R65 100

A financial guarantee to the value of R30 000 will be made available to the DMR before approval. It is proposed that the applicant submit two additional payments of R18 000 each before commencing with ensuing phases. Should the applicant rehabilitate each phase concurrently with mining it is proposed that the additional payments are reduced to R10 000 each.

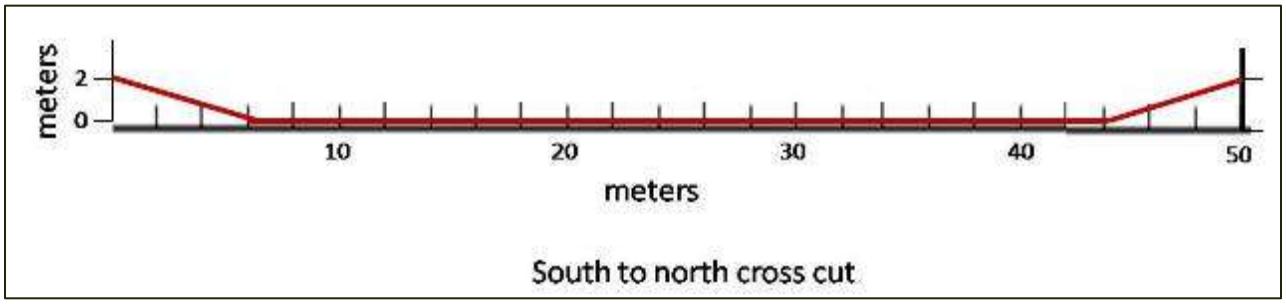


Figure 31: Final site profile at closure

Closure objections can be viewed under the heading “Closure Objections.”

CLOSURE COSTS

Considering that the mining area could be prone to severe scouring during extreme flows the mine area environment could be totally changed and post closure maintenance could be required. 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 = **R8000**
Infill of any erosion gullies or collapse of bar walls – **R15000**
Seeding, fertilizer van infill planting – **R5000**

Total = R28 000

UNDERTAKING: IMPACT ASSESSMENT

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

Signed on this day_____ of _____ 20_____

_____

Signature of applicant

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. Alien trees must be prevented from establishing in the mine area.
3. Surface water quality may not be compromised and mining must not result in a change in flow dynamics and erosion of the mining area.
4. 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 building industry and economic growth of the Metro. Since the quarry will be financially sustainable, it would provide ample finances for the rehabilitation process.

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 will 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 in June and December for evaluation and acceptance.
- 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.
- 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 production faces are profiled and stabilized, vegetated and fertilised and that no erosion or dumping of waste on unauthorised areas are taking place on site.
- That vegetation cover and species diversity is adequate.
- All plants that can be safely transplanted will be removed to disturbed areas.
- Transplanted plants will be irrigated on a regular basis.
- 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.
- Dust control on the roads at the quarry is effective to limit air pollution.
- Ensure that river gravels are not polluted with hydrocarbons.
- 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

1. Profiling of Phase 1 – continuous with mining with and completed before commencement of Phase 2.
2. The same sequence will apply to ensuing Phases.
3. Spreading of oversize boulders, if any – daily
4. Re-vegetation of Phase 1 must be completed before commencement of Phase 3. Re-vegetation of Phase 3 to be completed within 6 months after completion of mining.
5. Submit a closure plan & risk assessment three months before mining operations are to cease.
6. 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 and September for duration of mining, rehabilitation and aftercare phases, or alternatively the organic rich water from the Swartkops River can be used as a fertilizer during irrigation.

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 proposed buffer zones of approximately 100m and 50m respectively between the excavation and the Swartkops River on the northern border and the Despatch Storm water Drainage line to the south of the mine will be maintained to prevent the mining area being flooded during high flows.
- area between the excavation and river bank will be maintained at all times and mining will not impact on the structural integrity thereof that could facilitate the collapse thereof during high flows or impact on water quality of the stream.

- The mine area will be rehabilitated back to a sustainable riverine environment. The ecology of the area will be improved by establishing scrubs and trees (thicket) within the area and thereby creating an improved niche for animal species.
- Production faces of the quarry will be profiled to 1: 3 slopes by cut & fill method with the top edge rounded off to create a flowing landscape.
- Faces will be profiled in such a manner that soft lines are created and sharp corners are prevented in order to blend the quarry with surrounding fluvial landscape.
- 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 fluvial 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.
- Some animals will be able to return safely to the site
- The mining sites will not become prone to unauthorised dumping.
- The proposed land-use will be achieved within 1 year after rehabilitation has been completed.
- 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 or replant shrubs and trees. – 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 AESTHETIC ACCEPTABILITY

The quarry area will resemble a depression in the floodplain with 2m high faces reflecting gentle gradients. The area will display a heterogeneous grassland but with a substantial thicket component, which will align the site with the surrounds. It is anticipated that floods will not breach the mine area and that it will remain stable. The anticipated change in landform will after re-vegetation not be clearly noticeable and from an aesthetic point of view the landscape will have a higher aesthetic quality than what is currently the case. With the rehabilitation approach to be adopted, the objective is to reach 60% of remaining indigenous species diversity within 3 years and 80% within 5 years time.

If rehabilitation is not afforded adequate time and finances the above assessment will change dramatically and the area will revert to a heavily invested area reflecting poor quality landscape and extensive erosion.

PUBLIC PARTICIPATION

The setting of the land concerned is rural and surrounded on by semi-transformed land divided into small farms belonging to private owners. 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 16 March 2012 the following IAP's were 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 31 March 2012:
    - Environmental Services: Nelson Mandela Bay Municipality (Local government)
    - Estate: D.G. Benecke, Estate Administrator: P. Kemp (the landowner)
    - Mr. J.J. Slabbert (neighbor)
    - Mr. L. van Schalkwyk (neighbor)
    - Tondré Trust (neighbor)
    - Department of Roads & Public Works (Mr. M. Keyser)
    - Department of Rural Development and Land Reform (Mr. H.S. Prinsloo & Ms. F.N. Klaas)
- Mr Keyser responded and indicated that the correct traffic warning signs must be erected at the entrance of the site to the R367 road according to the SARTSM specifications, but the Department does not object to the proposed project.
- The landowner also responded and indicated that they do not object to the proposed development.
- None of the other consulted parties gave response.
- In addition, the comments raised by the Department of Roads were captured in this EMP document and specification measures stipulated to ensure that the applicant complies with the condition.
- 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.

It is the responsibility of the applicant to conduct basic training with the employees describing the listed environmental impacts and the mitigation measures to be followed prior to commencing with mining.

The applicant may chose to employ an independent consultant to conduct such training. Training will be done onsite. As a minimum the Environmental Awareness Plan as a Basic Level 1 Training must address the following:

- The need for training
- General discussion on what is the environment
- Why must the environment be protected
- The different components of mining, applicable to this application
- Types of environmental impacts
- Mitigation measures and Basic Rules to comply with
- Fines and Penalties
- Questions and Answers

It is important that the Environmental Awareness Plan be applicable to the specific mining operation and the level of understanding of the employee. Open communication between the employees and the manager must be establish and in the event of an environment emergency, the applicant must have process steps in place to ensure that the situation is contained and the correct procedure is followed to ensure that pollution does not occur.

Mitigation measures listed in this document must be used as a guideline to conduct such training and to establish the rules for operation. After such training, each employee may receive a certificate of completing the training. The applicant may also have a check list available onsite to ensure that employees are constantly aware of the mitigation measures. As an incentive for good performance the applicant may also reward an employee for good housekeeping at the site.

CAPACITY OF APPLICANT TO MANAGE AND REHABILITATE

TECHNICAL COMPETENCY

Both permit applications on this site owned by Mr. Hurter and Mr. Benecke contracted Macrovest Quarries to supply earth moving equipment to mine their sites. All of the earth moving equipment is owned by Grant Ranger, one of the main partners of Macrovest Quarries and all technical support will be provided by the company. The trucks and mining equipment is stored at the crushing plant area and will continue to be utilized for the development of this application as well as the proposed mining right application. The equipment is in good working order and will comply with the provisions of the Mine Health & Safety Act.

Figure 32: Equipment owned by Mr Ranger

ECONOMIC SUSTAINABILITY AND FINANCIAL COMPETENCY

Mr. G Ranger is one of the main partners of the company Macrovest Quarries. As previously indicated, Macrovest Quarries applied for a prospecting area that covers a large portion south of the Swartkops River and the intent is to start mining as soon as possible, while gaining time to apply for the mining right application; thus the application was made for a mining permit in the interim. With the money that will be gained through this mining permit venture, more funds will be made available for the mining right application.

