mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: **Finsch Diamond Mine (Pty) Ltd**

REFERENCE NUMBER: **NC 30/5/1/1/2/10927PR**

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.

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

ITEM	COMPANY CONTACT DETAILS
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ITEM	CONSULTANT CONTACT DETAILS (If applicable)
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1 REGULATION 52 (2): Description of the environment likely to be affected by the proposed prospecting or Mining operation.

Geoscientific Mineral Resources CC was appointed by Petra Diamonds Pty Ltd to assist with the public participation process and the compilation of an Environmental Management Plan (EMP) as a separate document for the application of a prospecting right, of a Diamond project, area (hereafter referred to as Portion 3 of the farm 299, Portion 1 and the remaining extent of the farm 298.

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

The proposed prospecting area falls within the Siyanda District Municipality and Kgatelopele local Municipality located at Danielskuil town, situated in Hay District, Northern Cape. See figure 1 showing the location of the proposed area.

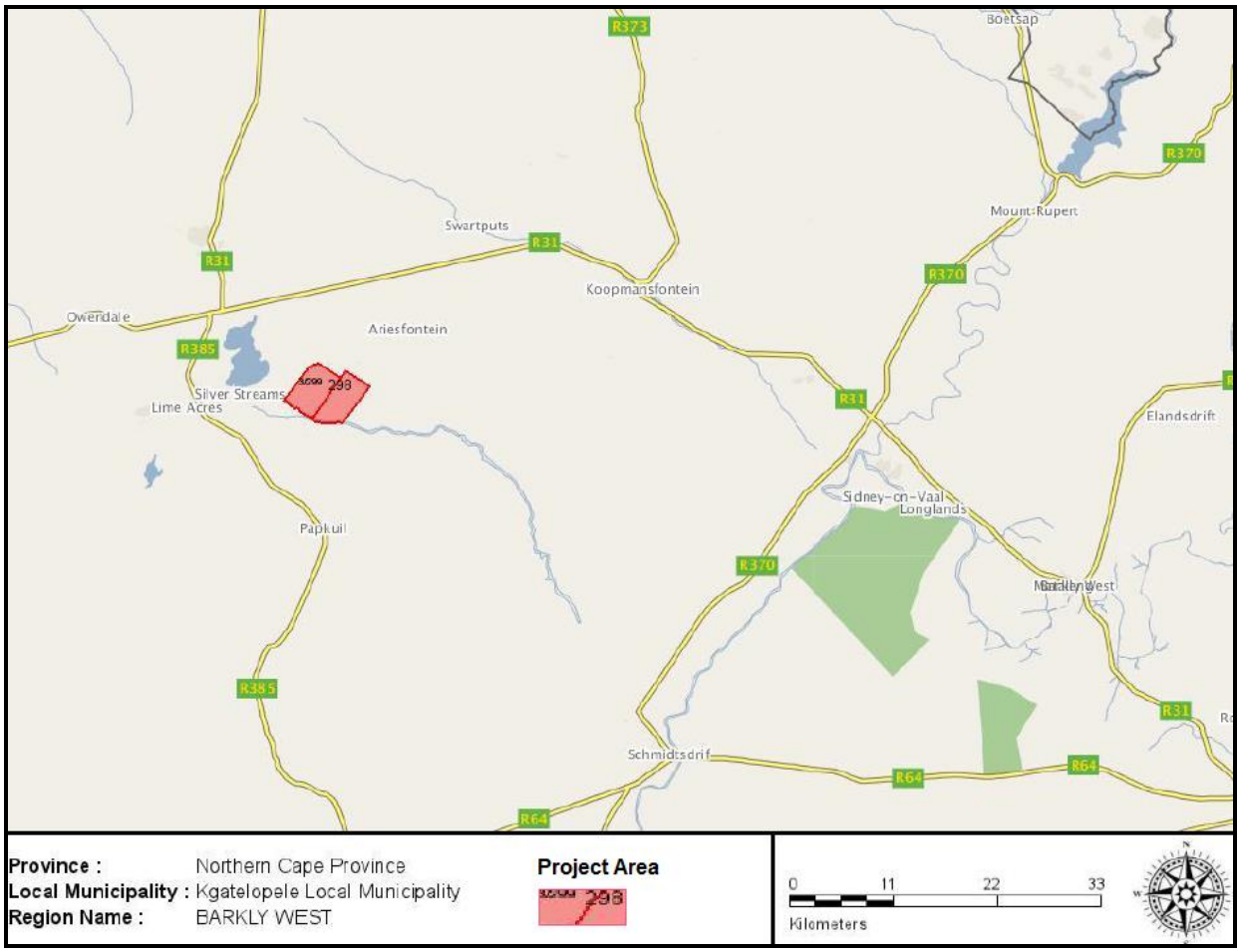


Figure 1: Locality map of the project area in relations to the nearest towns.

Property Description and Current Land Use

Farm no 298 is now consolidated to Glen Lyon Farms (Proprietary) Limited.

Farm Name:	VLEIPLAAS
Farm Number:	298
Portion:	1 and Remaining extent(RE)
Region Name:	Barkly West
Local Municipality:	Kgatlelopele
District Municipality:	Siyanda
District:	Hay
Province:	Northern Cape
Land Owner:	Mr B. Markram
Title deed number:	T1951/2002
Current land use:	Farming
Geo-graphical Co-ordinates	-28.353154° : 23.692930°

Farm no 299 has been consolidated to farm number 610 of Orange River Consolidated Properties (Proprietary) Limited.

