



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: Great Karoo Prospecting (Pty) Ltd

REFERENCE NUMBER: EC30/5/1/3/2/1010105MP – Tsitsikamma Borrow Pit 2

SPC REFERENCE #2696
Farm: Moeilikheid 662

ENVIRONMENTAL MANAGEMENT PLAN

SUBMITTED
IN TERMS OF SECTION 39 AND OF REGULATION 52 OF THE MINERAL AND PETROLEUM
RESOURCES DEVELOPMENT ACT, 2002,
(ACT NO. 28 OF 2002) (the Act)

STANDARD DIRECTIVE

Applicants for prospecting rights or mining permits, are herewith, in terms of the provisions of Section 29 (a) and in terms of section 39 (5) of the Mineral and Petroleum Resources Development Act, directed to submit an Environmental Management Plan strictly in accordance with the subject headings herein, and to compile the content according to all the sub items to the said subject headings referred to in the guideline published on the Departments website, within 60 days of notification by the Regional Manager of the acceptance of such application. This document comprises the standard format provided by the Department in terms of Regulation 52 (2), and the standard environmental management plan which was in use prior to the year 2011, will no longer be accepted.

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1 IDENTIFICATION OF THE APPLICATION IN RESPECT OF WHICH THE ENVIRONMENTAL MANAGEMENT PLAN IS SUBMITTED.

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2 Background to the Project

This Mining Permit Application comes due to the need to acquire materials to serve in the construction of the Tsitsikamma Community Wind Farm Project, currently under establishment between the towns of Clarkson and Humansdorp in the Eastern Cape. As construction contractor to this project, Haw and Inglis, through its empowered subsidiary Great Karoo Prospecting (Pty) Ltd has identified this area as one of six borrow pit sites of which the finally selected sites together can meet the materials requirements for the project, with their primary use being in providing the materials for the access roads and crane platform constructions of the wind farm.

Given the above background to the project, this Mining Permit, together with the other 5 Mining Permits under Application by Great Karoo Prospecting, are considered within the context of the large-scale construction activities which they will serve, and their impacts on the surrounds are thus assessed in relation to the wider activities of the Wind Farm Construction.

This Hard rock borrow Pit 2 which will be mined as a box-cut through drilling and blasting will provide a portion of the concrete aggregate and crushed concrete sand for the wind turbine bases and crushed sub-base (G4) for the access roads and platforms of the wind turbines.

As the site comprises an unrehabilitated old borrow pit site used by various roads authorities in the past for the removal of natural gravel from the surface, only a minimal amount of to such natural gravel (G5) remains on site, and given this earlier disturbance the site is heavily invaded by alien vegetation, with limited remnant natural vegetation (which has managed to partially recover on the site).

The relative proximity to the wind farm project via the passing public gravel road to Oyster Bay, the suitable geology exposed in the floor of the old borrow pit, and the poor environmental status of the site favoured its selection as Borrow Pit 2.

3 Locality

As shown in Figure 1 below, Borrow Pit 2 is located on the Farm Moeilikheid 662, immediately adjacent to the east/west public gravel road from Clarkson to Oyster Bay.

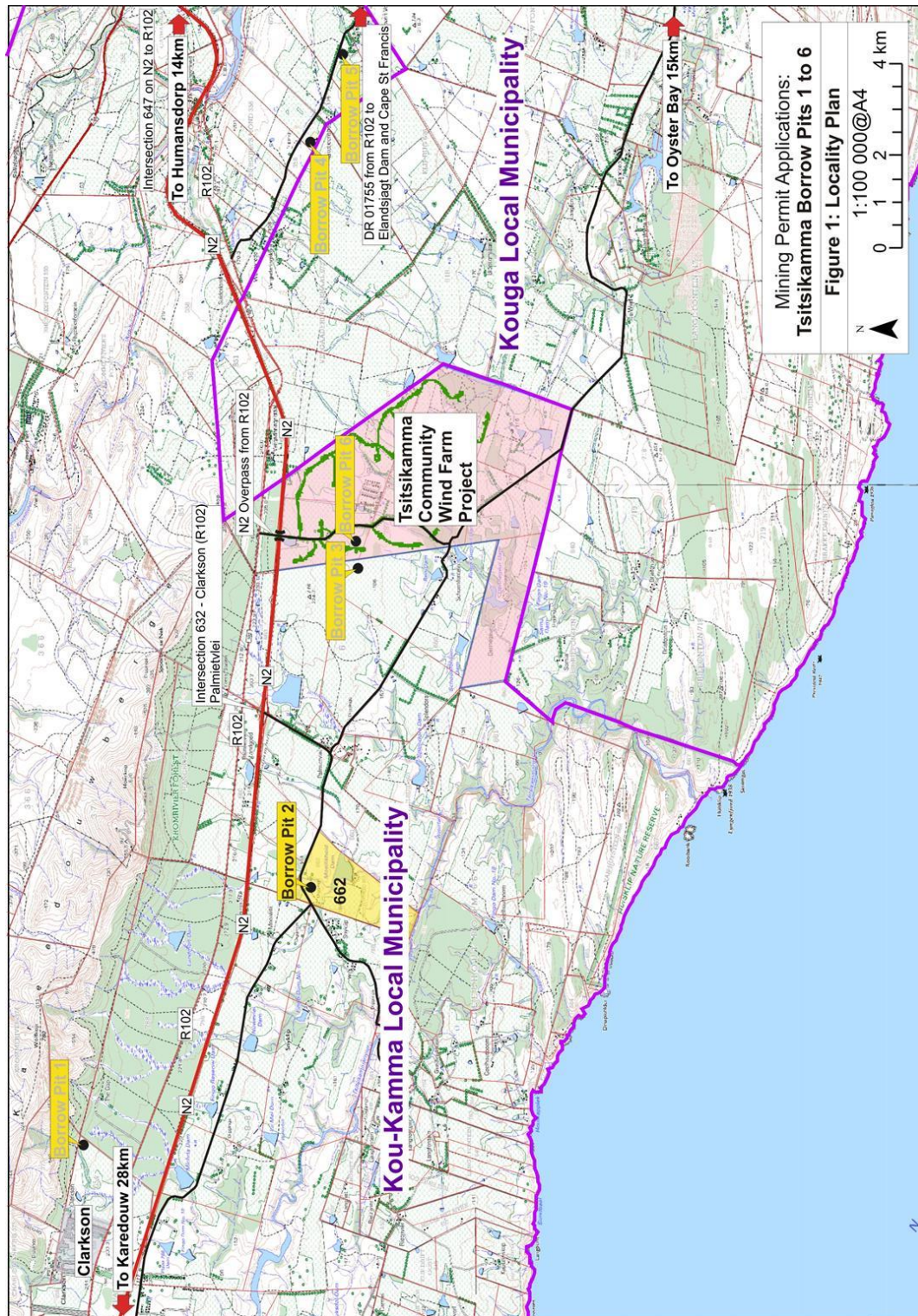


Figure 1: Locality

4 REGULATION 52 (2): Description of the environment likely to be affected by the proposed prospecting or mining operation

4.1 The environment on site relative to the environment in the surrounding area.

On site (refer figure 3 on page 11)

The photos below illustrate the disturbed nature of the site due to previous mining which has left the site with most of its topsoil and surface gravels no longer in place and significant density of alien infestation.

The dense mature alien vegetation between the borrow pit site and the public road totally screens the site area from view from the public road as seen in photo 2.

The extent of the earlier disturbance offers sufficient area to accommodate the entire project with very little disturbance of natural vegetation fringes. Additionally, further re-use of the site with well-directed planning and rehabilitation does offer the opportunity and funding to rehabilitate fringes of this currently highly disturbed site.

Given that the mature vegetation between the road and the site very effectively screens it from view and will limit dust impact on the road user, such alien vegetation will be maintained for the operational period of the site, following which, the Permit Holder will contribute to the alien vegetation clearance in the area between the road and the site, despite this being outside of the Mining Area.



Photo 1: footprint of earlier disturbance in the Mining Permit area.



Photo 2: Existing access gate showing perimeter alien vegetation growth to be maintained as visual and dust screen during the mining operation, with removal at end of contract

Surrounding

The Google earth™ photographic background to the Mine Layout Plan (Figure 4) reflects the intensity of alien vegetation in the surroundings of Farm 662

Figure 2 overleaf shows the **cadastral boundaries** of the Applicant property and surrounding properties, with their farm numbers.

The cadastrals show that both to the north and east the surrounding properties also belong to the landowner of the Application farm, with the only relevant adjacent ownership by others being the ownership of all properties to the west, owned by the Tsitsikamma Development Trust – Mfengu.

The relevant surrounding land uses to be considered in the assessing of potential impacts hereafter include the following:

- i) The extensive Vacant land immediately surrounding the permit area on the Applicant property and surrounding properties
- ii) The closest distance of 505m to any agricultural building
- iii) The farmsteads of Mfengu Trust being located beyond 650m at closest
- iv) The public gravel road adjacent to the site at a distance of 50-130m
- v) The Moeilikheid Dam wall at 900m
- vi) The closest edge of a centre pivot being 740m