Mr Ranger is a stern business man and has sufficient financial backing to provide financial support for this permit application. He has also lent financial support to various other mining companies and is familiar with the mining industry. Please see Appendix A for a copy of his financial Income Statement.

An amount of R30 000 will be made available to cover initial rehabilitation costs, which will be sufficient to rehabilitate the mining site.

Provided that the proposed rehabilitation and financial guarantee schedule is followed, the Department of Mineral Resources would not be at risk in terms of outstanding rehabilitation.

The proposed concern has limited Health and Safety considerations and finances available are more than adequate to cover any such costs.

ENVIRONMENTAL COMPETENCY

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 they are familiar with the mining industry. Mr Ranger, who will be the mine manager, has in the past provided the technical support for other mining applicants and is familiar with the concurrent rehabilitation process that must be followed once material is extracted. He had gained sufficient knowledge and is able to outwork environmental instruction. He will also be able to be on site on a daily basis to supervise the mine workings.

The location of the site plays a big role to increase effortless rehabilitation since the site is located next to the Swartkops River, thus water for irrigation would be readily available if needed and the soil structure of floodplain areas normally favor re-establishment of vegetation. Thus re-vegetation of disturbed areas will be easily achieved by seeding the area.

In conclusion the environmental impacts associated with the proposed mining concern is restricted to limited silt transport, limited erosion on slopes, visual impact, loss of vegetation cover, loss of soil fertility and limited social impact in terms of hauling material on public roads. All of these fall within the scope of the applicant's capabilities to handle and deal with problems should they arise.

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.

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 his ability to manage the environment.

UNDERTAKING

I, Mr. G Ranger, the undersigned have studied and understand the contents of this document in it's 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)

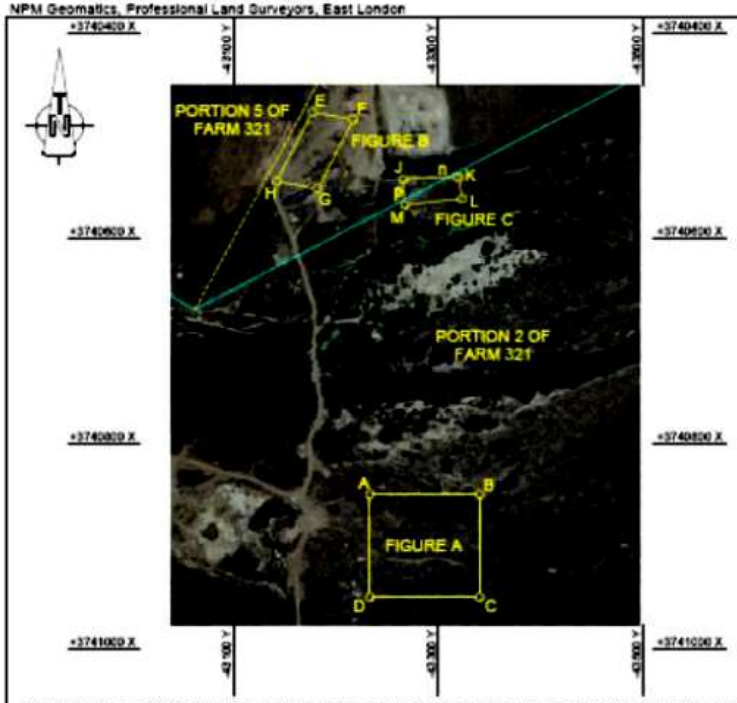
Signed at **Port Elizabeth** on this_____ day of _____ 20____.

…….

REGIONAL MANAGER

EASTERN CAPE

MINING PERMIT - I.T.O. ACT 28/2002
NPM Geomatics, Professional Land Surveyors, East London



SIDES Metres		ANGLES OF DIRECTION		CO-ORDINATES Y System WG 25° X		
		Constants		± 0,00	± 0,00	
FIGURE A						
AB	106,80	270 00 00	A	-43 233,20	-3 740 850,00	
BC	100,00	0 00 00	B	-43 340,00	-3 740 850,00	
CD	106,80	90 00 00	C	-43 340,00	-3 740 950,00	
DA	100,00	180 00 00	D	-43 233,20	-3 740 950,00	
FIGURE B						
EF	40,57	279 56 10	E	-43 177,16	-3 740 476,76	
FG	76,08	27 31 50	F	-43 217,12	-3 740 483,76	
GH	40,57	99 56 10	G	-43 181,96	-3 740 551,22	
HE	76,08	207 31 50	H	-43 141,99	-3 740 544,22	
FIGURE C						
JK	53,53	268 10 50	J	-43 265,80	-3 740 542,00	
KL	21,22	349 57 40	K	-43 319,30	-3 740 540,30	
LM	56,34	83 41 30	L	-43 323,00	-3 740 561,20	
MJ	25,43	177 17 40	M	-43 267,00	-3 740 567,40	

DEGREES MINUTES SECONDS WG25°		
	LAT	LONG
A	33 47 36.45981	25 28 00.62403
B	33 47 36.44408	25 28 04.77560
C	33 47 39.68959	25 28 04.79326
D	33 47 39.70532	25 28 00.64165
E	33 47 24.35448	25 27 58.37996
F	33 47 24.57580	25 27 59.93447
G	33 47 26.77039	25 27 58.57925
H	33 47 26.54907	25 27 57.02473
J	33 47 26.46882	25 28 01.83697
K	33 47 26.39577	25 28 03.91627
L	33 47 27.07354	25 28 04.06379
M	33 47 27.28301	25 28 01.88809

NOTES:
THE FIGURES J n p AND E F G H ARE SUBJECT TO A SERVITUDE AREA OVER PORTION 2 OF FARM FLORIDA No. 321 VIDE DIAGRAM No. 4960/1993

THE FIGURE A LETTERED A B C D REPRESENTS AN AREA OF LAND, IN THE EXTENT OF 1,0680 HECTARES (FOR MINIG PURPOSES)
THE FIGURE B LETTERED E F G H REPRESENTS AN AREA OF LAND, IN THE EXTENT OF 0,2942 HECTRES (FOR PLANT PURPOSES)
THE FIGURE C LETTERED J K L M REPRESENTS AN AREA OF LAND, IN THE EXTENT OF 0,1277 HECTARES (FOR SILT POND PURPOSES)
TOTAL EXTENT BEING 1,4899 HECTARES
SITUATED ON PORTION 2 OF FARM FLORIDA No.321 UITENHAGE
DISTRICT OF UITENHAGE EASTERN CAPE REGION,
IN RESPECT OF WHICH A MINING PERMIT HAS BEEN ISSUED TO
MACROVEST 104 PTY LTD I.D. No. 2004/006828/07
Situate in the Nelson Mandela Bay Metropolitan Municipality
Administrative District of Uitenhage
Province of the Eastern Cape
Scale: 1/4000

Surveyor .....
PLS No. C.J. DAVIES 0975
Date .....

Applicant .....
Date .....

OFFICE USE
REGIONAL MANAGER EASTERN CAPE
DATE

1 : 50 000 TOPO 3325CD

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 : Macrovest 104 (Pty) Ltd

Application number : EC 30/5/1/3/2/10028 MP

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

- Environmental Services: Nelson Mandela Bay Municipality
- Estate: D.G. Benecke, Estate Administrator: P. Kemp
- Mr. J.J. Slabbert
- Mr. L. van Schalkwyk
- Tondré Trust
- Department of Roads & Public Works (Mr. M. Keyser)
- Department of Rural Development and Land Reform (Mr. H.S. Prinsloo & Ms. F.N. Klaas)

2. Consultation documentation:

a. Consultation letter :

PUBLIC PARTICIPATION: MINING PERMIT APPLICATION FOR THE MINING OF FLUVIAL SAND, GRAVEL AND STONE ON PORTION 2 OF THE FARM FLORIDA 321, UITENHAGE

PREPARED FOR:

MARCOVEST 104 (PTY) LTD

401 CAPE ROAD

COTSWORLD

6045

March 2012

Tel. & Fax: 041-3672049 · Cell 0824140464 · 4 Josephine Avenue Lorraine 6070

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

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

Interested and Affected Party Date: 16 March 2012

MINING PERMIT APPLICATION FOR FLUVIAL SAND, GRAVEL AND STONE MINING ON PORTION 2 OF THE FARM FLORIDA 321, UITENHAGE. APPLICANT: MACROVEST 104 (PTY) LTD

You are hereby informed that Macrovest 104 (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 2 March 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 Macrovest 104 (Pty) Ltd to mine 1.5Ha of Mr. Benecke's property and thus as a neighbour, 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 comments on the application as well as environmental comments are required in writing not later than 31 March 2012.