Farm Name:	LANGVERWAG
Farm Number:	299
Portion:	3
Region Name:	Barkly West
Local Municipality:	Kgatlelopele
District Municipality:	Siyanda
District:	Hay
Province:	Northern Cape
Land Owner:	Mr GP du Plessis
Title deed number:	T2640/2006
Current land use:	Farming
Geo-graphical Co-ordinates	-28.342988°: 23.660066°(Central portion)

<u>Site location</u>

±12KM South of the provincial road R31

±16km North East of the town Lime Acres

±19km South East of Danielskuil, and

±81km North West of Barkly West Town.

As abovementioned, the proposed area and its surroundings site are mainly used for farming purpose. The project area Portion 1 of the farm 298 and portion 3 of the farm 299 is already affected in some areas by the development

of energetic infrastructure such as the four power lines Eskom`s Olien-Ulo and Silverstreams-Ulco intersecting the study from SSW to EES direction.

Topography: The proposed prospecting area is underlain by a valley floor land facet with gentle slope of 0.4% from south to northwest across the site, the lowest elevation is 1429 meter above mean sea level with the highest point 1440 m above mean sea level.

Drainage occurs as sheet-wash in a north western direction towards local low lying areas north of the site. The river forming the southern boundary of the farm lies beyond a local topographical watershed. There is no flooding risk from drainage on the site.

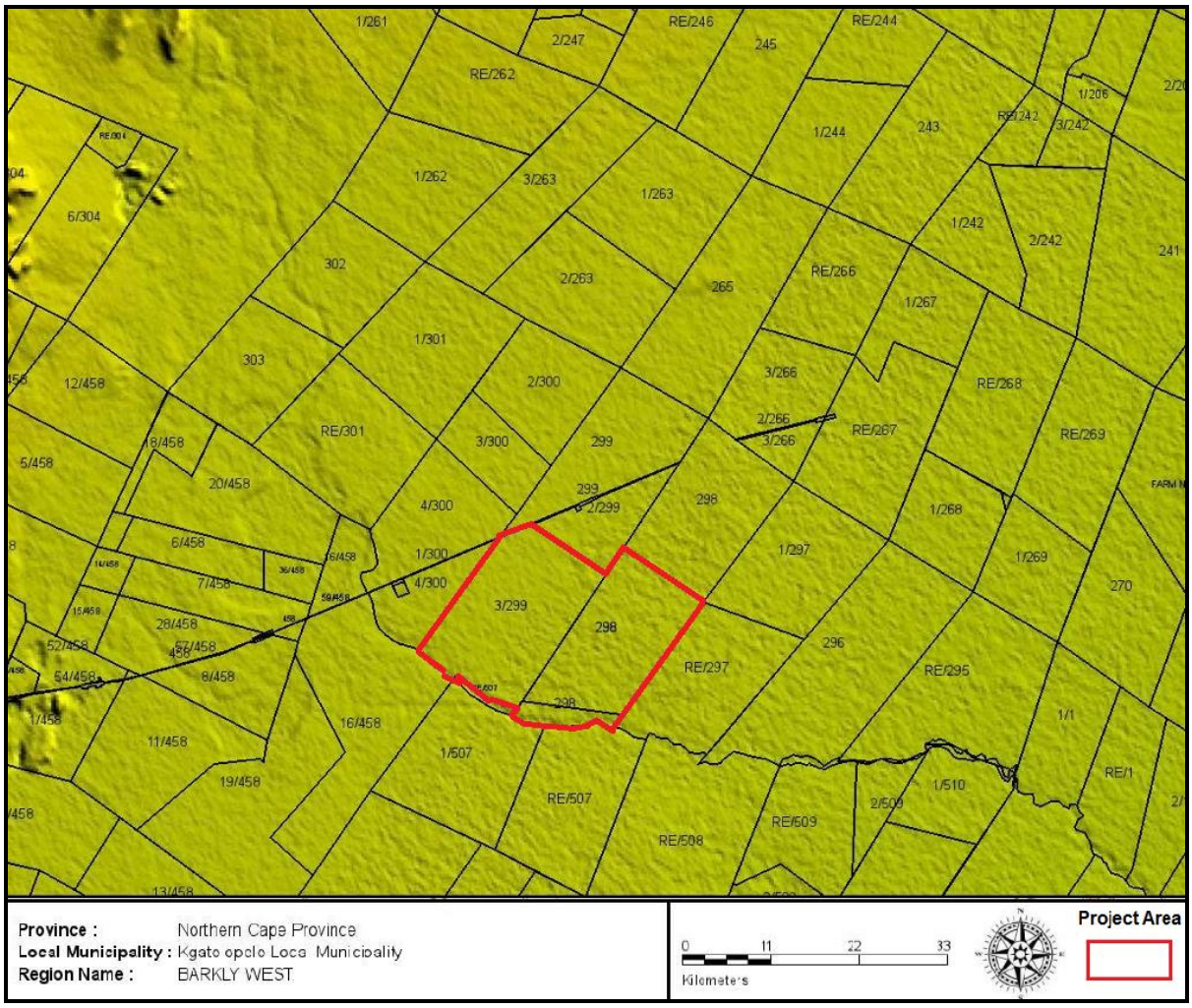


Figure 2: Landscape of the project area

Noise: The current sources of noise are from the traffic on the main gravel road 385 and road R31 from Kimberley to Postmasburg, traffic in Lime Acres town

and mining activities which is situated ±16km South west of the application area.

Climate: The study area is situated within the summer and autumn rainfall region with very dry winters. The mean annual precipitation varies between 200 and 400mm. The mean maximum and minimum monthly temperatures for the area are 36.3°C and -7.5°C, for January and July respectively**.**

Air Quality: The general air quality on the area is expected to be good, though sources that negatively impact on air quality are dust from the main road 385, and periodic burning of the veld due to human activity or as a result of natural causes. Dust produced by surface mining activity at PPC Lime, Idwala and Finsch mine also have a negative impact on air quality in the project area under certain weather conditions.