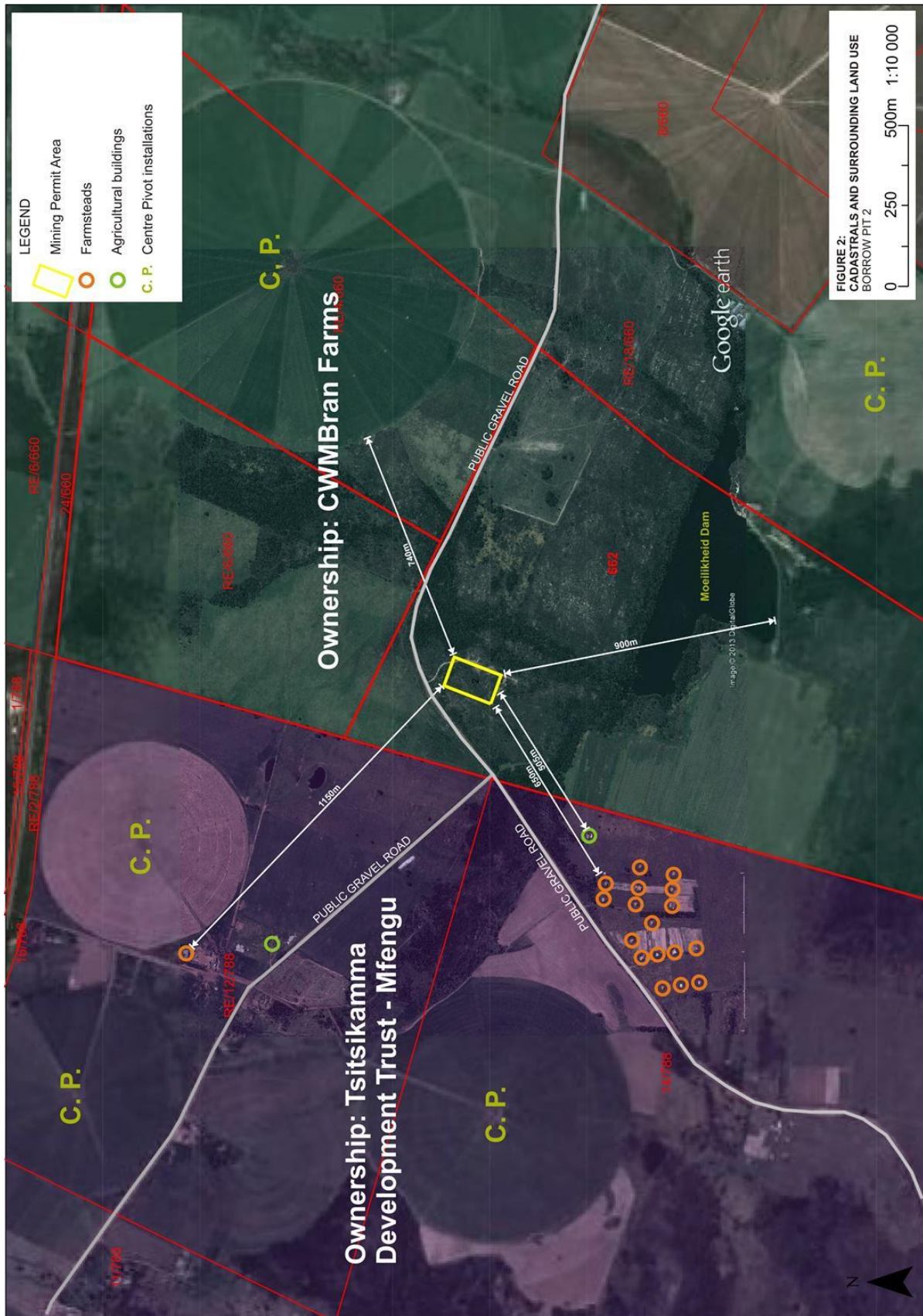


Figure 2: Cadastrals and Surrounding Land Use

4.2 The specific environmental features on the site applied for which may require protection, remediation, management or avoidance.

Given the earlier use of the area as a gravel borrow pit by roads authorities, the environment of the site as evident in the aerial photo background of Figure 3 overleaf are limited to:

4.2.1 Vegetation and topsoil

The vegetation was the subject of specialist botanical input. The full report is contained in Appendix G. Search and rescue/transplant of limited recovered species as well as the very limited retention of seed bank with limited topsoil which despite most having been lost by earlier mining, all remnants of which must be dozed to perimeter stockpiles as the first site activity.

4.2.2 Visual Impact

As the site is located on high ground relative to the Mfengu Trust residences, the activities on site will not have high visual impact, which visual impact will in any event is further restricted by the dense alien vegetation in the line-of-site.

Dense mature alien vegetation between the public road and the site currently very effectively screens the site as seen in photo 2, and such vegetation should be retained for the period of quarry activity and should only be removed during decommissioning rehabilitation.

4.2.3 Access

In order to avoid further disturbance of the immediate surrounds of the site, use must be made of the existing site access as seen in the photo background of Figure 3 overleaf and photo 2.

4.3 Map showing the spatial locality of all environmental, cultural/heritage and current land use features identified on site.

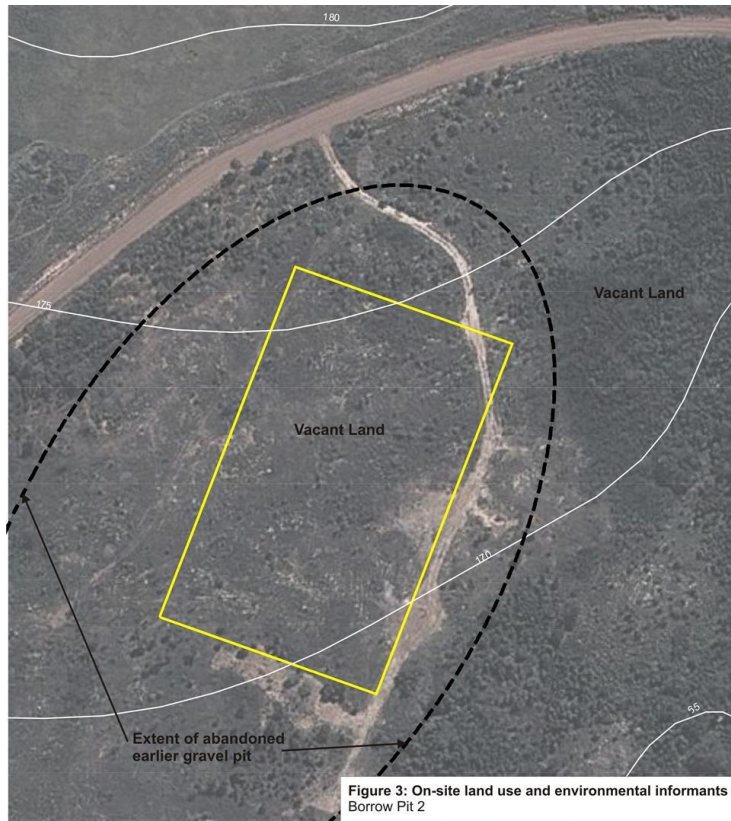


Figure 3: On site land use and environmental informants

4.4 Confirmation that the description of the environment has been compiled with the participation of the community, the landowner and interested and affected parties.

The public participation process was exhaustive and part of that process was the preparation of a so-called “Background Information Document” (BID). Such document is included in full in Appendix A. The BID document was hand delivered to the landowner and adjacent landowners, with all such persons additionally either contacted telephonically or visited and this Application discussed.

In order to reach the general public, a notice of the Application was placed in the local newspaper, The Kouga Express, along with hard copies of the BID document made available at the Humansdorp Public library and on the Site Plan website for perusal, with the BID being emailed to identified I&AP’s as well as persons who requested registration as I&AP’s.

Additionally, the Applicant conducted personal discussion with the landowner using the BID document’s listing and description of environmental elements of the site as background.

5 REGULATION 52 (2) (b): Assessment of the potential impacts of the proposed ~~prospecting or~~ mining operation on the environment, socio-economic conditions and cultural heritage.

5.1 Description of the proposed mining operation.

5.1.1 The main mining activities (e.g. access roads, topsoil storage sites and ~~any other basic prospecting design features~~)

The overall Mine Layout Plan during full production phase of hard rock is reflected in Figure 4 in para 5.2.2 hereafter to reveal the following:

- a) A 1.47ha area as the Mining Permit Area accommodating the excavation and showing a typical position of the tracked mobile crushing plant in the excavation where it will move in the expanding quarry floor and to cross section as shown in the plan in each of the two phases.



Photo 3: Typical mobile tracked in-pit crusher

- b) **Alternatively** the shot rock will be loaded directly from the blast pile by excavator without crushing (no crushing plant on site) for direct delivery of shot rock to the construction project site where a central crusher will crush material delivered from any of the 6 Borrow Pit.
- c) The **Phase 1 upper layer of 3m material** as shown in cross-section will be removed as sub-base (G4/G5) and crushed in such shallow excavation prior to the initiation of the **Phase 2 lower fresh rock box-cut**. The outer 5m perimeter of such 3m cut will be retained as a 5m wide perimeter safety bench when the fresh material box-cut is blasted into the Phase 1 floor.

- d) The haul road will be built at 1:10 gradient initially serving the 3m deep G4/G5 partly weathered material cut and then deepening to serve the 8-11m deep fresh quartzite box-cut.
- e) A front-end loader will continuously load product from the small product stockpile into delivery vehicles for transport to the construction site.
- f) There will be no bulk stockpiling on site. Such stockpiling will occur on the wind farm construction site at the designated concrete batch plant area or in the case of the G4/G5 material will be delivered directly to the road or platform construction.
- g) As the Applicant (contractor to the wind farm project) will operate from a main contractor's yard where he will have all logistical facilities of project office, workshops and stores with diesel storage facility, to serve the contract site and provide service and maintenance to the external Borrow Pit sites, the only logistical facilities required in the Borrow Pit 2 Mining area will be an office/personnel amenities container and a stores container. Additionally only a vehicle parking area or temporary mobile plant parking area is provided in the Mining Permit Area.
- h) No diesel tank is planned on site, given the limited distance to protect it from fly-rock, and the fact that a diesel bowser operated from the main contractor's yard at the project will provide diesel to all plant in the mining permit area on a daily basis. Similarly the mobile plant maintenance vehicle will visit the site daily to conduct greasing and other minor maintenance on the equipment.
- i) For any repairs of significant nature the respective plant will be removed by low-bed to the workshop at the contractor's yard of the wind farm project, where such repairs will be conducted.

Environmental indicators incorporated into the plan include:

- a) Retention of the mature alien vegetation screen perimeter buffer
- b) Re-use of the existing access road
- c) Upgrade of the access road intersection with a 20m long bell-mouth and with bush clearance to facilitate 100m uninhibited site distance of approaching traffic on the public gravel road together with danger signposting on the gravel road warning of "heavy vehicles crossing ahead"
- d) Location of the mining permit area within the previously disturbed borrow pit area
- e) Demarcation and fencing of the mining permit area prior to on-site activity
- f) Construction of perimeter stormwater cut-off drains leading to stormwater detention ponds
- g) Pre-disturbance dozing of remnant topsoil and vegetation (with bulbs and seedbank) to perimeter berm topsoil stockpiles

The mining activity is planned to be completed within a 24 month “life of mine” (with maximum renewable total lifespan of 5 years), while a total of 9 months is identified as minimum drilling and blasting period, with possible further drilling and blasting period should additional materials be required or contracts be delayed. Once mining ceases, disturbed surfaces will be made safe where appropriate and be rehabilitated, and the excavation perimeter shaped as shown diagrammatically on the Mine Layout Plan (Figure 4) cross-section inset, most notably with the following features:

- A fence around the excavation to negate accidental entrance to the quarry.
- An upper safety bench with maximum face height of 3m and bench width of 5m as per photo below



Photo 4: Example of upper perimeter safety bench before perimeter shaping and fencing on another site planned by SPC



Photo 5: Example of a rehabilitated, flooded hard rock quarry, with adit retained for ease of use as a watering hole

- A perimeter safety berm of minimal height (+-0.5m) to be constructed once the topsoil has been redistributed and used as growing medium on the upper perimeter safety bench.
- Production faces in the deep excavation of maximum 11m height (offset 18° to vertical for face stability and this angle further to be modified if bedding plane dip demands a different slope in especially the northern and southern faces). Main faces to be left in place should the need arise for re-use of the quarry through extension in future contracts to avoid the environmental impact of disturbing another virgin site.