Way Forward

1. The outcome of this consultation process will be submitted to the DMR for decision making.
2. Thereafter, an EIA & EMP will be submitted to the DMR and other affected Government Departments for evaluation and decision making.
3. 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.
4. 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.
5. Mining activities will then be conducted in accordance with the approved mining programme and EMP.
6. Annual environmental performance assessments will be conducted and the outcome submitted to the DMR for evaluation and any appropriate decision making.

7. 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: ON PORTION 2 OF THE FARM FLORIDA 321, UITENHAGE

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 Macrovest 104 (Pty) Ltd mining venture.

I, _____ confirm that I have received the Public Consultation Notice from Macrovest 104 (Pty) Ltd regarding sand, gravel and stone mining on Portion 2 of the Farm Florida 321, Uitenhage.

_____ _____ _____
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

Macrovest 104 (Pty) Ltd Reg. Nr. 2004/006828/07

401 Cape Road

COTSWORLD

6045

Tel 041 992 4239 Fax 041 992 7538

PARTICULARS OF LANDOWNER

Mr. Benecke

Florida Plaas

P O Box 17

DESPATCH

6219

PLAN SHOWING THE PROPERTY AND MINING AREA CONCERNED.

The proposed quarry is situated in the magisterial district of Uitenhage. The quarry is situated approximately 600m north of Despatch city centre and a 150m north of the landowner, Mr Benecke's residence and 900m south of the R367. The site is situated south of the Swartkops River in a semi-rural area surrounded by small farms/plots and the outskirt residential area of Despatch.

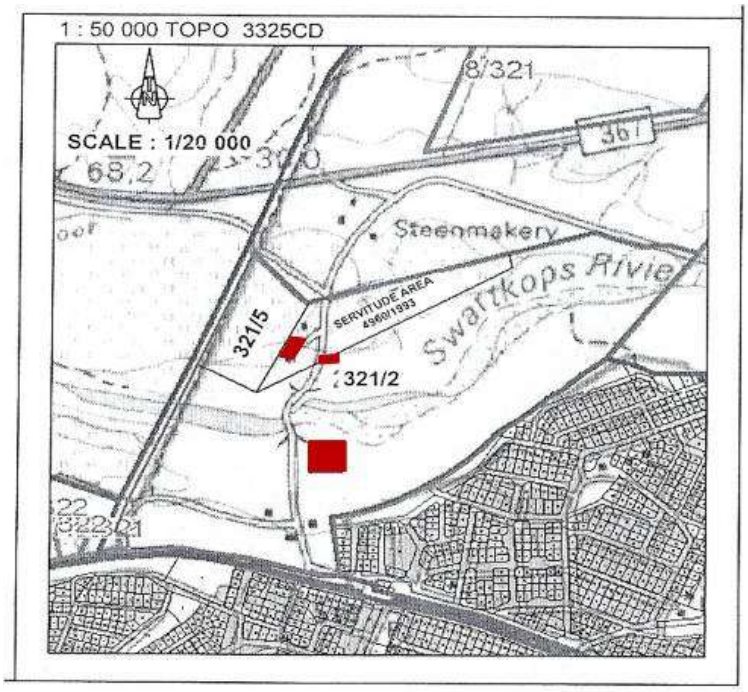


Figure 33: Site locality – just north of Despacth

Figure 34: Mining Permit (MP) area and surrounds – not to scale

EXTENT OF MINING AREA

The mining site is 1.5 ha in extent.

DEPTH OF MINE

Between 1-2m.

LIFE OF MINE

Two years with possibility to renew permit three times for one year each if market demand or operation challenges prevent the concern to operate at maximum capacity.

PICTORIAL RECORD

Vegetation at site and site appearance



Plant area


First and second settling ponds

CONSTRUCTION PHASE

No accommodation facilities for personnel are required since they will commute to work every day. No major repairs or servicing would take place onsite and only minor repair work will be performed onsite. For this purpose a container is available onsite and will serve as workshop and storage facility. A second container will serve also serve as office and general amenities facility. A flush toilet has already been established. Parking area for vehicles has already been demarcated, as is the case with other infrastructure, immediately north of the plant. The ramp and plant are already established onsite and are supported by relevant stockpiles areas. No earthworks are therefore required in the plant and stockpile area.

A power point and transformer have been installed in the plant area as part of previous mining operations. The plant and stockpile area is producing a significant amount of silt and in order to preventing pollution of the Swartkops River, silt ponds have been established south-east of the plant area as part of the previous mine ventures. Material will be sold by volume during the permit period hence no weighbridge will be installed.

The mine area disposes of no topsoil or overburden and only a very limited vegetation cover, which will be removed as mining progresses. Extraction can therefore commence immediately upon granting of the permit.

Access to the R367 is via a gravel Bell-mouth, which is in relative good condition but might require upgrading during the mining permit stage. Since material is generally damp when extracted, dust generation will not be a major consideration. Stockpile areas could generate more dust and for this purpose a water cart is available to dampen down these areas. The access road is relatively good but might require upgrading during the mining permit stage.

Water abstraction equipment is already in place since previous mining ventures and will supply the crusher and washing plant with water. The crusher and washing plant is powered by through the local Eskom grid.

Since all equipment is mobile it will preclude the placement of concrete surfaces or foundations. Waste disposal will be facilitated through medium size skips and dust bins, that are already in place at the plant and office area and will be removed by the applicant on a regular basis to any of the approved waste facilities in the area.

MINING METHODOLOGY

The total mine area comprises approximately 1, 48 ha of which 1,1ha will be mined. The silt ponds will cover approximately 0,1ha, the plant 0,15ha and the office and stockpile area approximately 0,25ha.

The quarry will be developed by creating a box cut along the A-D boundary to a depth of approximately 2m with an excavator. This cut will be extended to the east until the 1,1ha area has been mined out. The quarry will dispose of a flat quarry floor. The quarry will be developed in two phases as per the attached mine plan, to fast track rehabilitation. The sides of the excavation will be profiled through cut & fill method to slopes of approximately 18 degrees.

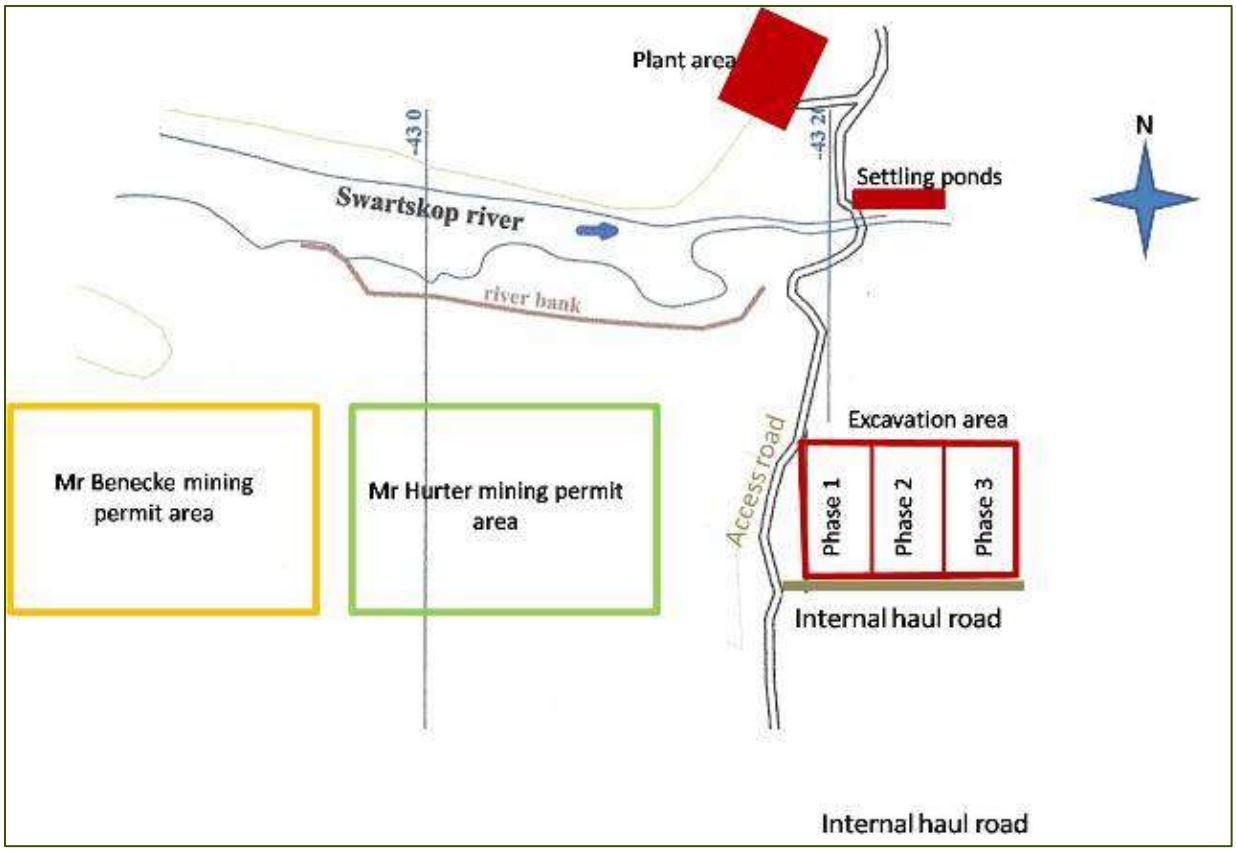
Mining will not intersect the water table and the floor will not become inundated during periods of low flow but water will percolate into the excavation during moderate to heavy rain events, but would impose no different safety impact than the section of watercourse located to the north-west. During drier periods, the water table level will decrease and the excavation will dry out to some extent. All runoff and silt will be retained in the excavation.