Fauna: Fauna species are expected to be present within the vicinity and around the adjacent farms. Mammalian species, mobile bat species, small carnivores, small rodents and Insectivores species should be expected to be found during prospecting. The prospectors should be watchful of the Mygalomorph spiders, scorpions, certain butterfly (Lepidoptera) and dragonfly and damselfly (Odonata) species as are regarded as conservational concern. Some potential rare fauna may also occur in the area, and specific mitigation measures need to be implemented to ensure that the impact of the prospecting activities on the species' habitat will be low.

Vegetation types: The vegetation of the proposed prospecting area falls within the north-eastern range of the Griqualand West Centre of Endemism and is one of the 84 African centres of endemism and one of 14 centres in southern Africa and these centres are of global conservation significance.

The proposed application area lies within the Savanna biome which is the largest biome in Southern Africa. It is characterized by a grassy ground layer and a distinct upper layer of woody plants (trees and shrubs). The environmental factors delimiting the biome are complex and include altitude,

rainfall, geology and soil types, with rainfall being the major delimiting factor. Fire and grazing also keep the grassy layer dominant. The most recent classification of the area by Mucina & Rutherford shows that the site is classified as Ghaap Plateau Vaalbosveld.

The landscape features of this vegetation type are a flat plateau with well developed shrub layer dominated by Tarchonanthus camphoratus underlain by surface limestone and dolomite. The conservation status of the Ghaap Plateau Vaalbosveld is Least Threatened with none conserved in statutory reserves and only 1% transformed *(Mucina & Rutherford, 2006).*

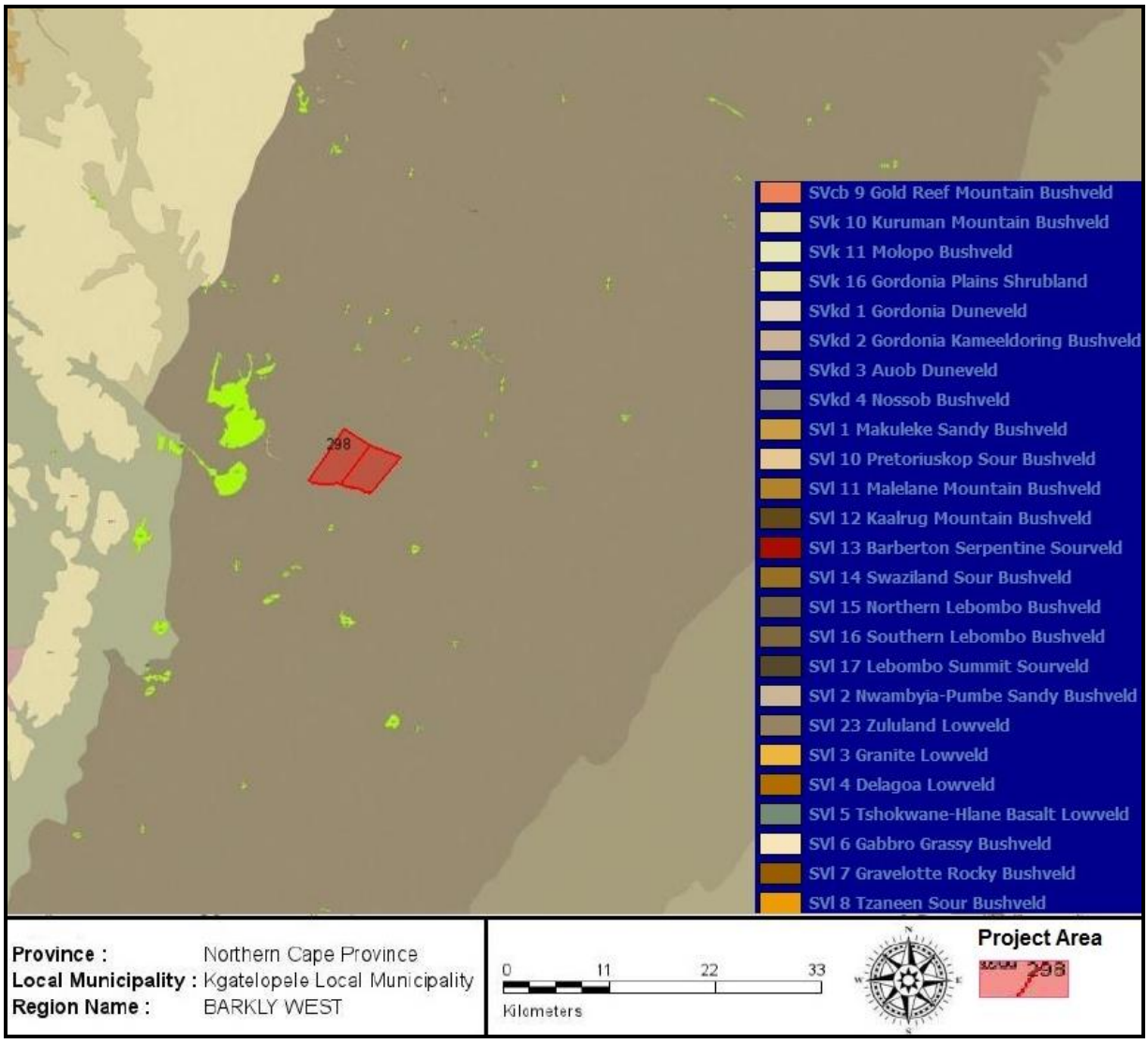


Figure 3: vegetation type map

This vegetation type covers most of the Ghaap Plateau, and is found on different types of soils, such as calcareous tufa, dark brown to red sands and acid gravels, all underlain by dolomite *(van Rooyen & Bredenkamp 1996).*