5.2 Hydrocarbon management

As fuel will be despatched from the contractor's main camp on the wind farm construction site to refill the mining permit area equipment and as maintenance vehicles will similarly visit the site on a daily basis, the hydrocarbon management for the site is limited to the following:

Vehicle /pump leaks:

Vehicles and equipment must be checked on a daily basis for oil/diesel/hydraulic fluid leaks. Drip trays must be available on site and should any oil/fuel/lubricant leak from the equipment, then such leaked fluid is to be collected via the drip trays into drums for transport to Oilkol or similar depot for recycling.

Should such leaked oil contaminate the topsoil, then such topsoil and oil must be removed from site and spread on a concreted area where it can be treated with a commercial product such as Spillsorbtm.

On-site repairs: All repairs other than minor repairs (such as replacement of hydraulic hoses etc and daily greasing and oil top-up) will take place off-site in the workshop at the contractor's main camp.

Emergency repairs on site:

In the event of a breakdown repair being required in the field, the staff are trained and will again be instructed in the use of drip trays and suitable funnels (not to drain oil into the sand) for filling and draining of lubricants and the staff shall be provided with such equipment to prevent oil contamination.

In addition:

- Used/replaced filters, hoses, belts, cloths, etc. are to be placed in the bins at the Mobile site store container for removal from site and disposal through the contractor's main workshop on the wind farm project site. Used filters are not to be buried at the site of repair (nor discarded in adjacent veld).
- In the event of accidental intense soil contamination, the contaminated soils are to be removed and placed in suitable bags or drums for disposal at a licensed facility or depot, and any remnant contamination to be treated

with the appropriate commercial decontaminant in the Spillsorbtm or other range.

All staff involved in mobile plant operation and maintenance are to be made aware of these oil and lubricant procedures. Staff will be given environmental induction training on the:

- Deleterious effects of oil / fuel on the environment
- Handling of oil leaks onto soil

General Provisions

- All operators are to check their equipment for leaks and report such leaks on a daily basis (before and after morning start up, at lunch break and when parking the equipment for overnight shutdown).
- No used oils are to be used as dust suppressants on manoeuvring areas. Used oils will be deposited in the used oil drums at the equipment container.

5.2.1 Plan of the main activities with dimensions

Refer Figure 4 overleaf.



Figure 5: Decommissioning Rehabilitation

5.2.3 Listed activities (in terms of the NEMA EIA regulations)

In respect of the Mining Permit Area, including mobile plant in-pit crushing the following applies:

a) Number R544 Listing Notice 1 (Requiring a Basic Assessment):

- Activity 20: Any activity requiring a Mining Permit in terms of Section 27 of the Mineral and Petroleum Resources Development Act 2002(Act No.28 of 2002), or renewal thereof
- Activity 23: Transformation of vacant land to... “industrial use”, outside urban area where total area to be transformed is bigger than 1ha but less than 20ha

Such listing calls for a basic assessment be done, which is included in this Mining Permit Application process as this EIA of the proposed operation.

As the Minister of the Department of Mineral Resources (DMR) is identified by NEMA as the Competent Authority, the entire Application process will be dealt with i.t.o. the MPRDA guidelines to be considered in the EIA/EMP phase of this Application in respect of the listed activities 20 and 23 above.

b) Number R546 Listing Notice 3:

- Activity 12: Clearance of an area of 300m² of more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.... in a CBA.

As the area does fall within a CBA, despite its highly degraded current state, a Specialist botanist/horticulturist was appointed to conduct a specialist vegetation assessment, with a view to defining the level of current disturbance, identifying any species requiring plant rescue through transplant, and making general recommendations on the management of the existing vegetation during topsoil removal as well as suggestions for revegetation during rehabilitation.

The botanical assessment is contained in Appendix G hereto, ex Sean Privett 2013.

5.3 Identification of potential impacts

5.3.1 Potential impacts per activity and listed activities.

The list of potential environmental impacts considered in respect of the mining activities is follows:

- 1: Soil
- 2: Topography
- 3: Visual Impact
- 4: Animal life
- 5: Land Capability
- 6: Surface Water
- 7: Ground Water
- 8: Natural Vegetation

9: Air quality (Dust)

10: Noise

5.3.2 Potential cumulative impacts.

Definition: “The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions”

Given:

- 1) the generally undisturbed nature of surrounding areas (i.e. no source of other impacts in the area besides the current disturbance at the existing site), the potential for cumulative impact is limited,
- 2) the small scale of activities and the limited time frame, the potential for cumulative impacts is in any event very limited,
- 3) the degraded state of the existing site and the proposed rehabilitation measures proposed in this round of activities,

impacts are largely limited to within the mining area where they are internally cumulative but given that there are no external disturbances of a permanent nature, the overall cumulative impacts are low.

5.3.3 Potential impact on heritage resources

The quarrying activity will be limited to predominantly previously disturbed areas, and as such the chance of any archaeological/ cultural finds are minimal, and no impact is expected.

Notwithstanding the above a Phase 1 assessment of both Palaeontology and archaeology has been conducted to satisfy the National Heritage Act. While not yet received the Archaeologist, Mrs K. van Ryneveld of Archaeomaps has advised telephonically that no significant finds have been encountered, and her full report, as well as the report by archaeologist Rob Gess, will be appended hereto as Appendix H on receipt.

5.3.4 Potential impacts on communities, individuals or competing land uses in close proximity.

(If no such impacts are identified this must be specifically stated together with a clear explanation why this is not the case.)

Given the distances involved (distances of 650m to the nearest residences as seen in Figure 2, 740m to the nearest center pivot installation and 505m to the nearest agricultural building) the impact on such surrounding uses will be extremely low or negligible, but given the proximity of the public road, the following impacts will occur on road users of the adjacent public road:

1. Dust
2. Noise
3. Limited visual Impact

4. General nuisance factor of temporary road closures which will be required for 20minutes once/month during blasting.

Socio-economic Impact

The applicant is an existing construction company, with an existing core labour force, but will employ additional local labour. As such, the Mining Permit will not bring about any negative change to the socio-economic impact of the area but will hold the positive impact of extending the period of permanent employment of its own employees and the additional employment of local job seekers from the local villages of Clarkson and Kruisfontein/Humnasdorp (and will in principle avoid employing farm labour from surrounding farms or farming projects) by a minimum of 2 years. No persons will live on the site, and only an overnight security guard will be present after hours if required.

5.3.5 Confirmation that the list of potential impacts has been compiled with the participation of the landowner and interested and affected parties,

Yes. A public participation process has been completed and part of that process was the preparation of the "Background Information Document" (BID). The BID document was made available to all parties as basis for comment – Refer Appendix A for copy of the BID and parts 10 and 11 of this EMP for full description of the public participation process.

The Applicant conducted personal discussion with the representative of the landowner using the BID documents listing and description of environmental elements of the site as background.

Additionally, this completed EMP will be emailed to the landowner and any registered I&AP in addition to the distribution by the DMR to State and Parastatals for consideration of the impacts.

5.3.6 Confirmation of specialist report appended.

It is noted that this Environmental Management Plan was prepared by:

- i) Stephen van der Westhuizen who is himself a specialist in most aspects of small mine development and rehabilitation as he has significant experience in this regard, and
- ii) Ecologist, Jaques van der Vyver, both of Site Plan Consulting.

The services of:

- specialist botanist (Mr Sean Privett of Fynbos Ecoscapes) have been employed (His full botanical report is attached as Appendix G)
- Specialist archaeologist Karen van Ryneveld and palaeontologist Rob Gess whom conducted the Phase 1 Heritage assessments as attached hereto in Appendix H.

In addition to the above, the documentation, which served the Environmental Authorisation and EIA/EMPR of the nearby Tsitsikamma Wind Farm (which

construction the sought borrow Pit will serve), was consulted to further inform the compilation of this EMP, specifically in regard to the Avian Impact Assessment conducted by Avisense Consulting.

6 REGULATION 52 (2) (c): Summary of the assessment of the significance of the potential impacts and the proposed mitigation measures to minimise adverse impacts.

6.1 Assessment of the significance of the potential impacts

6.1.1 Criteria of assigning significance to potential impacts

| <i>Significance</i> | | <i>Criteria</i> |
|---------------------|---------------------------------------|---|
| Negative | Significant (S) | <ul style="list-style-type: none"> Recommended level always exceeded with associated widespread community action Disturbance to areas that are pristine, have conservation value, are important resource to humans and will be lost forever Complete loss of land capability Destruction of rare or endangered specimens May affect the viability of the project |
| | Moderate (M) | <ul style="list-style-type: none"> Moderate measurable deterioration and discomfort Recommended level occasionally violated – still widespread complaints Partial loss of land capability Complete change in species variety or prevalence May be managed Is insignificant if managed according to EMP provisions |
| | Minor/ (I) Insignificant ¹ | <ul style="list-style-type: none"> Minor deterioration. Change not measurable Recommended level will rarely if ever be violated Sporadic community complaints Minor deterioration in land capability Minor changes in species variety or prevalence |
| Positive | Minor | <ul style="list-style-type: none"> Improvements in local socio-economics |
| | Significant | <ul style="list-style-type: none"> Major improvements in local socio-economics with some regional benefits |

- b) The **duration** is classified as
- Permanent (post-closure)
 - Life of Mine (LOM)
 - Temporary

- c) The **probability** is ranked as
- Definite/Certain
 - Possible
 - Unlikely

¹ Note there is another level known as negligible. This is more than no impact but does not justify any further comment.

6.1.2 Potential impact of each main activity in each phase, and corresponding significance assessment

6.1.2.1 Soil

Permanent loss of topsoil is generally considered a highly significant negative impact. As such, standard mining practise calls for removal and storage of such upper soils/sands in all areas of disturbance.

Such topsoils, inclusive of the seedbank secured within them, are then used during post-mining rehabilitation to rehabilitate all disturbance footprints, with the replaced seedbank acting to rejuvenate the natural vegetation cover over these areas.

In this case the upper gravels and sandy topsoil which once covered the now exposed rock was almost totally removed during previous mining, with little remaining, but despite this poor occurrence, all available soils/gravels will be recovered for re-use in rehabilitation.

The only true recoverable soils are small patches of thin Mizpah soils overlying the rock outcrops.

As revegetation by Fynbos transplant and seeding has been well established to be successful, even in very “poor” replaced growing mediums, the storage of any remnant gravels and soils and especially the small patches of removable Mizpah soils inclusive of their remnant seedbank and bulbs in perimeter stockpile berms for later use is absolutely critical as a priority programme during the establishment phase of the project.