Extracted alluvium will be removed from the quarry area with a dumper truck and hauled to the crushing plant, tipped into the holding bin of the primary crusher and crushed. Material is then directed to a screen from where all sand is directed to the washing plant. Partially crushed aggregate will be sent through the secondary/cone crusher and crushed to specification in various road construction or building products. Aggregate and sand will be sold from the stockpiles to construction companies and no carting of products will be done by the applicant.

Approximately 5-7 employees will be based at the concern during the day whilst a security guard will remain onsite during the night.

Process water will be obtained from the Swartkops River.

All equipment required for the mining process will be provided by M.C. & G. Ranger.



Mine layout and development plan

PUBLIC PARTICIPATION: MINING PERMIT APPLICATION FOR THE MINING OF FLUVIAL SAND, GRAVEL AND STONE ON PORTION 2 OF THE FARM FLORIDA 321, UITENHAGE

PREPARED FOR:

MARCOVEST 104 (PTY) LTD

401 CAPE ROAD

COTSWORLD

6045

March 2012

Tel. & Fax: 041-3672049 · Cell 0824140464 · 4 Josephine Avenue Lorraine 6070

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

Stellenryck Environmental Solutions

4 Josephine Ave Lorraine 6070

Mobile: 082 4140 464
Office: 041-367 2049

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

Interested and Affected Party

Date: 26 March 2012

MINING PERMIT APPLICATION FOR FLUVIAL SAND, GRAVEL AND STONE MINING ON PORTION 2 OF THE FARM FLORIDA 321, UITENHAGE. APPLICANT: MACROVEST 104 (PTY) LTD

Our previous registered correspondence to the above effect has reference.

You are hereby informed that Macrovest 104 (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 2 March 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 Macrovest 104 (Pty) Ltd to mine 1.5Ha of Mr. Benecke's property and thus as a neighbour, 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, you are reminded that your comments on the application *per se* must be submitted in writing not later than 31 March 2012. Your comments on environmental matters must be submitted not later than 4 April 2012.

Way Forward

8. The outcome of this consultation process will be submitted to the DMR for decision making.
9. Thereafter, an EIA & EMP will be submitted to the DMR and other affected Government Departments for evaluation and decision making.
10. If the application is found acceptable by the DMR, a financial guarantee will be submitted to the DMR to cover costs related to potential environmental disturbances that may be caused by invasive mining activities.
11. 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.

12. Mining activities will then be conducted in accordance with the approved mining programme and EMP.
13. Annual environmental performance assessments will be conducted and the outcome submitted to the DMR for evaluation and any appropriate decision making.
14. 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. 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

PUBLIC PARTICIPATION REPLY FORM FOR MINING PERMIT APPLICATION: ON PORTION 2 OF THE FARM FLORIDA 321, UITENHAGE

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 Macrovest 104 (Pty) Ltd mining venture.

I, _____ confirm that I have received the Public Consultation Notice from Macrovest 104 (Pty) Ltd regarding sand, gravel and stone mining on Portion 2 of the Farm Florida 321, Uitenhage.

_____	_____	_____
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

Macrovest 104 (Pty) Ltd Reg. Nr. 2004/006828/07

401 Cape Road

COTSWORLD

6045

Tel 041 992 4239 Fax 041 992 7538

PARTICULARS OF LANDOWNER

Mr. Benecke

Florida Plaas

P O Box 17

DESPATCH

6219

PLAN SHOWING THE PROPERTY AND MINING AREA CONCERNED.

The proposed quarry is situated in the magisterial district of Uitenhage. The quarry is situated approximately 600m north of Despatch city centre and a 150m north of the landowner, Mr Benecke's residence and 900m south of the R367. The site is situated south of the Swartkops River in a semi-rural area surrounded by small farms/plots and the outskirt residential area of Despatch.

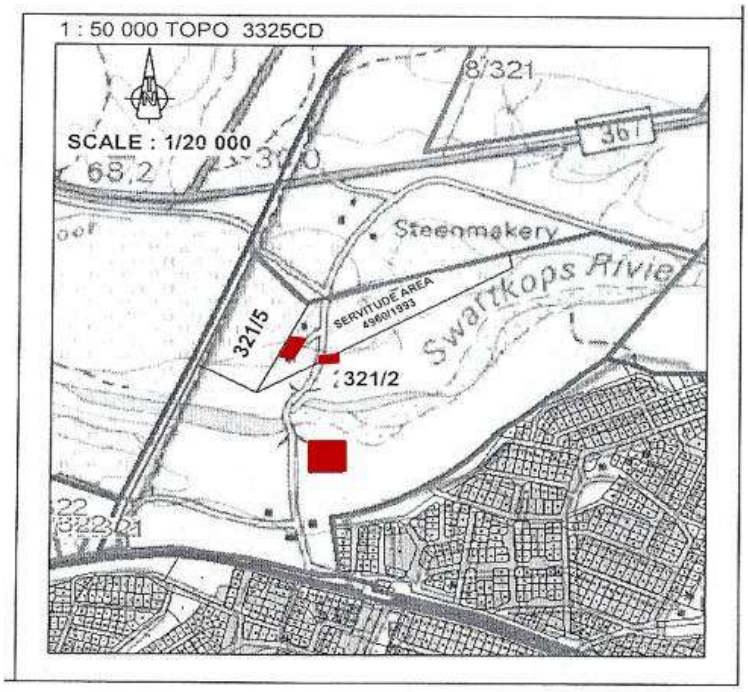


Figure 35: Site locality – just north of Despatch

Figure 36: Mining Permit (MP) area and surrounds – not to scale

EXTENT OF MINING AREA

The mining site is 1.5 ha in extent.

DEPTH OF MINE

Between 1-2m.

LIFE OF MINE

Two years with possibility to renew permit three times for one year each if market demand or operation challenges prevent the concern to operate at maximum capacity.

PICTORIAL RECORD


Vegetation at site and site appearance



Plant area


Existing settling ponds

CONSTRUCTION PHASE

No accommodation facilities for personnel are required since they will commute to work every day. No major repairs or servicing would take place onsite and only minor repair work will be performed onsite. For this purpose a container is available onsite and will serve as workshop and storage facility. A second container will serve also serve as office and general amenities facility. A flush toilet has already been established. Parking area for vehicles has already been demarcated, as is the case with other infrastructure, immediately north of the plant. The ramp and plant are already established onsite and are supported by relevant stockpiles areas. No earthworks are therefore required in the plant and stockpile area.

A power point and transformer have been installed in the plant area as part of previous mining operations. The plant and stockpile area is producing a significant amount of silt and in order to preventing pollution of the Swartkops River, silt ponds have been established south-east of the plant area as part of the previous mine ventures. A weighbridge is available in the plant area.

The mine area disposes of no topsoil or overburden and only a very limited vegetation cover, which will be removed as mining progresses. Extraction can therefore commence immediately upon granting of the permit.

Access to the R367 is via a gravel Bell-mouth, which is in relative good condition but might require upgrading during the mining permit stage. Since material is generally damp when extracted, dust generation will not be a major consideration. Stockpile areas could generate more dust and for this purpose a water cart is available to dampen down these areas. The access road is relatively good but might require upgrading during the mining permit stage.