The vegetation varies from open to closed bushveld, composed mostly of shrubs and some small trees, in mixed grassland. The principal shrubs are Camphor Tree *Tarchonanthus camphoratus, Threethorn Rhigozum trichotomum, Puzzle Bush Ehretia rigida, Grewia flava and Gymnosporia buxifolia.* The tree species present are Wild Olive *Olea europaea subsp. africana*, Umbrella Thorn Acacia tortilis and Shepherd's Tree *Boscia albitrunca (van Rooyen & Bredenkamp 1996).*

Grasses are tall, and Red Grass *Themeda triandra*, Copperwire Grass *Aristida diffusa* and Silky Bushman Grass *Stipagrostis uniplumis* are common. Thickets of shrubs and trees are present and include Fringed Karee Searsia ciliata, Black Thorn Acacia *mellifera subsp. detinens*, and Umbrella Thorn Acacia *tortilis*.

The pans on the proposed prospecting site represent the Southern Kalahari Salt Pans vegetation type on site. These pans represent low grasslands on pan bottoms. The pans as an entity have a Least Threatened conservation status and are subject to natural degradation / regeneration cycles controlled by concentration of grazing animals.

Surface Water: Minor pan wetlands and riparian habitat were identified within the vicinity or the proposed prospecting area including the surrounding areas. It is unlikely that the prospecting operation will negatively affect the surface water as there is no surface water available within the vicinity. There is a non-perennial surface water systems (Klein Riet River) located South at the boundary of the proposed application area.

Ground Water: The proposed application is located in the tertiary catchment area C92A. The catchment area forms part of several non-perennial/ dry pans,

where 45 m³/ha/annum of ground water abstraction is allowed for under the DWA General Authorization. The proposed prospecting site falls within the Lower Vaal Water Management Area (WMA).

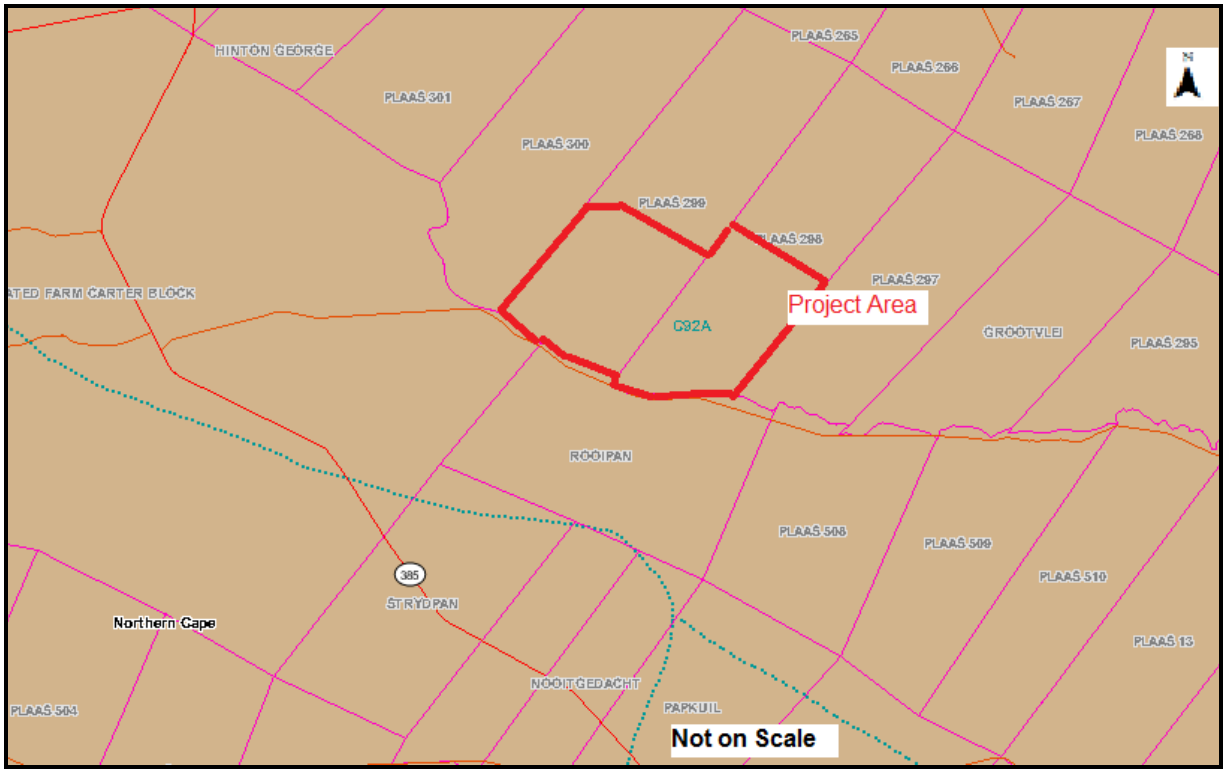


Figure 4: Catchment Map

The Recorded Mean annual precipitation is 367 mm per annum, with an annual run-off of 8 mm. The groundwater recharge is 10.3 mm per year and the groundwater level of the area is 4m below surface. The total groundwater use in the quaternary is 0.83 Mm3 per year.

The estimated annual groundwater recharge (10.3 mm/m2 per annum) from an average annual precipitation of 367 mm falling on the property (2,720 ha) will result in 280,160 m3 of water available.

The maximum annual water requirements are:

- 6300 m3 / year for livestock (350 head of cattle consumes 50 l of water per day);
- 360 m3 / year for human consumption (landowners).

Water for domestic use by the surface owner at his residence is obtained from a borehole. The ground water quality is expected to be of good quality.

Soils and geology: This land is situated in the Campbellrand Subgroup which comprise of carbonates, shales and chert. The topography is relatively flat with Vaalbos and Olienhout trees covering it mostly. This area is well known for limited water resources and a very thin layer (5 - 10cm) of soil.