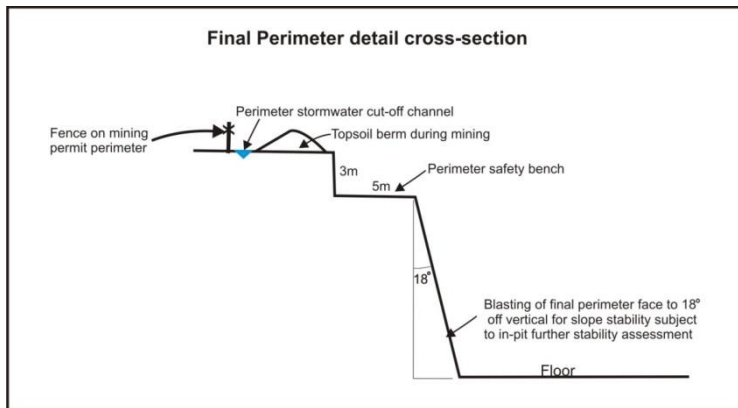
The specialist botanist/horticulturist was tasked with identifying soil handling methods to maximise eventual rehabilitation of the site. The full report is annexed as Appendix G.

| <i>Activity</i> | <i>Spatial extent</i> | <i>Significance</i> | <i>Duration</i> | <i>Probability</i> | <i>Post-closure impact</i> |
|-----------------------------|--|--|-----------------|--------------------|---|
| Quarry (planned excavation) | Minimal to no topsoil available in the excavation area | Insignificant. But will be used in rehabilitation of larger tracts | Temporary | Definite | Available topsoil will be replaced on disturbed natural ground levels and on the perimeter safety bench and revegetated |

6.1.2.2 Topography

The quarry excavation will by necessity impact on the topography of the site. The impact will consist of the development of excavation 0.85ha in extent up to 14m below ngl at its deepest point.

The eventual proposed cross section through the excavation is as follows:



| <i>Activity</i> | <i>Spatial extent</i> | <i>Significance</i> | <i>Duration</i> | <i>Probability</i> | <i>Post-closure impact</i> |
|-----------------|---|---------------------|-----------------|--------------------|----------------------------|
| Excavation | The final excavation will measure 115 x 70m | Moderate | Permanent | Definite | Moderate |

6.1.2.3 Visual Impact

The Borrow Pit 2 area is completely screened from view by the dense alien vegetation present on site as seen in photo 2. While alien vegetation eradication over the area will form part of the Decommissioning Rehabilitation Plan (Figure 5), such perimeter vegetation will be maintained until the end of the contract due to its role in screening. In post-mining phase and following future alien vegetation eradication, the excavation will be exposed to visual impact from passing traffic but this too will be limited by the provision of the low revegetated perimeter safety berm.

Furthermore, the excavation is on land elevated above the level of the farmsteads of the neighbouring Mfengu Trust southwest of the quarry and as such the visual impact of the quarry is limited by this topographic relationship. Such visual impact on the residences is further reduced by the existence of dense mature alien vegetation in this site line which will limit the visual impact of surface activities during the mining operation, while in post closure the retention of the southern quarry rim with low revegetated safety berm will preclude visual impact of the excavation on the residences.

Fortunately Keurboom trees are endemic to this area and with them providing dense growth their use as screen planting in the long term would be effective if needed.



Photo 6: Existing access gate showing perimeter alien vegetation growth to be maintained as visual and dust screen during the mining operation, with removal at end of contract

| <i>Activity</i> | <i>Spatial extent</i> | <i>Significance</i> | <i>Duration</i> | <i>Probability</i> | <i>Post-closure impact</i> |
|------------------------|---|---|---|--------------------|--|
| Excavation Development | From the lower-lying area south of the excavation | Insignificant (given topography and alien vegetation in line-of-sight) | Long term (i.e. post mining) but will continue reducing as perimeter vegetation re-establishes (keurboom) | Definite | Initially moderate reducing as vegetation recovers |
| | On passing traffic | <ul style="list-style-type: none"> Insignificant during operation given retained alien vegetation Low to moderate after perimeter alien vegetation clearing | | | |

6.1.2.4 **Animal life**

The site is largely previously disturbed by previous mining. Vast expanses of the vegetation type surrounding the site provide a habitat suitable for species typical of the area. These include buck, rodents (mice, shrews etc), reptiles (snakes and tortoises), birds and insects.

The large scale of the habitat type when compared to the extent of the proposed activity within current disturbance footprint negates any significance of any impact in this regard. Furthermore the extent of the farm allows for relatively free migration of most animals. As is standard practise, an animal search and rescue will be undertaken prior to any activity on site, with specific attention to sedentary species.

Regarding avifauna, it is noted that during the site visits to date no large terrestrial bird species have been seen on the site or in the immediate surrounds. Notwithstanding these observations, the pre-disturbance search and rescue will pay specific attention to any occurrence of Blue Crane and Denham's Bustard.

| <i>Activity</i> | <i>Spatial extent</i> | <i>Significance</i> | <i>Duration</i> | <i>Probability</i> | <i>Post-closure impact</i> |
|------------------------|-------------------------------------|---|---|--------------------|---------------------------------|
| Excavation Development | Area of 1.5ha (currently disturbed) | Insignificant (given current state of disturbance and small scale)) | Temporary (although habitat type will change permanently to cliffed habitat and possibly reed-bed floor | Definite | None (with vegetation recovery) |

6.1.2.5 Land Capability

In the case of this hard rock site, the area encumbered by the excavations will lose its very limited agricultural land capability, and at best will serve a wilderness function, providing habitat for water- fowl and other bird nesting. The impact can be seen as insignificant given the disturbance on site to date.

| <i>Activity</i> | <i>Spatial extent</i> | <i>Significance</i> | <i>Duration</i> | <i>Probability</i> | <i>Post-closure impact</i> |
|------------------------|-------------------------------------|---|---|--------------------|---------------------------------|
| Excavation Development | Area of 1.5ha (currently disturbed) | Insignificant (given current state of disturbance and small scale)) | Temporary (although habitat type will change permanently to cliffed habitat and possibly reed-bed floor | Definite | None (with vegetation recovery) |

6.1.2.6 Surface Water

No surface water resources are in the Mining Permit Area and as such surface water will not be impacted in any way. The nearest drainage course is at closest 120m East of the site, with this drainage course feeding the Moeilikheid Dam.

6.1.2.7 Ground Water

The proposed hard rock excavation to a proposed depth of 14m below the 175m contour (ie with floor at level 161mamsl) is unlikely to result in any impact on groundwater (the permanent phreatic surface), but notwithstanding the above, given the fractured nature of the rock and of the recharge in the hill above the quarry, seasonal seepage into the excavation through its northern faces will no doubt occur and together with catchment of rainwater, will no doubt pond seasonally in the deep excavation floor.

There will be no discharge and consequently no provision for stormwater discharge needs to be made, and it will also pose no threat to down contour surface water quality.

6.1.2.8 Natural Vegetation

Prior to previous disturbance of the site, the vegetation classified as Tsitsikamma Sandstone Fynbos (Mucina & Rutherford (2006)), but the impact of the proposed

permanent loss must be seen as low, given that the site is heavily invaded by dense alien vegetation, and that much/almost all of its original soil cover and previous vegetation was already been removed by previous mining.

Be that as it may, a Specialist Botanist/Horticulturist has been appointed to conduct a Botanical Assessment of the site, and his findings and recommendations are contained in Appendix G hereto.

“Part of this site has been mined in the past. The eastern and southern boundary has been scraped in the past and topsoil removed. As a result there is little indigenous plant cover in these areas (approximately 50% of the proposed mining permit area). The remaining 50% is characterised by relatively intact Tsitsikamma sandstone fynbos invaded by alien vegetation, including *Pinus radiata*, *Acacia mearnsii*, *Hakea* sp., *Leptospermum laevigatum* and *Acacia saligna*. The average alien vegetation cover across the site is 50% and the natural diversity is lower than expected. This could be the result of general impacts relating to past mining or past Pine infestations.”

“The natural vegetation is largely intact and characterised by *Cliffortia* sp., *Leucadendron salignum*, *Leucospermum cuneiforme*, *Erica* cf. *hispidula*, *Erica deliciosa*, *Erica gracilis*, *Metalasia muricata*, *Elytropappus rhinocerotis*, *Athanasia* sp., *Athanasia dentata*, *Elegia* cf. *fistulosa*, *Struthiola* sp., *Metalasia pungens*, *Tetraria* cf. *bromoides*, *Elegia juncea*, *Stoebe plumosa* and *Restio triticeus*. The geophyte *Watsonia* cf. *knysnana* was recorded.”

“This site can be categorised as having medium conservation value.”

Conclusion of the Botanical assessment:

“Site 2 has been heavily impacted by past mining activities and alien vegetation infestation and has low conservation value. Mining could be permitted on this site”

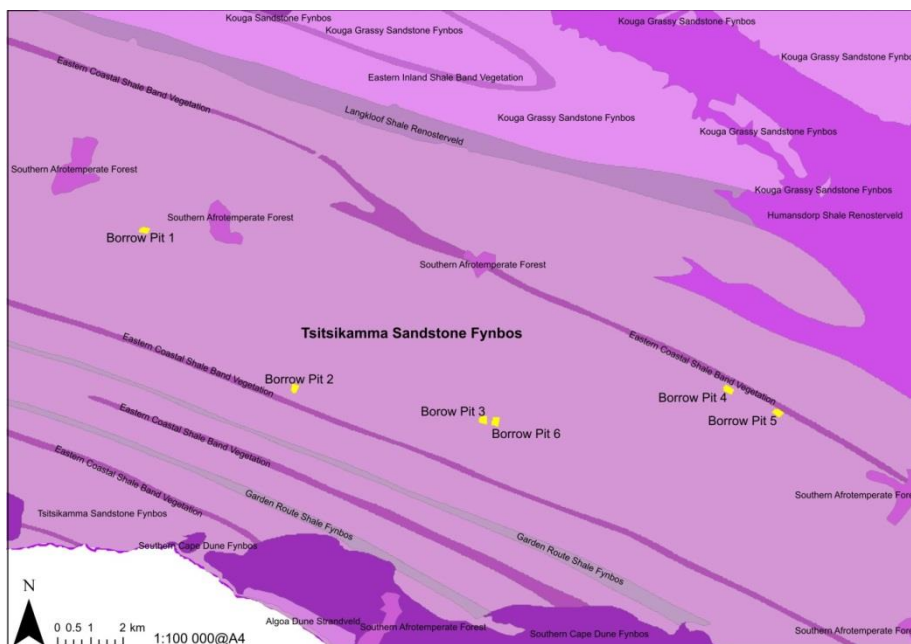


Figure 6: Original natural vegetation types in the region. The sites (yellow polygon) in Tsitsikamma sandstone fynbos: source SANBI – BGIS.