Water abstraction equipment is already in place since previous mining ventures and will supply the crusher and washing plant with water. The crusher and washing plant is powered through the local Eskom grid.

Since all equipment is mobile it will preclude the placement of concrete surfaces or foundations. Waste disposal will be facilitated through medium size skips and dust bins that are already in place at the plant and office area and will be emptied by the applicant on a regular basis to any of the approved waste facilities in the area.

MINING METHODOLOGY

The total mine area comprises approximately 1, 48 ha of which 1,1ha will be mined. The silt ponds will cover approximately 0,1ha, the plant 0,15ha and the office and stockpile area approximately 0,25ha.

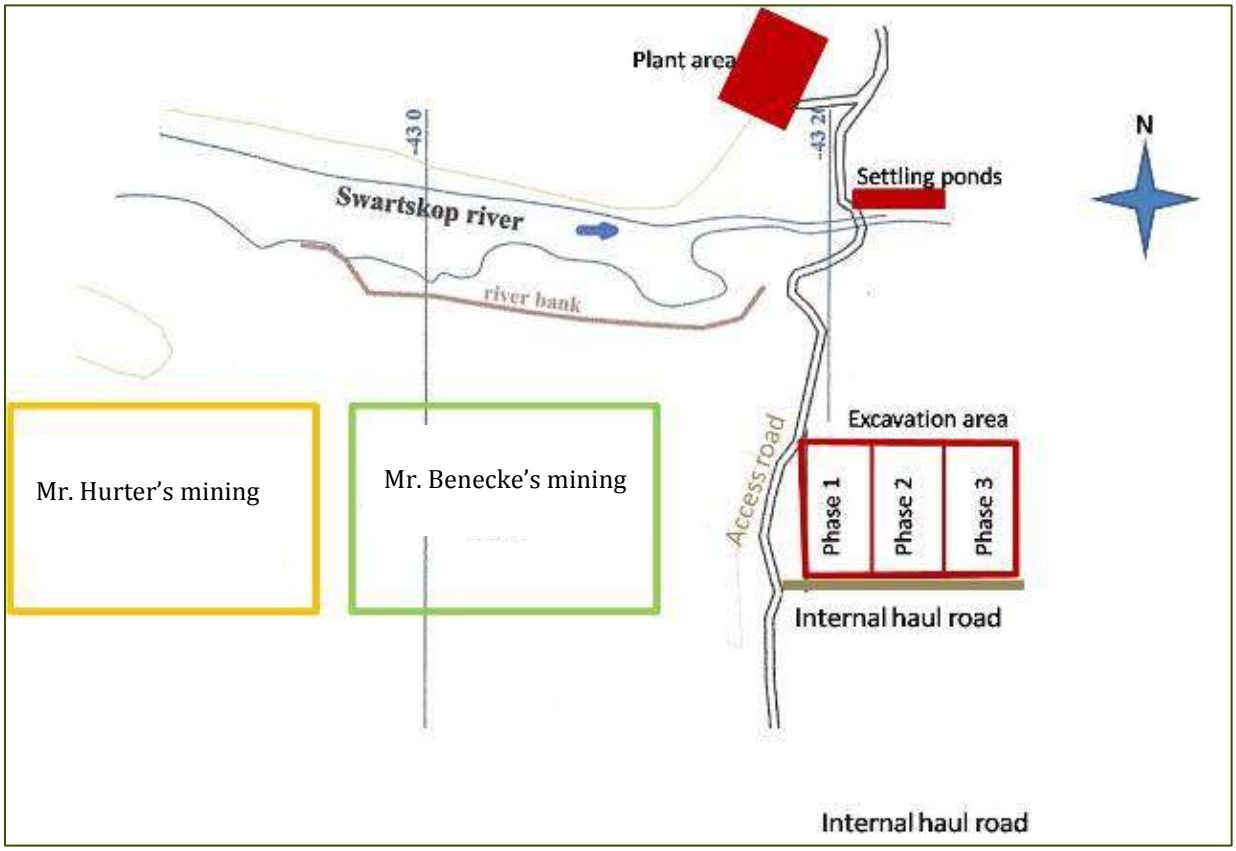
The quarry will be developed by creating a box cut along the A-D boundary demarcated on plan to a depth of approximately 2m with an excavator. This cut will be extended to the east until the 1,1ha area has been mined out. The quarry will dispose of a flat quarry floor. The quarry will be developed in three phases as per the attached mine plan, to fast track rehabilitation. The sides of the excavation will be profiled through cut & fill method to slopes of approximately 18 degrees.

Mining will not intersect the water table and the floor will not become inundated during periods of low flow but water will percolate into the excavation during moderate to heavy rain events, but would impose no different safety impact than the section of watercourse located to the north-west. During drier periods, the water table level will decrease and the excavation will dry out to some extent. All runoff and silt will be retained in the excavation.

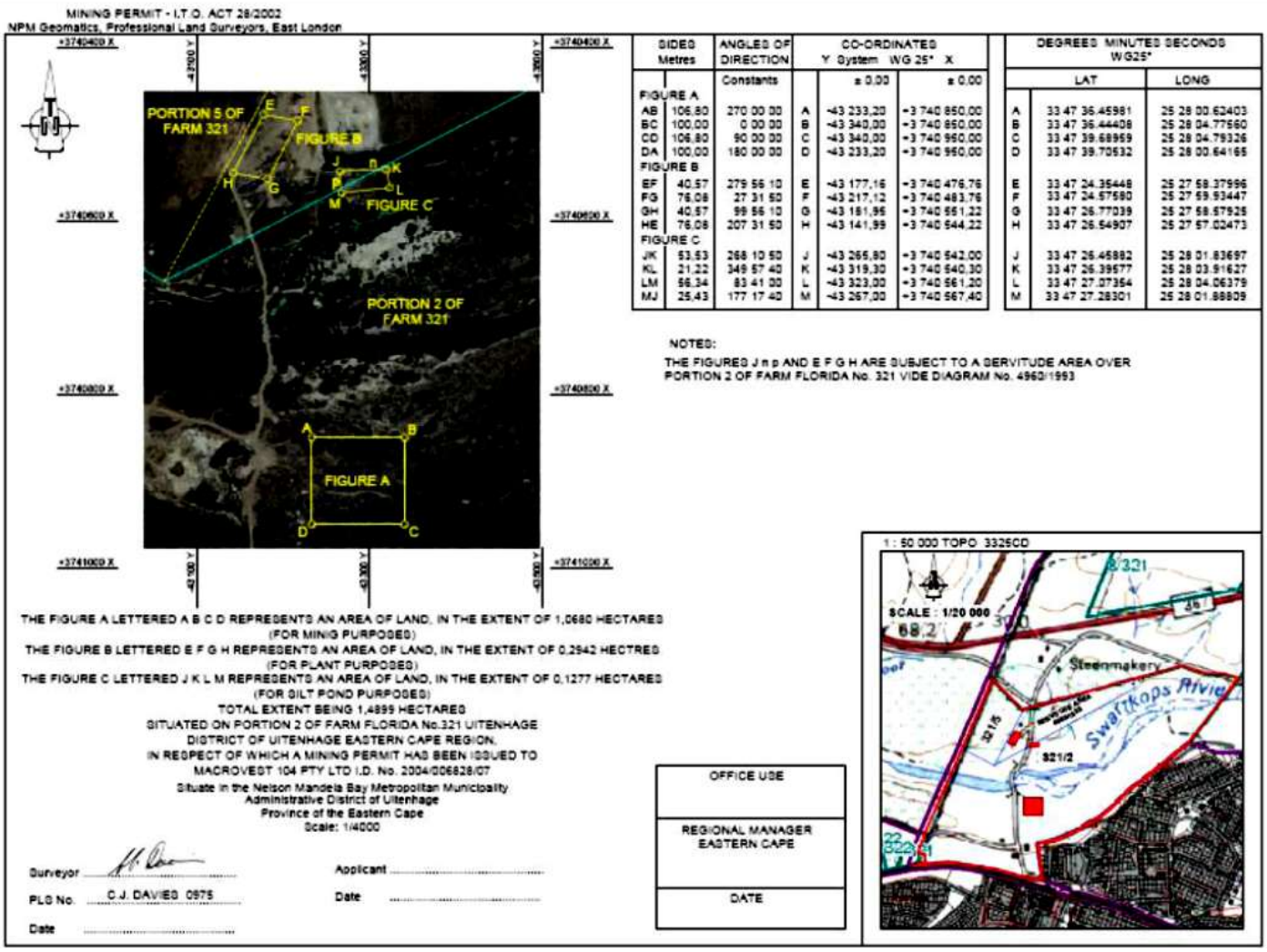
Extracted alluvium will be removed from the quarry area with a dumper truck and hauled to the crushing plant, tipped into the holding bin of the primary crusher and crushed. Material is then directed to a screen from where all sand is directed to the washing plant. Partially crushed aggregate will be sent through the secondary/cone crusher and crushed to specification in various road construction or building products. Aggregate and sand will be sold from the stockpiles to construction companies and carting of products will be done primarily by contractors/clients buying quarry products. The applicant will have trucks available to cart quarry products in the events clients cannot arrange transport for these materials.