The area has not been irrigated and is engaged by livestock grazing land, as a result has a low agricultural potential for cropping production. The site is underlain by Aeolian sand and quaternary calcrete overlying the limestone of the Ghaap Plateau Formation (Vgl). Sporadic outcrop of limestone were noted across the site during the site investigation.

The surface calcrete (Ql) occur as a capping on the dolomite and in places cemented limestone boulders were observed.

The Aeolian sand is generally well graded and has a potential to be collapsible. In partially saturated conditions the soil has high relative high shear strength because of the apparent cohesion imparted by pore water suctions. In saturated conditions the reduction in strength is however instantaneous. Therefore for foundation design purposes the effective cohesion is zero and the effective angle of internal friction is between 31° and 36°.

The calcareous pedogenic soil that develop under fluctuating water levels in the soil occur in areas where the host rock is argillaceous is variable and can range from a calcareous soil to hardpan calcrete.

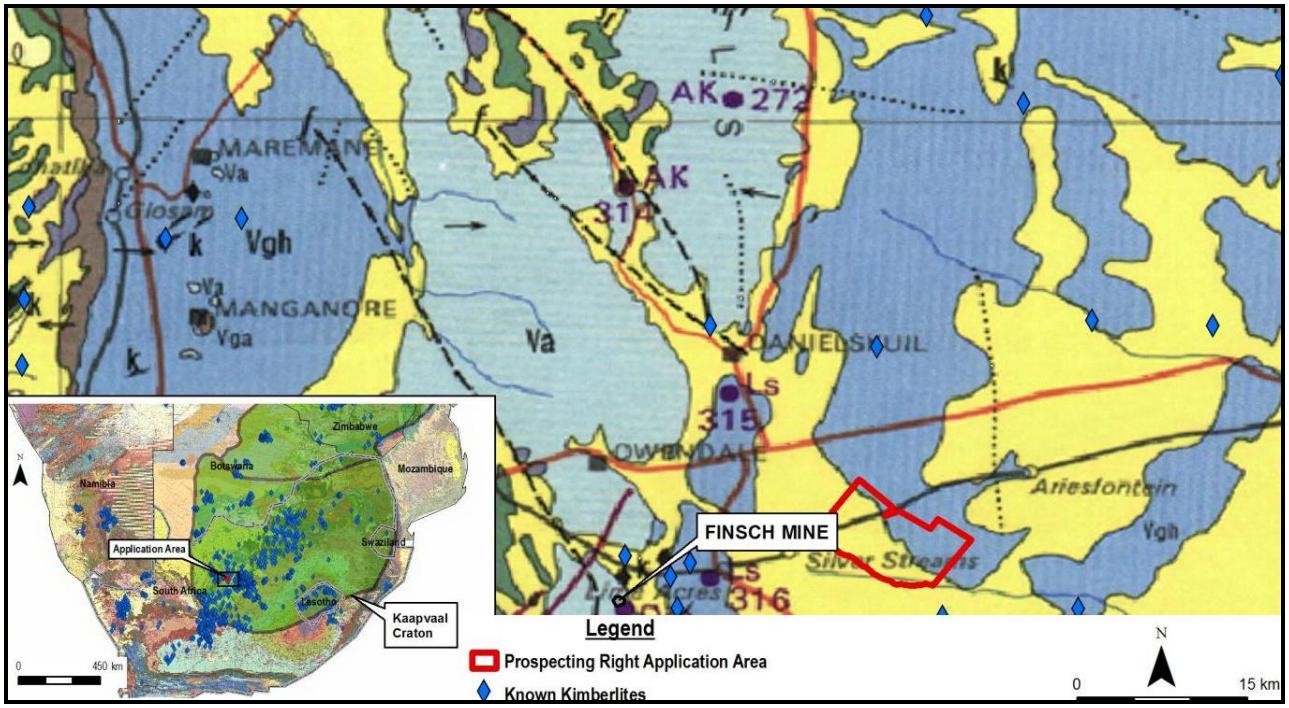


Figure 5: Surface geology map

Current land use: The current land-use of the proposed prospecting site is grazing by livestock. Neighboring farms are being used for livestock grazing, with some isolated crop cultivation further away from the site in the deeper soils adjacent to the rivers where water is available for irrigation. The proposed prospecting area is largely composed of shallow, calcareous soils (clay content varies between 5 and 10% with depth less than 400mm). The soils are predominantly shallow with the calcrete bedrock often exposed along the surface. The shallow nature of the soils renders the area investigated unfavorable for effective crop production. Economically viable crop production is therefore not considered as a viable option on this site.