Figure 7: Locality in CBA context

| Activity | Spatial extent | Significance | Duration | Probability | Post-closure impact |
|--|--|--|-----------------|--------------------|--|
| Mining Permit area extension of excavation | Mining permit are measures 1.5ha but only +-25% natural vegetation | Moderate for natural vegetation, None for the rest | Temporary | Definitely | Low. Decommissioning rehabilitation aim is to reinstate natural vegetation over the excavation perimeter |

6.1.2.9 Air quality (Dust)

The following sources of dust will arise due to quarrying activity

- Excavation activities (excavator).
- Crushing and screening.
- Product loading.
- Delivery vehicles to the public road.

No weigh bridge will be located on-site as a central weigh bridge in the wind farm project area will serve all borrow pits.

As per Figure 2 (surrounding land use), the closest residences lie in excess of 600m to the south-west of the site, while on the east-west axis from the quarry there are no sensitive land uses noted in the surrounding land use analysis.

Accordingly the only potential dust impact which could occur is that on the gravel road traffic.

However, in light of the retention of the alien vegetation thicket between the quarry and the road for the period of quarry activity and the contractor's ability to avoid crushing with excess dust through attenuation measures as well as avoiding excess dust generation under easterly wind conditions, sufficient attenuation can be applied to avoid dust generation which could hold any risk for gravel road users. Such attenuation measures can include water cart wetting, termination of crushing under high dust risk wind conditions and general implementation of good housekeeping practises on site.

As the crushing and screening will be undertaken within the confines of the excavation (refer Photo 4), with such crushing position an average minimum of 130m from the public road, crushing and screening dust can be limited to levels which will not impact on the passing traffic.

As there is no shale on-site, dust generation by the quartzitic sandstones will be lower than that encountered at the other sites during the crushing and loading of materials which have a fine particle size.

Despite the above facts, the dust will be white and as such very noticeable in the atmosphere.

6.1.2.10 **Noise**

The following noise sources will occur during the envisaged life-of-mine:

- Loading of material to delivery vehicles or screening plant hopper
- Crushing and screening plant, which activity will be limited to daytime hours, Monday to Friday.
- Product loading and delivery vehicle generated noise

Loading, screening, hauling, and vehicle noise will be limited to the extent of the mine and activities will be limited to the hours between 07h00 and 18h00, weekdays only.

- Blasting; at a maximum once every three weeks

Drilling, loading, and uphill hauling vehicle noise will be limited primarily to the vicinity of the mine, but while these are surface activities during the Phase 1 initial 3m deep sub-base removal these surface generated noises will have a broader dispersion and time of day for such surface activities will be considered in scheduling the activities, again with consideration of atmospheric (wind-still or temperature inversion) conditions.

During the bulk of crushing, the plant will however largely be located within the confines of the deep excavation and noise dispersion beyond the rim of the quarry will be very limited by such confinement.

As in the case of wind-dispersed dust impact, noise impact on the farmsteads at more than 650m to the south-west will be limited to wind-still conditions as during

all other wind directions noise and dust will be dispersed away from such farmsteads and during high wind speed conditions the wind noise in trees and roofs surrounding the farmsteads will exceed the dispersed quarry noise.

Blasting noise will have the most widespread impact on the surrounding land users. It is important to note that such blasting activities will occur only once/month and will be controlled in accordance with standard industry practices, namely:

- Avoid blasting under temperature inversion (mainly cold mornings)
- Avoid blasting under low cloud conditions
- Always try to blast at the same time of day so that it becomes expected by persons working in the veld
- Alerting of all surrounding land users by way of notifications/ telephone / SMS.
- Warning signage to be erected along the public road.
- Road closure will in any event occur given the risk of fly-rock impacting on traffic

It is noted that all activities will be limited to daylight working hours.

6.1.2.11 **Blast vibration and fly rock**

a) Blast vibration – Blast vibration will have no negative impact given the large distances between the quarry and adjacent buildings (closest agricultural building some 505m from the quarry, with residence a minimum of 650m), with the added consideration that, as the geological structures strike east-south-east to west-north-west (+-180degrees), the sub-vertical bedding planes of this layered quartzite will additionally reduce blast vibration transmissivity, posing no damage risk to such structures.

Despite these expectations of low blast vibration risk, all blasts will be monitored with recordal equipment placed at the closest residence on Farm 788/14.

b) Fly rock - Fly rock is legally acknowledged as being a potential impact within a radius of up to 500m. As such this operation will not impact on any surrounding farmsteads or other activity centres, but would impact on farm labourers and livestock who may be in close proximity to the quarry at the time of blasting (**which persons will by prescription of the EMP and the blasting regulations have been alerted well in advance of such blast**).

Given the proximity of the public road, blasting will require the temporary closure of the adjacent public gravel road for the time period immediately prior to and during blasting, ie ±20 minutes. It is however noted that such blasting is to occur only once/month. The Applicant is alerted to the fact that the geologist identifies that given the fractured nature of the rock occasional fly rock could be relatively uncontrolled within a likely 350m radius, and hence road closure should be maintained even when blasting within the floor of the deep excavation.

(As the road contractor will manage the site and is acquainted with temporary road closure for construction, such envisaged closure will be properly signposted and conducted so as to present no problems).

6.1.3 Assessment of potential cumulative impacts

This Mining Permit is one of 6 Mining Permit Applications currently being sought in the area, which permit applications will together serve the greater Tsitsikamma Community Wind Farm construction project.

Given the relative remoteness of the Mining Application site, the re-use of a previously disturbed site and the temporary nature of this planned disturbance, cumulative impacts of the proposed mining are assessed as being none.

6.2 Proposed mitigation measures to minimise adverse impacts

6.2.1 List of actions, activities, or processes that have sufficiently significant impacts to require mitigation

The following impacts are deemed significant enough to require mitigation:

1. Soil that is available must be strictly collected and re-used sparingly and wisely during rehabilitation
2. The return of indigenous vegetation to the site is also deemed a requirement to eliminate visual impact
3. Noise, dust and fly rock are other aspects which will require mitigation measures be put in place to eliminate/reduce their impact.

6.2.2 Concomitant list of appropriate technical or management options

6.2.2.1 Soils

The following topsoil management methodology is copied directly from the specialist botanist's report (attached as Appendix G):

“Top soil stripping

Successful rehabilitation is dependent on careful management of topsoil. Some 70-80% of all plant species found on these sites can returned if topsoil is conserved and replaced following mining. The top 300 mm of soil should be scraped separately and stockpiled for re-spreading following mining”.

“Top soil storage

The top soil should be stored in berms on the perimeter of the site and covered in netting to reduce wind loss. The length of time that the topsoil is stored is critical as regeneration success diminishes with time as the seed store becomes depleted. If feasible the mining should be undertaken in stages whereby topsoil from the next stage is used to cover earlier stages as they are completed.”

“Returning top soil

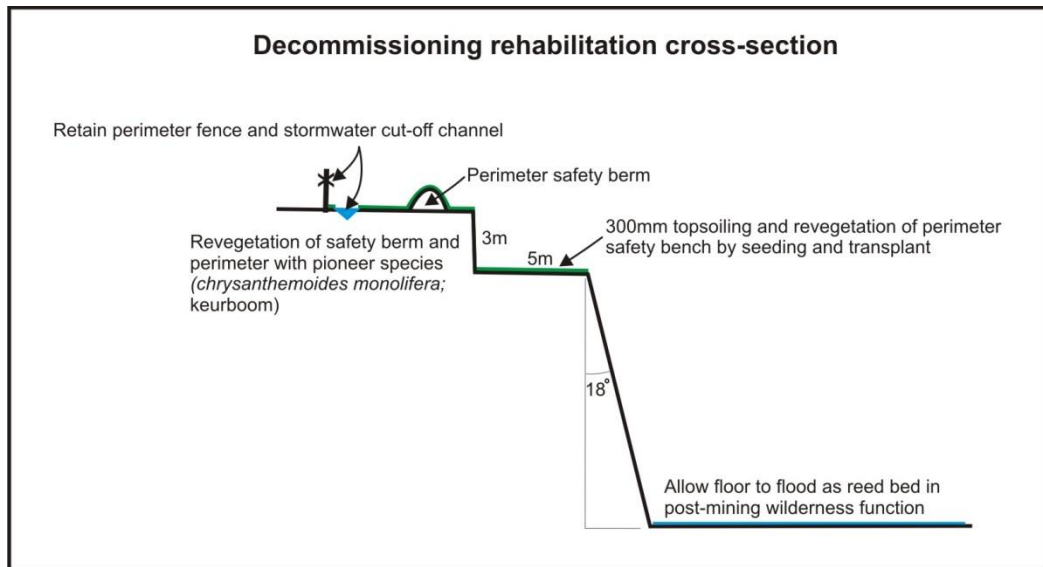
Care must be taken to ensure that topsoil is evenly replacedover the trimmed edges.”

“Re-vegetation

Following scarification, all bulbs removed and stored should be returned to the floor. The seed must then be smoke treated and raked into the topsoil in the autumn.”

6.2.2.2 Topography

Rehabilitation shaping and re-topsoiling of the disturbance perimeter (including the perimeter safety berm) will be conducted post-mining, to re-integrate the area more fully into the surrounding wilderness. The excavation faces will be benched as per cross section below.



6.2.2.3 Visual Impact

The proposed mining and rehabilitation incorporates the following measures to reduce visual impact in both the short and long terms:

- 1) As a temporary measure for visual impact reduction during operation, the existing mature dense alien vegetation perimeter seen in photos will be retained for the duration of the operation, largely precluding all visual impact on passing traffic where the road passes directly adjacent to the site. The retained mature alien perimeter will only be cleared during project decommissioning rehabilitation and the 2-year monitoring and two cycles of annual alien sapling control will commence.
- 2) The topsoiling and revegetation programme proposed for the disturbed perimeter and safety berm if implemented correctly will serve to eliminate visual impact in the long term.
- 3) Replanting of indigenous screening species, eg:
 - i. Low shrub – *Chrysanthemoides monolifera* (bush tick berry)
 - ii. Bushy trees – Keurboom

Will serve to eliminate long term post-mining visual impact of the site, and repel alien re-infestation.

6.2.2.4 Animal Life

As is standard practise, an animal search and rescue will be undertaken prior to any activity on site, with specific attention to sedentary species.