Approximately 5-7 employees will be based at the concern during the day whilst a security guard will remain onsite during the night.

Process water will be obtained from the Swartkops River.



Mine layout and development plan



	SIDES Metres	ANGLES OF DIRECTION Constants		CO-ORDINATES Y System WG 25° X ± 0.00	± 0.00		DEGREES MINUTES SECONDS WG25° LAT	LONG
FIGURE A								
AB	106.80	270 00 00	A	-43 233,20	-3 740 850,00	A	33 47 36.45981	25 28 00.62403
BC	100.00	0 00 00	B	-43 340,00	-3 740 850,00	B	33 47 36.44408	25 28 04.77560
CD	106.80	90 00 00	C	-43 340,00	-3 740 950,00	C	33 47 39.68959	25 28 04.79326
DA	100.00	180 00 00	D	-43 233,20	-3 740 950,00	D	33 47 39.70532	25 28 00.64165
FIGURE B								
EF	40.57	279 56 10	E	-43 177,16	-3 740 476,76	E	33 47 24.35448	25 27 59.37996
FG	76.08	27 31 50	F	-43 217,12	-3 740 483,76	F	33 47 24.57590	25 27 59.93447
GH	40.57	99 56 10	G	-43 181,95	-3 740 551,22	G	33 47 26.77039	25 27 58.57925
HE	76.08	207 31 50	H	-43 141,99	-3 740 544,22	H	33 47 26.54907	25 27 57.02473
FIGURE C								
JK	53,53	268 10 50	J	-43 265,80	-3 740 542,00	J	33 47 26.45882	25 28 01.83697
KL	21,22	349 57 40	K	-43 319,30	-3 740 540,30	K	33 47 26.39577	25 28 03.91627
LM	56,34	83 41 30	L	-43 323,00	-3 740 561,20	L	33 47 27.07354	25 28 04.06379
MJ	25,43	177 17 40	M	-43 267,00	-3 740 567,40	M	33 47 27.28301	25 28 01.88809

PROVISIONAL ENVIRONMENTAL IMPACT ASSESSMENT

Public participation

The following persons & entities were consulted:

- The landowner,
- Abutting landowners,

- The Department of Mineral Resources will consult all relevant Government Departments for example (Environmental Affairs, Water Affairs, Agriculture, Forestry),
- Department of Roads & Transport,
- Nelson Mandela Bay Municipality,
- Department of Rural Development & Land Reform.

Topography

The proposed mine area will be located within the high flow channel, approximately 100m from the main channel. The proposed mine area was historically mined haphazardly, but most scars were remedied through flood events and the riverbed in this area is generally flat. The plant area is located on the northern embankment, outside the high flow channel.

Upon rehabilitation of the area, a small depression, 1,5-2m deep will be created within the floodplain. The slight topographical changes brought about would not necessarily be irreversible but will be remedied by future flood action through deposition of sand and silt within the excavation. The impact is rated of very low significance.

Soils

There is limited to no topsoil in the study area due to the area being subject to flood action and because of historic mining. The soils (S2) are generally highly drained, structureless and infertile. Any available topsoil will be stripped and once mining is completed in a particular phase, be reintroduced to assist with rehabilitation. Reinstated soil will be marginally upgraded and vegetated. The impact on soil properties is rated of very low significance.

Land use and capability

The river environment has limited agricultural capability being subject to flood regimes and disposing of very marginal alluvial soils and hence poor vegetation cover. The river environment has definite potential for mining since it disposes of good stone and sand resources. From an ecological perspective the study area and remainder of property dispose of poor vegetation cover, high alien infestation levels and virtually no faunal assemblages due to high subsistence pressure index and poor water quality.

The proposed process area has been used for the past 10 years for mining purposes. Prior to that it had no particular use and hosted degraded vegetation. Commercial stock farming ceased many years ago since the unit it is subject to severe stock theft. The area has therefore become an unproductive agricultural unit. For this reason the farm was used in the past for quarry purposes to generate some income. Considering the close proximity to mining /built up/industrial area the development can be integrated with the surrounding land uses quite comfortably without endangering sensitive natural and cultural resources or abutting land uses, both during mining operations or post closure. The impacts on land use and land capability are rated of very low significance.

Flora

The proposed process area hosts no vegetation and secondary vegetation has been cleared approximately 7 years ago for mining purposes. The immediate surrounds host cultivation areas and therefore host no natural vegetation. In terms of conservation, this part of the mining area has no conservation value. Once mining ceases the entire process area will be top-dressed with topsoil, ripped and upgraded with fertilizer and seeded to grass cover to blend in with the surrounds above the floodplain.

The mining area is situated within the riverbed and alluvium is readily reworked, dislodging natural vegetation that establishes in-between flood regimes. The study area and upstream thereof were haphazardly mined in the past and vegetation cover is low and species diversity poor. Lack of fertile topsoil causes the study area to be of low floral significance, especially considering the level of alien infestation.

Originally the site hosts Albany Alluvial Vegetation, which is threatened but has been severely transformed by anthropogenic pressures and currently disposes of a limited grass cover with isolated shrub and thorn tree specimens. Alien infestation in the surrounding area is overwhelming and has out competed most of the natural vegetation and has therefore significantly decreased the ecological value of the site. The impact mining will impose on the flora is rated of low significance.

Fauna

Due to severe transformation caused by historic agricultural activities, alien infestation, mining and illegal hunting resulted in the area to become mostly sterile, except for some avian species that still frequent the area. Poor water quality of the stream resulted in no important fish species to occur onsite. From ecological perspective faunal assemblages of the area are rated of very low importance. Also, the surrounding areas have been partially transformed to pasture/cultivation or fully transformed to residential resulting in natural habitat to be almost wiped out causing wild animals to vacate the area. The severity of this impact is further increased by unauthorized hunting. Faunal species are therefore becoming increasingly scarce. During the operational phase, the impact of mining on fauna is rated of very low significance. During the post closure phase no impact is anticipated. The impact on faunal assemblages is therefore of negligible significance.

Surface Water

Mining will not take place within the stream environment and will therefore not impact the water quality of the Swartkops River. All runoff and therefore silt generated will be captured within the quarry void. During medium to high flows the study area will be inundated and will present an area for deposition of alluvium that has been reworked upstream. Blue Horizon Consulting has in the past investigated the impact of mining on alluvium movement and bed erosion extensively and came to the conclusion that mining does not pose a sediment and water quality threat during medium and high flows since the river in any event reworks alluvium significantly, whether mining is taking place or not.

Over the past three years water was monitored at this specific site and the stream during low flow regimes has become nothing more than a sewage stream, reflecting significant enrichment and having an almost unbearable stench due to depositing of sewage works effluent, treated and untreated at times, in the stream. Water quality is therefore generally poor during low flows and mining will not result in any cumulative impact.

At the process area, the sand will be washed as part of the processing to improve the sand quality. Silted waste water will be directed to the existing two settling ponds, from where clean water is discharged into a secondary wetland that has established in the past because of this washing process. Any silt still remaining after leaving the settlers will be filtered out by the secondary wetland releasing clean water to the stream. From this perspective no water loss, except from evaporation, is applicable to the proposed operation.

During the sand washing process, no chemicals are added, thus the quality of the effluent water will not be influenced. The impact of the proposed operation on water availability and quality is rated of very low significance.

Groundwater

Above the clay aquicludes formed by the Sundays River Formation, the Swartkops River has over the years deposited thick alluvium material consisting of sand, gravel and boulders in the order of several meters thick. Within these deposits, a perched aquifer occurs of which the depth is determined by high & low flows and mining will be restricted to above average low flow level. Mining will therefore not affect the main aquifer which is restricted to sandstones at depth of at least 15-50m below fluvial ground level and because the perched aquifer in the alluvium is not linked with the main aquifer. The former is not responsible for the recharge of the latter aquifer.