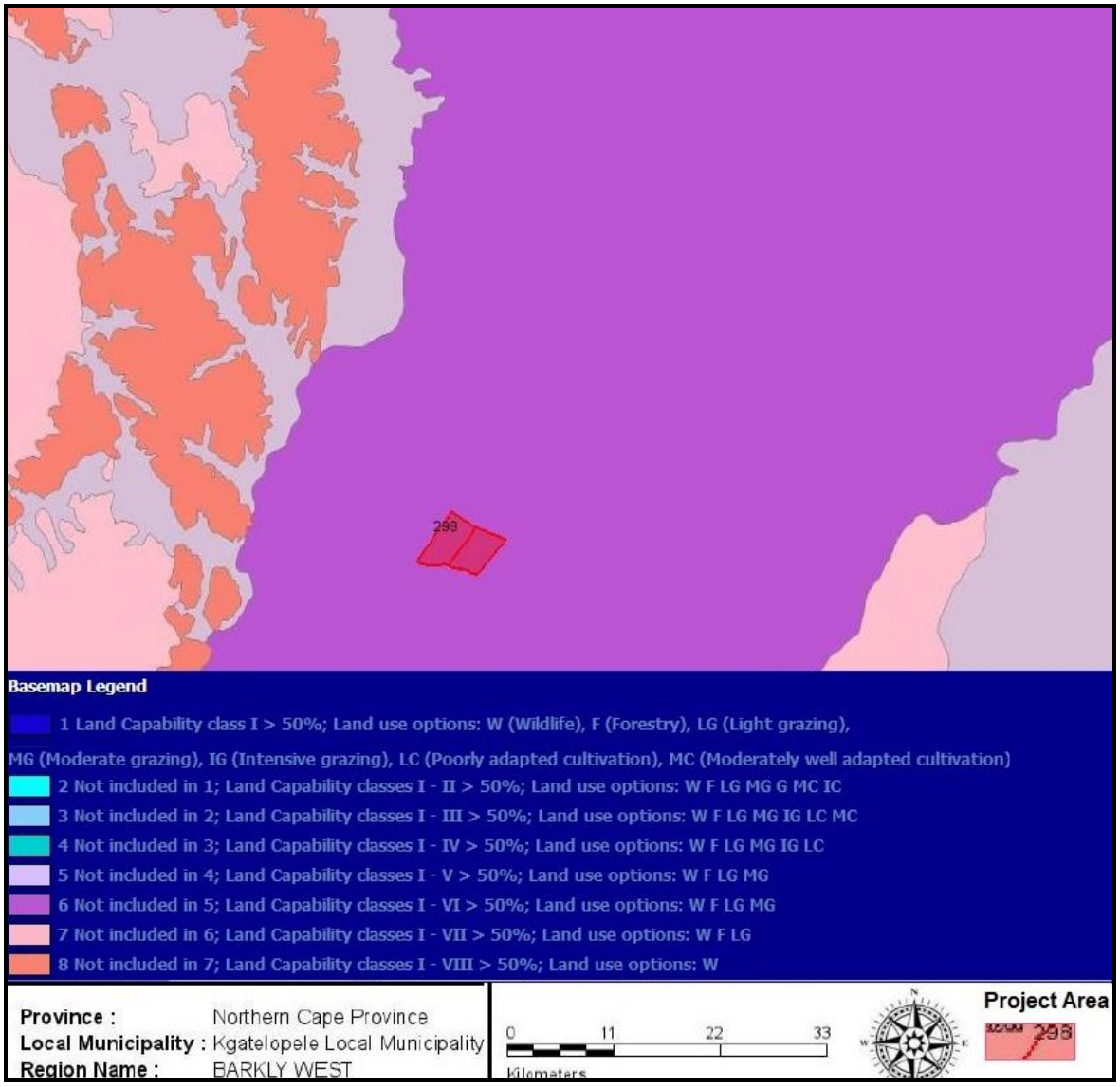


Figure 6: Land Capability map

The current vegetation at the proposed prospecting area consists mainly of shrub land with a well-developed grass layer. According to databases (ARC) the grazing capacity of the area for livestock is low, which indicates the veld to be unsuitable for sustainable grazing over a small area such as the project site. The nature of the vegetation at the farm is therefore marginal for extensive livestock production. Using planted pasture to supplement livestock production is however possible, but this could be constrained by high demand for irrigation water due to the shallow and often sandy nature of the soil and relatively higher day temperatures in summer.

Cultural and Heritage Resources: An archaeological Impact assessment was not conducted to ascertain whether there are any remains of significance in the area that will be affected by the proposed prospecting activities.

All prospecting activities will keep away from all hydrological features like pans, floodplains and riverine areas, including farmstead and power lines.

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

The salt pans and valley bottom without a channel (Klein Riet River) represent sensitive wetland habitat type that will be seasonally wet and have a high sensitivity. No prospecting operation can occur in these areas and a buffer zone of 100 meters should be implemented around these areas.

No red data plant species were found on the site due to the state of the vegetation and physical environment of the larger area mostly not being suitable for any of the red data plant species that may be found in the area.

Some potential rare fauna may also occur in the area, and specific mitigation measures need to be applied to ensure that the impact of the prospecting operation on the species' habitat. Mitigation measures are provided that would reduce these impacts from a higher to a lower significance. Provided that all mitigation measures and recommendations of the EMP are strictly adhered to, the proposed prospecting operation won't significantly influence the potential rare habitats for flora and fauna on the site.

There is a railway line in the northern corner of the land and a few secondary gravel roads that are used by neighbouring farmers.

- A buffer zone of 100m metres from rivers and streams, outside the floodplain and above the 1:50 year flood level mark.
- A buffer zone of 100m around heritage sites, including buildings older than 60 years and cemeteries.

- A buffer zone of 100m around farmsteads and all other residential areas.
- Buffer zone of 100m from roads.

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

The Klein Riet non perennial River, small tributary streams as well as naturally occurring pans, floodplains and riverine areas are all environmental features which have been identified within the proposed project area and will require protection. As such, these areas will be treated as environmentally sensitive areas and Finsch Diamond Mine Pty ltd is committed to not undertaking any prospecting activities within 100 m of any of these water resources.