Regarding avifauna, the pre-disturbance search and rescue will pay specific attention to any occurrence of especially Blue Crane (nesting between October and March) and Denham's Bustard (nesting throughout the year) nesting sites, in which event a specialist ornithologist will be consulted to assess the situation and prescribe attenuation measures, which may include rescheduling the use of the borrow pit to allow non-disturbance during occupation of any nest.

6.2.2.5 **Land Capability**

The aim of rehabilitation (including proposed mining layout and method) is to re-instate the site's wilderness land capability, however altered. The following actions will be put in place to meet this aim:

- 1) The excavation is to be shaped in such a way as to maximise wilderness function. The proposed excavation shaping will in fact lead to increased bio-diversity given the variation it provides in habitat type (Raptor nesting and temporary water fowl occupation of the ponded floor). Refer also para 10.2.4 regarding accommodation of avifauna in the cliff faces and the reed bed floor to guidelines of the british publication referred to.
- 2) The topsoiling and revegetation programme proposed for site perimeter and upper safety bench if implemented correctly will serve to maximise (and improve on current) wilderness rating in the long term.
- 3) Topsoil stockpiles (i.e. topsoil removed ahead of mining or placement of any facilities or stockpiles) are not to be placed on top of natural vegetation and must be placed in previously disturbed areas.

6.2.2.6 **Surface Water**

The contamination of stormwater will be avoided/ minimized through:

- 1) Strict adherence to the fuel management as per para 5.2 in the Mining Permit Area.
- 2) Maintaining internal drainage of the excavation.
- 3) Provision of up-contour stormwater cut-off drains and down contour silt catchment drains both of which will lead to detention ponds which collect surface run-off and avoid siltation thereof – refer figure 4 and 5.

6.2.2.7 **Vegetation**

The following measures must be put in place to minimize impact on vegetation and maximise restoration of natural vegetation post mining. Note that all of these measures are sourced directly from Privett report (attached as Appendix G):

1) *Site demarcation*

The perimeter of the site to be mined must be clearly demarcated with visible posts at a maximum of 50m apart. No-go areas must be clearly demarcated and no access allowed into these areas during mining."

2) “Alien vegetation clearing

All alien vegetation, with the exception of the perimeter vegetation (when required for visual and dust screening during mining) must be removed prior to mining. The perimeter alien vegetation plus surrounding 50 m of alien vegetation must be cleared during decommissioning rehabilitation. This buffer area is important in reducing the chances of seed being brought back into the site during the early phases of rehabilitation when the disturbed ground is particularly vulnerable to re-introductions. The topsoil will be full of alien seed and at least three annual post-mining alien clearing follow ups must be built into the alien clearing program. All alien clearing must be undertaken by a local trained Working for Water qualified team using Working for Water standards and quality checks.”

3) “Search and rescue

A qualified botanist/horticulturalist should remove all geophytes and other translocatable material from the site prior to excavation commencing. Material removed from site must either be stored in appropriate cool, dry, dark conditions for later replanting or be planted in suitable No-go areas. If used for rehabilitation then bulbs and rescued plants should be replanted once topsoil has been returned and scarified, but prior to seed introductions. Bulbs recorded on the sites include Tritoniopsis caffra, Haemanthus coccineus, Watsonia knysnana, Velthemia capensis and Kniphofia praecox. There is a high likelihood of other bulb species being present that were not visible owing to the season of sampling. Ideally bulbs should be marked in spring when they flower or are in leaf, but they should only be transplanted once their leaves have dried off (late summer/autumn). If stored under correct conditions these bulbs will all last for the duration of the mining operation.”

4) “Seed Collecting

A qualified botanist/horticulturalist should carry out seed collections both on site and from surrounding vegetation. Collections should ideally be carried out in late summer when the majority of seeds are mature. The vegetation is currently mature and seeds will be available for most species in late summer. Additional seeds of Leucospermum cuneiforme, Protea mundii and Leucadendron salignum should be collected. These seeds should be smoke-treated prior to raking into topsoil post-mining.”

6.2.2.8 **Ground Water**

Despite there being no impact expected on groundwater, avoidance of contamination of ground water will be achieved by:

- 1) Strict adherence to the Fuel management as per para 5.2. As the groundwater in this area can be assumed (given the quartzite rock) to be very pure, strict control over potential hydrocarbon contamination will be imposed through a fuel and lubricant management system relating to vehicle maintenance, refuelling, refuelling procedures, the use of drip trays and drip sheets under parked vehicles, and incorporation of the fuel and

lubricant management programme into the Environmental Induction Training Programme.

No fuel is to be stored on site, with daily refuelling to take place by means of a mobile fuel bowser.

- 2) Provision of chemical toilets given the temporary nature of the site.

6.2.2.9 **Air quality (Dust)**

Given that implementation of the following measures to control dust has become minimum standard practise, the consideration of dust impact must assume that at least the following basic measures will be implemented.

- 1) Dust generated off unsurfaced roadways (General): Wetting of unsurfaced roadways by water cart spray when required and limit speeds on the affected roads.
- 2) Drilling generated dust: Drills to be provided with dust extraction equipment (This is now standard).
- 3) Dust generated during blasting (No specific measure identified as it is expected that the blast dust will be low in the absence of weathered overburden and that given the surrounding land use, no users will be significantly impacted).
- 4) Crushing and screening will be undertaken within the confines of the excavation (refer Photo 4), especially in the bulk phase 2, with such crushing position minimum 130m from the public road, crushing and screening dust can be limited to levels which will not impact on the passing traffic. Should excessive but however occur under easterly wind conditions the site manager should terminate crushing activities in order to not place any risk on passing traffic due to such dust.
- 5) Retention of the perimeter alien vegetation combined with regular wetting of roadways by water cart will limit dust levels from loading and vehicle movement in and from the stockpiles to levels which will not interfere with traffic (despite the proximity). It must be remembered that the site is relatively isolated other than in its proximity to the road and that given the reigning wind regime north-easterly winds which could disperse dust towards the dwellings of the south-west smallholdings are extremely rare, while there are no down-wind residences which could be impacted by predominant westerly or easterly wind-dispersed dust. i.e. dust levels will be well below the 600mg/m²/day recommended maximum.

It must be remembered that dust impact must also be controlled / limited in terms of employee health (Mine health and safety).

6.2.2.10 **Noise**

Para 6.1.2.10 describes the existing elements which serve to eliminate most noise impacts through the proposed operation on surrounding land users and uses.

Staff/ Operators will be made aware of noise considerations through induction training.

Blast noise impact on the nearest residents will be limited to that of a startling nature and not pose any threat of health impact on such persons.

The most significant impact (startling effect) beyond the mining area is that of blast noise. Given the distances involved (the closest of which is the landowner's residence some 2.5km to the west) even this effect will be limited, but be that as it may, the following will be implemented:

- 1) Never blast under temperature inversion (early cold windless mornings).
- 2) Avoid blasting under low cloud conditions.
- 3) Always try to blast at the same time of day so that it becomes expected
- 4) Warn, by way of telephone / SMS, all neighbouring land owners.
- 5) Temporary closure of the adjacent public gravel road for a period of 20 minutes at time of blasting during initial blasts while the risk is fully established by monitoring the initial blast noise, dust and flyrock.
- 6) As the activities will be limited to daytime only, while the high-pitch reverse signals of the front-end loader will be audible from the residences under wind-still conditions this will not be considered an impact during normal daylight hours and will in any event reduce significantly for the longest period of operation during Phase 2 when loading will occur on the deep quarry floor, with such noise not transmitting to the residences.

As the activities will be limited to daytime only, while the high-pitch reverse signals of the front-end loader will be audible from the residences under wind-still conditions this will not be considered an impact during normal working hours.

Against monitoring conducted at numerous quarries in terms of the standard set in SABS 0103 ,at the 480m distance to the farmstead it is not expected that the general borrow pit noise will exceed the recommended daytime noise level of 45dB.

Expected community response

In terms of community response to noise, SANS recommendations are to be used as follows:

| Excess dB above ambient | Estimated Community / Group Response | |
|-------------------------|--------------------------------------|-------------------------------------|
| | Category | Description |
| 0 | None | No observed reaction |
| 5 | Little | Sporadic complaints |
| 10 | Medium | Wide spread complaints |
| 15 | Strong | Threats of community / group action |
| 20 | Very Strong | Vigorous community / group action |

In addition, the general noise industry rule of “ambient +7 dB” shall serve as a good indicator above which levels are generally “not acceptable” (this applies to variations which may occur on occasion and not the average levels).

6.2.2.11 **Fly rock**

As Fly rock is acknowledged as being a potential impact within a radius of up to 500m, but definite high risk to the passing traffic on the public road, it will require the temporary closure of the public gravel road by flagmen for the 20 minutes period prior to and during blasting for all blasts, during mining operation.

It is again noted that such blasting is to occur only once every three to four weeks.

7 **REGULATION 52 (2) (d): Financial provision.**

The applicant is required to-

7.1 **Plans for quantum calculation purposes.**

(Show the location and aerial extent of the aforesaid main mining actions, activities, or processes, for each of the construction operational and closure phases of the operation).

Refer figure 4: Detailed Mine layout plan in para 5.2.2 and Figure 5: Decommissioning Rehabilitation Plan.

7.2 **Alignment of rehabilitation with the closure objectives**

(Describe and ensure that the rehabilitation plan is compatible with the closure objectives determined in accordance with the baseline study as prescribed).

The proposed closure objective is to return the entire site to a wilderness area with restoration of natural vegetation over the excavation perimeter.

Once mining ceases, all disturbed perimeter surfaces will be rehabilitated and the excavation shaped as shown diagrammatically in para 6.2.2.2, most notably with the following features:

- A fence and safety berm around the excavation to negate accidental entrance to the quarry.
- An upper safety bench of 5m wide, maximum 3m depth will be provided and topsoiled and revegetated
- The excavation will be internally draining.
- The floor of the quarry does not need to be topsoiled as such floor will eventually form shallow reedbed through seepage and stormwater.
- In order to achieve the aim of creating a water fowl breeding site, a portion of the floor perimeter should be partly backfilled with graded excess material to provide a varied depth to promote red bed development in a accordance with the methods and set objectives of the British publication referred to in paragraph 10.2.4

7.3 Quantum calculations

(Provide a calculation of the quantum of the financial provision required to manage and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulation 54 (1) in respect of each of the phases referred to).