Sensitive sites

The site is located within a CBA 2 aquatic zone and developments should therefore not detrimentally impact on water quality (A2a), corridor potential (A2b) and the Swartkops estuary (E3a). As indicated mining will not take place in the stream and will not affect water quality or migration of any aquatic fauna. It will affect the corridor potential temporary but will be remedied by the rehabilitation process and natural flood events. Also, mining will not increase sediment load generated during flood events and will not increase sedimentation in the estuary. In fact the excavation will trap sediment dislodged from upstream.

The site is located within a CBA 1 zone, indicating a natural or near status. This is, however, not applicable to the study area. As pointed out earlier, the Albany Alluvium Vegetation has been severely transformed and the T2 (Veg) and T1 (Step) status is not applicable anymore. Considering the limited natural vegetation in the study area, its corridor status from a forage and protection perspective is rather limited.

The impacts on sensitive environments are therefore rated of low significance.

Altering of channel alignment

The study area is located within the high flow channel and will therefore not change the course of the river. The only potential impact is that a channel can be established between the excavation and the main channel to the north-east, with no impact except for dislodging additional alluvium. Increased alluvium load will definitely settle out in the pools created by Lafarge and Sandman downstream hence the estuary will not be affected. The Swartkops is a meandering system and channels develop or relocate regularly.

Air Quality

At the excavation silt content of the stone and gravel deposits is very low and would not cause excessive dust when excavated and loaded onto the trucks. The deeper layers are even coarser and are generally moist which will further reduce the potential for dust generation. Crushing of stone at the plant area could potentially increase dust generation, but considering the material to be damp and the effect of dust sprays on the crusher, dust impacts can be mostly rule out.

The excavation area is effectively screened by alien vegetation from residences to the south and would filter out any dust generated onsite. The distance of 600m from the plant as well as the tree screens will prevent dust impacts at any residence.

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. This impact is rated of very low significance.

Noise

The site is bordered on both sides by roads, industrial activities and residential areas and ambient noise levels will range between 45dBA and 50dBA. Noise levels should therefore not increase above 55dBA on constant basis to prevent complaints.

Noise at the excavation will be generated by one excavator and one truck, at levels ranging between 55dBA and 70dBA. Noise levels abate over distance and will be reduced to at least 60dBA at

residences 200m to the south. The tree screen will further reduce noise generated at the mining site and only a limited increase (1-3dBA) in noise levels is anticipated at these residences. The crushing and screening operation will increase noise levels to approximately 85dBA. Considering a distance of 600m to the nearest residence as well as the mitigation effect of tree screens, noise levels will not be increased at any residence.

Working hours will be restricted to between 7.30am and 17.30pm, which is aligned with normal working hours of inhabitants of the immediate area. No workers will be housed on the property therefore noise generated at night would not become a nuisance. The noise impact is rated of low significance.

Visual Impact

The excavation area would have been visible from the landowner's house, but due to the height of the Blue Gum tree stand, the site is screened 100% effectively. Due to the topography, the site is not visible from any public road. The plant area is screened only partially and is visible from the R367, but the infrastructure on site already exists, thus the visual intrusion is already present and the public has grown accustomed to this impact. The study area disposes of a low-moderate visual quality and the proposed mining, due to the limited extent will impose a very limited cumulative impact.

Once mining ceases and rehabilitation of disturbed areas has been effected the area will be integrated with the surrounding area. The impact is considered to be of low significance.

Traffic

The existing, approved access to the R367 north of the mining site will be used. Continuous mining might require the construction of a surfaced Bell-Mouth.

Road integrity: Haul and Access road

The access road is a private gravel road belonging to the landowner, Mr. Benecke, who has given permission for the use of this road. Upgrading of this road will be the responsibility of the applicant and no other public member will be impacted on. The road is most of the time in good condition.

Road integrity: R367 road

The R367 is a national single lane road with shoulders. The quality of the road is good and it reveals no signs of potholes, edge breaking or wearing course disintegration. The road was constructed to carry heavy loads.

The upgrading and maintenance of the R367 road rest solely with the District Road Engineer (DRE) for the western region. The impact on the road structure of the R367 road is rated of low significance considering the mine's contribution to overall freight hauled on this road.

Road safety

Safety risks for motorists would not increase but remain the same, since the proposed development will just be a continuation of former mining activities undertaken by other applicants. Since the road disposes of a shoulder, loaded trucks will be able to turn into these lanes to attain reasonable speed before entering the driving lane. The risk for accidents will therefore be reduced.

Truck drivers will be bound by a safety code in this regard and any transgressions will be severely penalised. Heavy vehicle signage will be erected on both sides of the access to the R367 as per the specifications of the District Roads Engineer. During periods of high hauling rates, a flagman would secure the access.

Social impact

The mining concern could potentially pose some social impacts to residents to the south in terms of safety and security issues and nuisance factors such dust and noise generation. However, due to the nature of the material and distance from the plant and mining areas, no residence would be subject to dust and noise impacts. Workers are not residing onsite and since they are supervised during the day, no safety and security impacts are anticipated.

Archaeological findings

There is no known natural heritage or cultural sites close to the study area. No areas of social, cultural or historic value were identified onsite and the impact is rated insignificant in this regard. Since mining will be done in a fluvial environment, which was reworked on a regular basis in the past, it would not be necessary to complete a heritage impact assessment. Nevertheless, the site was surveyed previously by Dr. Binneman and no findings were made. The impact is rated zero.

YOUR INVOLVEMENT

All impacts imposed by the quarry concern would be short term. Should you disagree with any of the above provisional impact ratings please provide detailed information/assessment on the matter(s) concerned.

Proof that consultation letter was hand delivered to Nelson Mandela Bay Municipaliy (see signature as received)

STELLENRYCK ENVIRONMENTAL SOLUTIONS

PUBLIC PARTICIPATION: MINING PERMIT APPLICATION FOR THE MINING OF FLUVIAL SAND, GRAVEL AND STONE ON PORTION 2 OF THE FARM FLORIDA 321, UITENHAGE

PREPARED FOR:

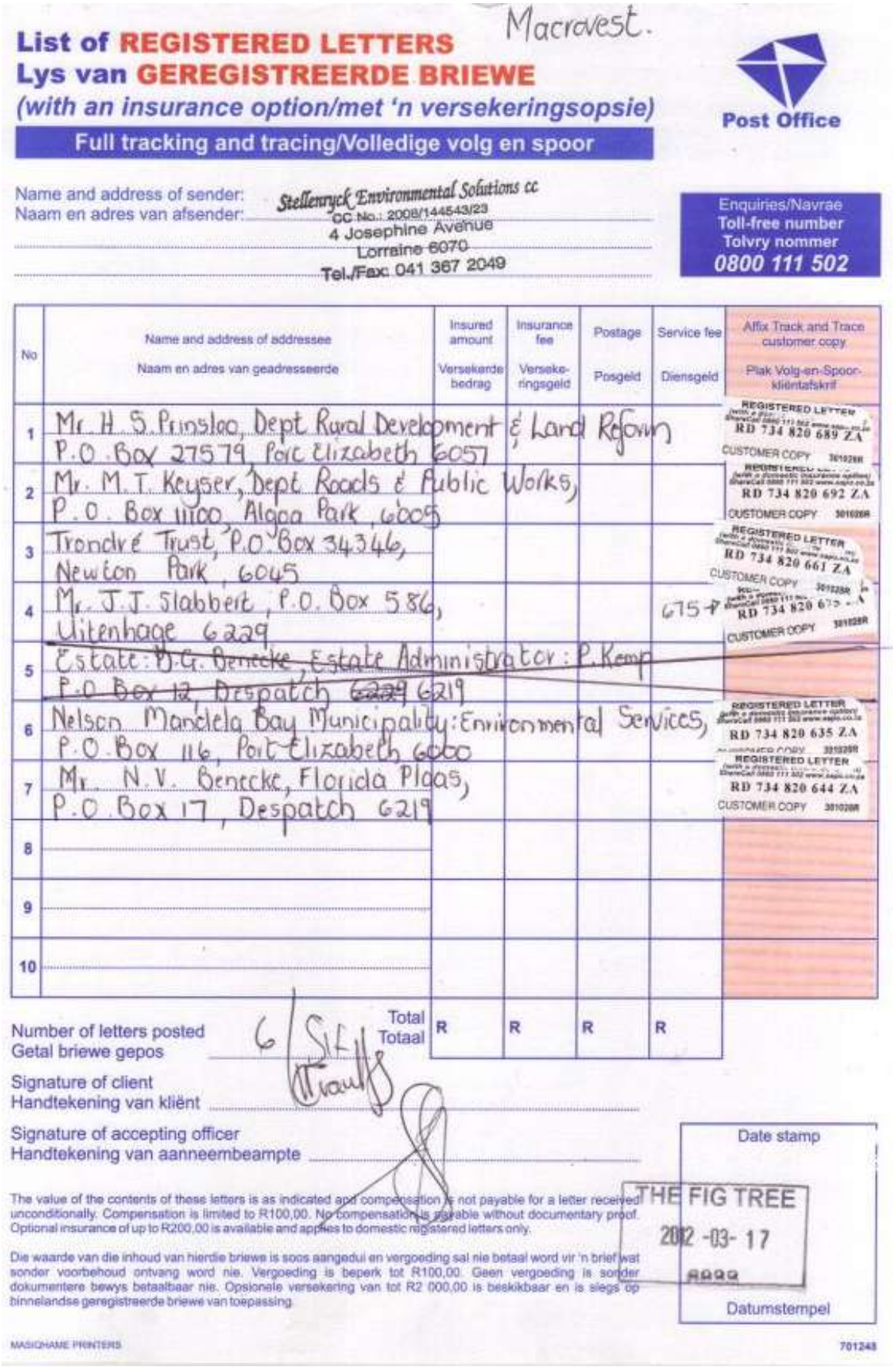
MARCOVEST 104 (PTY) LTD
401 CAPE ROAD
COTSWORLD
6045