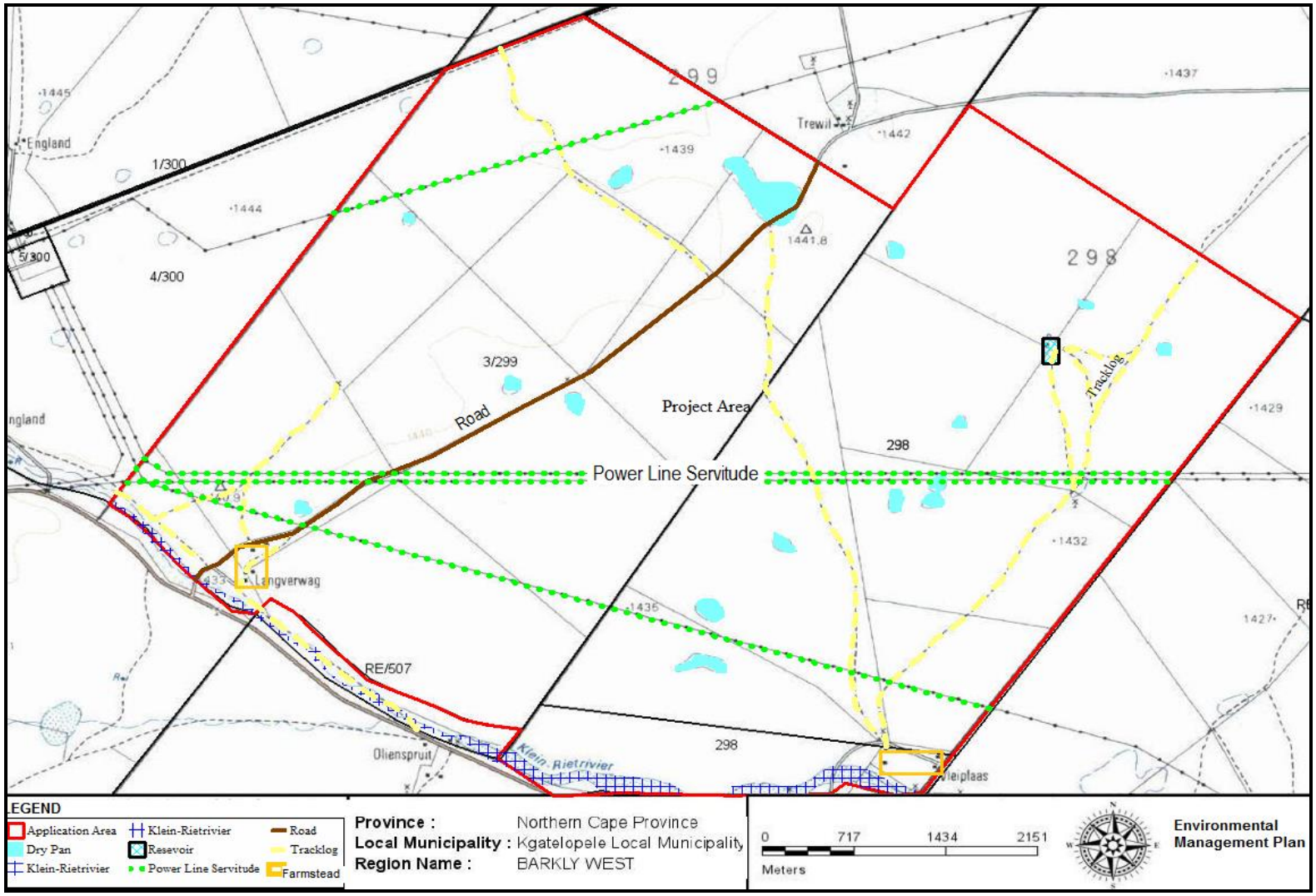


Figure 7: spatial locality of the environmental features on site

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

The description of the environment was discussed with the interested and affected parties communicated with via email, registered letters and telephonically.

Refer to the background information document (BID) in Appendix A used for information sharing purposes, which included information on the baseline environment, and the record of consultation included in Appendix C for confirmation that the landowner and Interested and affected parties were given the opportunity to comment on the BID.

The following are the two stakeholders responded to the baseline environment.

Table B: Response from Stakeholders

Stakeholders	Organisation	Comments
Mr GP du Plessis	Owner of Langverwag-Ptn 3/299	5 year prospecting activities are not inline with future plans.
		Environmental disruption could have long term impact on cattle farming.
		Limited water resources Impact on game such as Steenbok, Duiker and Kudu
Mr AW Fourie	Owner of Content- Ptn 2/298	Security

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

2.1 Description of the proposed mining or prospecting operation.

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

The planned prospecting operation will create the following:

Prospecting Work plan

The detailed geology and diamond potential of the area is relatively unknown, and as such exploration work will commence from a very basic level.

The exploration work programme will be planned in three phases, each phase conditional on the success of the previous phase as described below;

Phase 1: Data Acquisition and Desktop Study: A desktop study of all available data for the area will be performed in order to accumulate as much regional and historical data around the area as possible. This includes published geological reports, infrastructure mapping, satellite imagery and existing geophysical information if available, both primary (Kimberlite or Lamproite) and secondary (alluvial) diamond deposits will be targeted.

Phase 2: Target Generation, ground truthing and delineation: Should the initial results of the desktop study be encouraging, further data will be generated through wide spaced grid loam sampling and ground or possibly airborne geophysical work in order to determine if there are positive indications of the existence of either a primary or secondary diamondiferous deposit on the exploration area. Targets generated during the sampling and geophysical surveys will be ground-truthed and tested by drilling if deemed necessary if any of the exploration targets give a positive result, a drilling program will be undertaken in order to delineate and give a preliminary assessment of the diamond potential of the deposit identified.