As per the Financial and Technical Ability Report Table 2 (overleaf), an amount of R220 000 is specified for decommissioning rehabilitation.

| ACTIVITY | POTENTIAL IMPACT | MITIGATION MEASURE | STATE QUARTERLY COST OF THE MITIGATION MEASURES IN THE AVAILABLE SPACE BELOW, IN RANDS | STATE THE ESTIMATED REHABILITATION COST RELATED TO THE ACTIVITY IN THE AVAILABLE SPACE BELOW, IN RANDS |
|--|-----------------------|-------------------------|--|--|
| Excavating | Surface disturbance | Rehabilitation | | R120 000 |
| | Dust | Dust Control Measure | R20 000 | |
| | Noise | Noise Control Measure | None required | |
| | Contaminated drainage | Storm water system | R10 000 | |
| Blasting | Fly rock | Access control measures | R15 000 | |
| Stockpiles | Surface disturbance | Rehabilitation | | Material directly removed to crusher/screen off-site |
| | Dust | Dust Control Measure | Not Applicable | |
| | Contaminated drainage | Storm water system | Not Applicable | |
| Discard dumps or dams | Surface disturbance | Rehabilitation | | Not Applicable |
| | Dust | Dust Control Measure | Not Applicable | |
| | Contaminated drainage | Storm water system | Not Applicable | |
| Loading, hauling and transport | Noise | Noise Control Measure | Not Applicable | |
| | Dust | Dust Control Measure | R40 000 | |
| Water supply dams and boreholes | Surface disturbance | Rehabilitation | | Not Applicable |
| Accommodation, offices, ablution, stores, workshops, etc | Surface disturbance | Rehabilitation | | R100 000 |
| Processing plant | Noise | Noise Control Measure | Not Applicable | |
| | Dust | Dust Control Measure | Not Applicable | |
| | Contaminated Water | Storm water system | R10 000 | |
| | Surface disturbance | Rehabilitation | | |
| TOTAL | | | R95 000 | R220 000 |

Decommissioning Rehabilitation cost @ R220 000

7.4 Undertaking to provide financial provision

(Indicate that the required amount will be provided should the right be granted).

The required amount of R220 000 or alternate amount adjudicated by DMR will be provided by the applicant by way of Bank Guarantee. The applicant commits to the provision of such guarantee through the lodging and signing of this document.

8 REGULATION 52 (2) (e): Planned monitoring and performance assessment of the environmental management plan.

8.1 List of identified impacts requiring monitoring programmes.

The only aspects of the operation that will require monitoring are as follows:

1. Topsoil management
2. Fuel/Lubricant management
3. Dust and Noise
4. Blasting, ground vibration and especially fly rock
5. Stormwater management (Cut-off trench inspections)
6. Vegetation management

8.2 Functional requirements for monitoring programmes.

Fortunately this monitoring programme is fairly straightforward with monitoring to be conducted by the Mine manager. As such no specific functional requirements are deemed necessary but it will serve to note the following elements to be implemented and as such for their implementation to be monitored by the mine manager.

1. Topsoil management:

Mining Permit area:

- Remove any topsoil **where present** to designated stockpiles for re-use in excavation bench rehabilitation and rehabilitation of the excavation rim and upper safety bench
- Pre-ripping of disturbance footprints prior to topsoil replacement.
- Replacement of topsoil by dozing from perimeter topsoil berms.
- Smoothing the surface by scarification, and reseeding with localised pioneer species in consultation with specialist botanist.

2. Fuel/Lubricant management As per paragraph 5.2:

The appointed mine manager will ensure implementation of the fuel and lubricant management programme elements as per paragraph 5.2 on a daily basis. Additionally, the operators of the equipment must be instructed to report daily on any fuel/lubricant incidents and the mine manager will be responsible for such daily verbal reporting. The mine manager shall record all “environmental incidents” in writing (Place of occurrence, date and time together with description of occurrence, remediation treatment applied and residual status etc).

3. Dust and Noise

Ambient conditions will be monitored visually and audibly daily and the Mine Manager will adapt operations so as to limit all noise and dust generation when conditions are unfavourable, and instruct on additional water cart wetting of manoeuvring areas and roads as required to control dust.

Should a combination of high dust and easterly wind conditions pose any risk to traffic safety at any time, the on-site activities shall immediately be terminated and attenuation measures applied prior to recommencement of activities at a reduced risk to traffic.

4. Blasting

Blasting will be conducted by a blasting contractor who shall be responsible for the ground vibration monitoring of each blast while the blaster and mine manager/production manager will inspect the distribution of fly rock as basis for risk assessment relating to continued road closures during blasting.

5. Stormwater cut-off channels and ponds

On a monthly basis and additionally during and after heavy rains the Mine Manger/Production Manager shall inspect the stormwater cut-off

channel/detention pond and the silt cut-off channels and siltation pond to ensure that they are maintained and functioning.

6. Vegetation

On a monthly basis the mine manager/production manager shall conduct a site inspection to:

- Check that no unnecessary disturbance of natural vegetation takes place by either unauthorised tipping or movement of mobile plant outside of demarcated areas and roadway.
- Alien vegetation management in accordance with botanist specification.

8.3 Roles and responsibilities for the execution of monitoring programmes.

The applicant will arrange for the conducting of monitoring during topsoil removal, mining and during substrate ripping and re-topsoiling and an Environmental Performance Assessment (EPA) will be conducted midway during rehabilitation, which EPA will be supplemented by a final rehabilitation inspection serving the purpose of closure motivation.

Implementation of the on-site daily monitoring by observation and internal verbal reporting will be conducted by the equipment operators and mine manager.

8.4 Committed time frames for monitoring and reporting.

The following applies:

- 1) Daily monitoring by observation of:
 - a. Fuel and lubricant management
 - b. Dust levels
 - c. Restriction of equipment movement to demarcated areas
- 2) Continuous visual monitoring of dust levels
- 3) Ground vibration monitoring by contractor and fly rock monitoring by contractor and mine management during each blast
- 4) Three stages of monitoring by Mine Management ie:
 - a) During topsoil removal
 - b) During mining
 - c) During rehabilitation sub-soiling and re-topsoiling
- 5) Monthly monitoring by management inspection of:
 - a) Stormwater and siltation channels and ponds
 - b) Alien vegetation.
- 6) As Environmental Performance Assessments are prescribed to be conducted every two years, and given that the lifespan of a Mining Permit as sought is

two years, only a single formal Environmental Performance Assessment Report will be submitted to the DMR during final rehabilitation.

However, should a 1-year extension period be sought, or it be deemed necessary throughout the project by the DMR, such Report may be conducted annually to fall within site activity time frames.

9 REGULATION 52 (2) (f): Closure and environmental objectives.

9.1 Rehabilitation plan

(Show the areas and aerial extent of the main mining activities, including the anticipated mining area at the time of closure).

Refer Figure 5: Decommissioning rehabilitation Plan.

9.2 Closure objectives and their extent of alignment to the pre-mining environment.

The closure objective is to return the entire site to a wilderness area. In terms of pre-mining environment, this closure objective represents an improvement given the extent of damage to the site through previous unrehabilitated mining by others.

9.3 Confirmation of consultation

(Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties).

Yes.

The public participation process was exhaustive and part of that process was the preparation of a so-called "Background Information Document" (BID). Such document is included in full in Appendix A. The BID document was hand delivered to the landowner and adjacent landowners, with all such persons additionally contacted telephonically and this Application discussed. The landowner's written consent for the project is attached hereto in Appendix C and he will be entering into a Surface Rental Agreement with Great Karoo Prospecting prior to the commencement of any activities on-site.

In order to reach the general public, a notice of the Application was placed in the local newspaper, The Kouga Express, along with a hard copy of the BID document made available at the Humansdorp Public library for perusal, with the BID being emailed to identified I&AP's as well as persons who requested registration as I&AP's. (responses to date are attached hereto in Appendix D).

The Applicant conducted personal discussion with the representative of the landowner using the BID documents listing and description of environmental elements of the site as background.

Additionally, this completed EMP will be emailed to the landowner and any registered

I&AP in addition to the distribution by the DMR to State and Parastatals for consideration of the impacts.

10 REGULATION 52 (2) (g): Record of the public participation and the results thereof.

10.1 Identification of interested and affected parties.

(Provide the information referred to in the guideline)

As referred in the report on Consultation:

10.1.1 Name the community or communities identified, or explain why no such community was identified.

While no community is specifically identified, this borrow pit will serve the supply of materials to the Tsitsikamma Community Wind Farm Project which is an undertaking involving the Tsitsikamma Development Trust – Mfengu Community, and consequently the community will be deriving full benefit from the successful construction of the wind farm, and successful and cost effective supply of materials in the construction programme by the Applicant.

The Borrow Pit is located in a rural farming area with the closest town being Clarkson at 8km to the west.

The Department Rural Development and Land Reform has been notified in respect of possible land claims and their response is awaited.

10.1.2 Specifically state whether or not the Community is also the landowner.

No, the land is privately owned.

10.1.3 State whether or not the Department of Land Affairs been identified as an interested and affected party.

The Department Rural Development and Land Reform has been notified in respect of possible land claims. Their response is however still awaited and will be included as an Appendix to this report once received.

10.1.4 State specifically whether or not a land claim is involved.

The Department Rural Development and Land Reform has been notified in respect of possible land claims. Their response is however still awaited and will be included as an Appendix to this report once received.

10.1.5 Name the Traditional Authority identified

None applicable

10.1.6 List the landowners identified by the applicant.

Farm Moeilikheid 662 is owned by:
CWMBran properties, in terms of Title deed T21658/1968.

10.1.7 List the lawful occupiers of the land concerned.

The landowner currently occupies the farm but as an un-rehabilitated road works gravel borrow pit the site of Borrow Pit 2 is vacant land.

10.1.8 Explain whether or not other persons' (including on adjacent and non-adjacent properties) socio-economic conditions will be directly affected by the proposed prospecting or mining operation and if not, explain why not.

The proposed Mining Permit area of 1.472Ha combined with the 2-year lifespan of the operation results in a limited direct employment impact arising from the mining operation, which will be served largely by existing Great Karoo Prospecting employees supplied by local recruitment. However, this Mining Permit will serve to provide the very necessary construction materials to the Tsitsikamma Community Wind Farm Project and as such will contribute positively to the employment of the local workforce involved in the Civil Engineering Construction programme of the Project and in post-completion the wind farm will provide the nearby community of Mfengu with a significant source of income.

10.1.9 Name the Local Municipality identified by the applicant

Kou-Kamma Local Municipality. Their comment on this documentation is not requested as a separate full Application for Land Use Departure is being submitted to the Local Authority.

10.1.10 Name the relevant Government Departments, agencies and institutions responsible for the various aspects of the environment and for infrastructure which may be affected by the proposed project.

- Department Environment and Nature Conservation (Eastern Cape)
- Department of Water Affairs and Forestry
- Department of Agriculture

10.1.11 Submit evidence that the landowner or lawful occupier of the land in question, and any other interested and affected parties including all those listed above, were notified.