March 2012

22.03.12

Tel. & Fax: 041-3672049 · Cell 0824140464 · 4 Josephine Avenue Lorraine 6070
Member: J. A. van As: B.Sc (Botany & Zoology), B.Sc (Hons) (Eco-Physiology), M.Sc (Plant Physiology)

Consultation letters sent via registered post:



Macravest.

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(with an insurance option/met 'n versekeringsopsie)

Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender:
Naam en adres van afsender:
Stellenryck Environmental Solutions cc
CC No.: 2008/144543/23
4 Josephine Avenue
Lorraine 6070
Tel./Fax: 041 367 2049

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee / Naam en adres van geadresseerde	Insured amount / Versekerde bedrag	Insurance fee / Versekeringsgeld	Postage / Posgeld	Service fee / Diensgeld	Affix Track and Trace customer copy / Plak Volg-en-Spoor-kliëntafskrif
1	Mr. H. S. Prinsloo, Dept Rural Development & Land Reform P.O. Box 27579, Port Elizabeth 6057					REGISTERED LETTER RD 734 820 689 ZA CUSTOMER COPY
2	Mr. M.T. Keyser, Dept. Roads & Public Works, P.O. Box 11100, Algoa Park, 6005					RD 734 820 692 ZA CUSTOMER COPY
3	Trondvé Trust, P.O. Box 34346, Newton Park, 6045					REGISTERED LETTER RD 734 820 661 ZA CUSTOMER COPY
4	Mr. J.J. Slabbert, P.O. Box 586, Uitenhage 6229				6757	RD 734 820 675 ZA CUSTOMER COPY
5	~~Estate: B.G. Benecke, Estate Administrator: P. Kemp P.O. Box 12, Despatch 6229~~ 6219					
6	Nelson Mandela Bay Municipality: Environmental Services, P.O. Box 116, Port Elizabeth 6000					REGISTERED LETTER RD 734 820 635 ZA
7	Mr. N.V. Benecke, Florida Plaas, P.O. Box 17, Despatch 6219					REGISTERED LETTER RD 734 820 644 ZA CUSTOMER COPY
8						
9						
10						
	Total / Totaal	R	R	R	R	

Number of letters posted / Getal briewe gepos: 6

Signature of client / Handtekening van kliënt:

Signature of accepting officer / Handtekening van aanneembeampte:

Date stamp
THE FIG TREE
2012 -03- 17
Datumstempel

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R200,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentere bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

MASIQHAME PRINTERS 701248

Macravest

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(with an insurance option/met 'n versekeringsopsie)

Full tracking and tracing/Volledige volg en spoor

Post Office

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

Name and address of sender:
Naam en adres van afsender: Stellenryck Environmental Solutions cc
CC No.: 2006/144543/23
4 Josephine Avenue
Lorraine 6070
Tel./Fax: 041 367 2049

No	Name and address of addressee / Naam en adres van geadresseerde	Insured amount / Versekerde bedrag	Insurance fee / Versekeringsgeld	Postage / Posgeld	Service fee / Diensgeld	Affix Track and Trace customer copy / Plak Volg-en-Spoor-kliëntafskrif
1	Mrs Benecke, Farm Florida, P.O. Box 17, Despatch 6219					REGISTERED LETTER RD 555 705 547 ZA CUSTOMER COPY
2	Mr. J.J. Slabbert, P.O. Box 586, Uitenhage 6229					REGISTERED LETTER RD 561 974 945 ZA CUSTOMER COPY
3	Trondre' Trust P.O. Box 34346 Newton Park 6045					REGISTERED LETTER RD 561 974 928 ZA CUSTOMER COPY
4						
5						
6						
7						
8						
9						
10						
	Total / Totaal	R	R	R	R	

Number of letters posted
Getal briewe gepos 3

Signature of client
Handtekening van kliënt [signature]

Signature of accepting officer
Handtekening van aanneembeampte [signature]

Date stamp
2012-03-26
Datumstempel

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R200,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

MASIGHAME PRINTERS 701248

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE

Macrave St.

(with an insurance option/met 'n versekeringsopsie)

Full tracking and tracing/Volledige volg en spoor

Post Office

Name and address of sender:
Naam en adres van afsender:

Stellenryck Environmental Solutions cc
CC No.: 2006/144543/23
4 Josephine Avenue
Lorraine 6070
Tel./Fax: 041 367 2049

Enquiries/Navrae
Toll-free number
Tolvry nommer
0800 111 502

No	Name and address of addressee / Naam en adres van geadresseerde	Insured amount / Versekerde bedrag	Insurance fee / Versekeringsgeld	Postage / Posgeld	Service fee / Diensgeld	Affix Track and Trace customer copy / Plak Volg-en-Spoor-kliëntafskrif
1	Mnr L. van Schalkwyk, Springbokstraat 17, Despatch 6220					REGISTERED LETTER RD 734 820 627 ZA CUSTOMER COPY 3010268
2						
3						
4						
5						
6						
7						
8						
9						
10						
	Total / Totaal	R	R	R	R	

Number of letters posted / Getal briewe gepos: 1

Signature of client / Handtekening van kliënt:

Signature of accepting officer / Handtekening van aanneembeampte:

Date stamp / Datumstempel: THE FIG TREE 2017 -03- 27

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R200,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentere bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.

MASIQHAME PRINTERS 701248

To date we have received the following comments/requests:

Name	Comments
Dept Roads & Public Works	Please refer to comment form below
Mrs. R.M. Benecke	Please refer to comment form below

PUBLIC PARTICIPATION REPLY FORM FOR MINING PERMIT APPLICATION: ON PORTION 2 OF THE FARM FLORIDA 321, UITENHAGE

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: M.T. KEYSER
Property/Organization District Roads Engineer
Postal address PO Box 11100, Algoa Park 6005
Telephone 0414036041 Fax No. 0414561666
Mobile 0836661598 E-mail

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

1. Warning Signs TW 344 and TW 345 must be erected along R367 at the access
2. to the quarry. SARTSM specifications apply.
3.
4.
5.

UI

I have no comments on the proposed Macrovest 104 (Pty) Ltd mining venture.

I, _____ confirm that I have received the Public Consultation Notice from Macrovest 104 (Pty) Ltd regarding sand, gravel and stone mining on Portion 2 of the Farm Florida 321, Uitenhage.

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

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

2012.03.20 16:14 0414561666 Page 1

PUBLIC PARTICIPATION REPLY FORM FOR MINING PERMIT APPLICATION:
ON PORTION 2 OF THE FARM FLORIDA 321, UITENHAGE

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: MRS RACHEL MAGDELENA BENECKE
Property/Organization: TRUSTEE NEILDAN VERN BENECKE FAMILY TRUST
Postal address: P.O. BOX 17 DESPATCH 6219
Telephone: 041 9331764 Fax No. —
Mobile: 0825340377 E-mail: gbenecke@mweb.co.za.

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 Macrovest 104 (Pty) Ltd mining venture.

I, Rachel Magdalena Benecke confirm that I have received the Public

FROM : LAROCHELLE FAX NO. : 0419333314 Mar. 28 2012 02:13PM P2

A Beneke
Signature

5401040140082
ID Number

28/3/2012
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)