Landowners

The landowner's representative, Robert Ballantyne, was fully consulted by the Applicant in a meeting held between himself and Mr Kevin Konkol of Great Karoo Prospecting on 23/5/2013, and as per the signed table of confirmation (Appendix 2) has received a full copy of the Background Information Document (BID) outlining the envisioned activities on site.

Refer Appendix C which contains copies of:

- Table of Landowners who were personally met with on-site which includes Mr Ballantyne of CWMBran farms
- Emailed notification and cover letter as sent to the immediate adjacent landowner of Farms 788 portion 12 and 788 portion 14, the Tsitsikamma Development Trust – Mfengu. A subsequent meeting to

discuss the project was also held on site with Mr Thobile Makamba (Trust representative)

- Signed letters of consent from both the landowner Mr Ballantyne and the adjacent landowner, the Tsitsikamma Development Trust represented by Mr Makamba.

General I&APs and general Public (notification by newspaper)

Refer Anexure D which includes:

- Copy of newspaper notice published in the Kouga Express on 23 May 2013 with copies of the BID document provided at the Humansdorp Public Library
- Copies of correspondence received in respect of the newspaper advert (One to date, the St Francis Kromme Trust, represented by Mrs M. Langlands)

Refer Appendix E which the includes notification and comment of other identified I&AP's

- Department Rural Development and Land Reform. As mentioned, given the discrepancies in farm numbering being encountered between the title deeds, SG diagrams and Windeed and GIS databases, notification to the Department of Rural Development and Land Reform was specifically delayed until Conveyancer's Certificates were obtained to ensure correct Farm references were used. No response has yet been received from the Department, but such response will be appended to this EMP once received. Given that land reform has taken place to a large degree in this area to date, no land claims in respect of this property are expected.

10.2 The details of the engagement process.

10.2.1 Description of the information provided to the community, landowners, and interested and affected parties.

Refer Appendix A. The Background Information Document (BID) contained the following:

- General information regarding the application process with specific reference to where public participation takes place in the process.
- Brief project description
- Brief description of existing environment, anticipated impacts and impact attenuation (reduction) measures
- Way forward and request to comment/register as I&AP

This BID document was:

1. Hand delivered to the Landowner and adjacent landowner – Refer Appendix C
2. Placed at the Public Library in Humansdorp following notification in the press

3. Provided by Email or to all other parties who requested a copy (none requested to date).

The result is that every single person who wished to know more about the operation or comment thereon had access to the Background Information Document.

10.2.2 List of which parties identified in 10.1 above that were in fact consulted, and which were not consulted.

I&APs consulted were as follows:

- The registered Landowner (Farm 662) – CWMBran Farms represented by Mr R. Ballantyne
- Adjacent Landowner of surrounding farms to the west – Tsitsikamma Development Trust represented by Mr T. Makamba
- Department Rural Development and Land Reform
- The St. Francis Kromme Trust, following their registration as an I&AP

10.2.3 List of views raised by consulted parties regarding the existing cultural, socio-economic or biophysical environment.

None.

10.2.4 List of views raised by consulted parties on how their existing cultural, socio-economic or biophysical environment potentially will be impacted on by the proposed prospecting or mining operation.

Refer Appendix E for correspondence with the St Francis Kromme Trust. While their registration as an I&AP was in response to the later Application for Borrow Pit 6 which followed the Application for Borrow Pit 1 to 5, the concerns do relate to all borrow Pit applications which are underway and are thus included herein.

As per their letter of comment dd 3 July 2013, their concerns relate primarily to the potential impacts on avifauna of the area, specifically terrestrial species of conservation concern.

While they call for an avian specialist study to be undertaken, this is seen as unnecessary, given:

- The specialist assessment already undertaken for the area which informed the granted Environmental Authorization of the Tsitsikamma Community wind farm.
- That the primary impact of concern, being that of blasting noise, is of an exceptionally temporary nature, occurring at maximum only once every 3 weeks over a plus/minus 7 month period on the hard rock sites (**Borrow Pits 2 and 6**) and only possibly on ad hoc occasions on the soft rock sites (Borrow Pits 4 and 5), and amounts only to an immediately startling effect with no long term residual effects on surrounding wildlife.

- Experience at many quarries in which Site Plan Consulting have been involved over the past 30 years reveals the following in respect of quarrying impact on mobile wildlife:
 - Initial blasting in the short term scares away mammal and bird life but these soon return despite daily crusher and other activity noise and subsequent monthly blasting. This comment is based on the fact that a very successful bird park with bird hides visited by members of the Port Elizabeth ornithological clubs reports a broad diversity of species in the rehabilitated valley adjacent to the continued plant and excavation operation at Moregrove Quarry.
 - Small buck footprints are found daily in the silt deposits in the proximity of the plant of the Outeniqua Quarry in George (refer Photo 13)
 - Leopard being sighted within the mining area during the active crushing plant construction period of Palmiet quarry in the Western Cape, notable for being situated within the Kogelberg Biosphere Reserve
 - Fish eagles nest and breed successfully every year in the same Bluegum tree immediately adjacent to the Peak Quarry in Eerste River, despite immediately adjacent blasting and the direct line of site crusher noise and hauling activities
 - As per the photo 14, blue crane pairs were observed in the post-rehabilitation monitoring the first year following closure of a large “soft rock” calcrete borrow pit near Still Bay.
 - Visits to temporarily abandoned quarries and old quarries with hard rock faces on numerous sites reveals nesting by raptors, including owls.

While, as per the telephonic discussion between Mrs Langlands and Mr Stephen van der Westhuizen of Site Plan Consulting, we do concede that in the case of the hard rock excavations the habitat will be lost over the Mining Permit Area, this loss constitutes a change in habitat type rather than the sterilization of the area, as the rehabilitation to be put in place will allow reintegration of the area into a wilderness function. As evidenced in the Avian assessment conducted by Avisense Consulting; quarry faces provide nesting sites for key raptor species, and the envisioned flooding of the quarry floor with a shallow gradient reed-bed in line with british quarry guidelines will provide habitat suitable for water fowl colonization of the site (as per “Amenity Reclamation of Mineral Workings: Main Report” published by Her Majesty’s Stationary Office).



Photo 7: Buck spoor in silt bank 60 from existing operating crusher at Outeniqua Quarry, George



Photo 8: Blue cranes nesting on a rehabilitating “soft rock” Borrow Pit site at Still Bay, Western Cape, 1-year after initial decommissioning rehabilitation of the site.

10.2.5 Other concerns raised by the aforesaid parties.

No concerns have been raised to date and both the landowner and adjacent landowner have given their full consent.

10.2.6 Confirmation that minutes and records of the consultations are appended.

Full copies of signed notification acceptance table, and responses received are attached in the Appendices to this EMP

10.2.7 Information regarding objections received.

No objections have been received.

10.3 The manner in which the issues raised were addressed.

Refer 10.2.4 above and Site Plans emailed response to Mrs Langlands attached in Appendix E.

11 SECTION 39 (3) (c) of the Act: Environmental awareness plan.

11.1 Employee communication process

(Describe how the applicant intends to inform his or her employees of any environmental risk which may result from their work).

An Environmental Awareness Training Programme is contained in Appendix F setting out how the applicant will communicate the environmental sensitivities and requirements to all staff

11.2 Description of solutions to risks

(Describe the manner in which the risk must be dealt with in order to avoid pollution or degradation of the environment)

The only risks which are evident are:

1. Hydrocarbon spills:
Ensure that all prescriptions contained in para 5.2 are adhered to.
2. Risk of unnecessary disturbance to areas outside of the demarcated mining area
The entire Mining Permit area will be fenced with stock-proof fence prior to primary on-site activities.
3. Improper Topsoil/Growing Medium Management in the plant and stockpile areas
All available topsoil will be removed wherever available and will be stored temporarily in perimeter topsoil berms.
4. Alien vegetation infestation
The site is already significantly infested with alien vegetation. The proposal is to remove all alien vegetation on site and a buffer surrounding such mining area. Alien vegetation management will continue beyond decommissioning rehabilitation phase and will form part of minimum 2 year aftercare programme whereafter the management of alien vegetation on-site as for the remainder of the farm will revert to the landowner.

11.3 Environmental awareness training/Emergency situation management.

(Describe the general environmental awareness training and training on dealing with emergency situations and remediation measures for such emergencies).

Only two high evidential risk probabilities/possibilities are identified namely:

- Fuel/oil spills; or
- Veld fires.

To this end the following procedures must be brought to the attention of all staff and suitable material/equipment provided to deal with them.

a) Fuel/oil spills

The reporting procedure in terms of which any person on site who sees an oil/fuel spill occurring must:

1. Ensure the safety of any person nearby by evacuating any such persons from the danger area.
2. Having assessed the volume of the spills and if safe, then:
 - Report the spill to the office personnel who shall notify the Manager
 - Use either shovels or mechanical equipment (loader, etc.) to either dig a low trench or construct a wall to contain the spill.
3. The Manager shall consult the literature as to the methods of clearing up the spill and treating the affected soil.

b) Fire

No open fires are allowed on site.

Should any fire derived from the mine or elsewhere be noted in the veld, the mine manager must immediately be notified and all available persons recruited on site to beat the fire or use the water cart if available to assist. The contact names and telephone numbers (office and after hours) of the following persons must be displayed at the mobile offices and stores/equipment container.

EMERGENCY NUMBERS

| | Name | Telephone |
|----------------------|------|-----------|
| Mine Manager | | |
| Surrounding Owners | | |
| | | |
| Land owner | | |
| Municipal Fire Chief | | |

12 SECTION 39 (4) (a) (iii) of the Act: Capacity to rehabilitate and manage negative impacts on the environment.

12.1 The annual amount required to manage and rehabilitate the environment.

(Provide a detailed explanation as to how the amount was derived)

As per the table in paragraph 7.3 of this EMP which is a copy of table 2 in the Financial and Technical Ability section of the Application, an amount of R95 000 per active quarter is provided for environmental management and operational rehabilitation.

The above-mentioned table in para. 7.3 also contains the cost derivation for closure rehabilitation i.e.; the R220 000 Quantum which is over and above the quarterly allocation to operational rehabilitation.

12.2 Confirmation that the stated amount correctly reflected in the Prospecting Work Programme as required.

Yes, it is confirmed.

13 REGULATION 52 (2) (h): Undertaking to execute the environmental management plan.

| | |
|--|---|
| Herewith I, the person whose name and identity number is stated below, confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application, and confirm that the above report comprises EIA and EMP compiled in accordance with the guideline on the Departments official website and the directive in terms of sections 29 and 39 (5) in that regard, and the applicant undertakes to execute the Environmental management plan as proposed. | |
| Full Names and Surname | Enzo Menegaldo Representing Great Karoo Prospecting (Pty) Ltd |
| Identity Number | 5912085211184 |

-END-