Phase 3: Bulk Sampling and Feasibility Assessment: Should delineation and initial evaluation of the deposit indicate a sufficient size and grade to warrant further evaluation, an appropriate bulk sampling program will be undertaken in order to establish grade and confirm its viability for mining.

a) Access Routes

It is not foreseen that any new permanent structures will be constructed as part of the proposed prospecting operation of Finsch Diamond Mine (Pty) Ltd. The identification of the existing routes and smaller tracks will be required to reach pre-determined prospecting areas to be used by prospecting vehicles and machinery without opening new road.

b) Chemical lavatories facilities

There will be two mobile chemical toilet provided on sites which will be serviced and emptied by qualified contractor on regular basis. Those chemicals toilet will be removed from site upon finishing of prospecting activities.

c) Accommodation

The workers to conduct the prospecting activities including the contractors to conduct the drilling will not reside on the premises. The contractors and workers will only operate during day time (between 06h00 and 18h00) to respect the privacy of those residing within the proposed prospecting area.

d) Water

Only drinking water for the employees will be needed. This will be arranged with every surface owner if necessary. There will be water required for the drilling sampling as well. It is estimated that drilling will use ±10000 Litre per day. On-site water storage tanks for water supply to the drill will be installed.

e) Waste Management

All chemicals, fuels and oils to be stored on site will be appropriately banded according to the Oil and Diesel Storage Procedure. Spills will

be managed according to the Spill Procedure. Only one prospecting site will be operational at a time. Drill rig and other prospecting vehicles will be inspected for leaks every day to prevent contaminating of prospecting sites. Prospecting areas will be maintained in a clean and tidy condition at all times. Precautions will be taken to prevent spills and soil contamination.

Hydrocarbon spills will be treated with a suitable absorbent material. The resulting waste will be considered hazardous and will be disposed of as such by a reputable waste disposal contractor. Should topsoil be contaminated, the appropriate steps will be taken to ensure that the soil is rehabilitated. Hazardous substances/materials will be stored in closed storage containers within secondary containment of sufficient capacity to prevent substances from escaping in the event of a spill or leak.

- Domestic waste will be stored in closed containers and removed on a weekly basis from the site. The waste will be disposed of at the nearest municipal landfill site.
- Sewerage will be accumulated in closed containers designed for such purpose and will be removed weekly and discarded at the local water treatment works.
- Emergency maintenance waste will be kept in suitable containers and will be removed weekly from site and disposed of at a waste disposal facility.

f) Top soil storage

- The topsoil obtained (i.e. the top 10-30 cm of soil) from site clearing and bulldozing activities should be stockpiled in a suitable place in order to be used to rehabilitate cleared areas, or to landscape the area after the completion of prospecting activities,
- Soil stockpiling areas must be sufficiently situated away from the seepage zones and watercourses,

- Erosion damage to soil stockpiles should be prevented with such soil conservation measures as specified by the Independent Environmental Control Person; and
- Topsoil stockpiles older than 6 months may need to be upgraded or enriched before use to ensure the effectiveness of the topsoil.

g) f. Off-site Activities

Data Acquisition: A desktop study of all available data for the area will includes published geological reports, infrastructure mapping, satellite imagery and existing geophysical information if available.

h) g. On-site activities

Loam Sampling, Ground Sampling Survey, Drilling and opening of an excavation/Pit.

2.1.2 Plan of the main activities with dimensions

Loam Sampling:

Soil or loam samples will be collected from predetermined sites on a wide-spaced grid, and will be analysed primarily for kimberlite indicator minerals (KIM).

Up to 20kg soil samples of soil will be collected at each sample site from the topsoil to a depth of around 1cm. This is based on the concept that lighter minerals will have been transported away by wind/water action leaving a relative concentration of heavier minerals on the deflated surface. The heavy mineral fraction will be extracted from these samples by heavy liquid separation, followed by hand picking of suspected KIM from the heavy mineral concentrate.

Geophysics Survey:

Geophysical surveys will take the form of airborne magnetic or ground magnetic and/or gravity surveying. It is not envisaged that airborne surveys will have any effect on the environment. Ground based surveys may involve thinning of vegetation where necessary.

Drilling:

Location of the boreholes to be drilled will be selected based on the information gathered from the results of the geophysics, and loam and alluvial sediment sampling. At this stage the number of boreholes is unknown since this phase is controlled by information from phase 1 and phase 2.

It is impossible to say exactly how many drill targets will be generated at this stage, but five (5) is a reasonable estimate. This would result in the drilling of 5 percussion holes, each to a depth of approximately 50m to obtain drill chips from the causative bodies.

Assuming that one of these anomalies will be caused by a kimberlite intrusion, then a further delineation drilling exercise would be undertaken to estimate the dimensions and shape of the body, as well as to obtain material for Indicator mineral (HMA) sampling and Microdiamond (MiDa) sampling to assess the diamond potential of the kimberlite. Based on the size of known pipes and blows in the area (around 0.5Ha), a total of 4 drill holes would be necessary to delineate the body to a sufficient extent for a bulk sampling programme.

Thus the estimated drilling to be carried out is:

Five (5) percussion holes for anomaly testing, each to a depth of 50m (1 per anomaly)

Four (4) NQ diamond drill holes for kimberlite delineation and sampling, each to a depth of 50m.

Excavation/Pitting:

Should the deposit indicate a sufficient size and diamond potential from KIM and MiDa sampling to make it potentially economically viable, an appropriate bulk sampling program will be undertaken in order to confirm grade, diamond quality and size frequency distribution.

Table B: Estimated excavation/pit to be carried out.

ACTIVITY		DETAILS		
Number of pits/trenches planned				
Dimensions of pits/trenches, per pit/trench	Number of pits/trenches	Length	Breadth	Depth
	1	80m	50m	15m
Locality		Unknown		
Volume Overburden (Waste)		37 500m³		
Volume Ore		82 500t		
Density Overburden		Unknown		
Density Ore		Unknown		
Phase(s) when bulk sampling will be required		Phase 3		
Timeframe(s)		Year four		

At this stage the number of excavation to be opened is unknown since this phase is controlled by information from drilling programme, but one excavation/pit is a reasonable estimate.

However, figure 8 shows a hypothetical sample pit on a 0.5Ha kimberlite body less than 15m of cover.

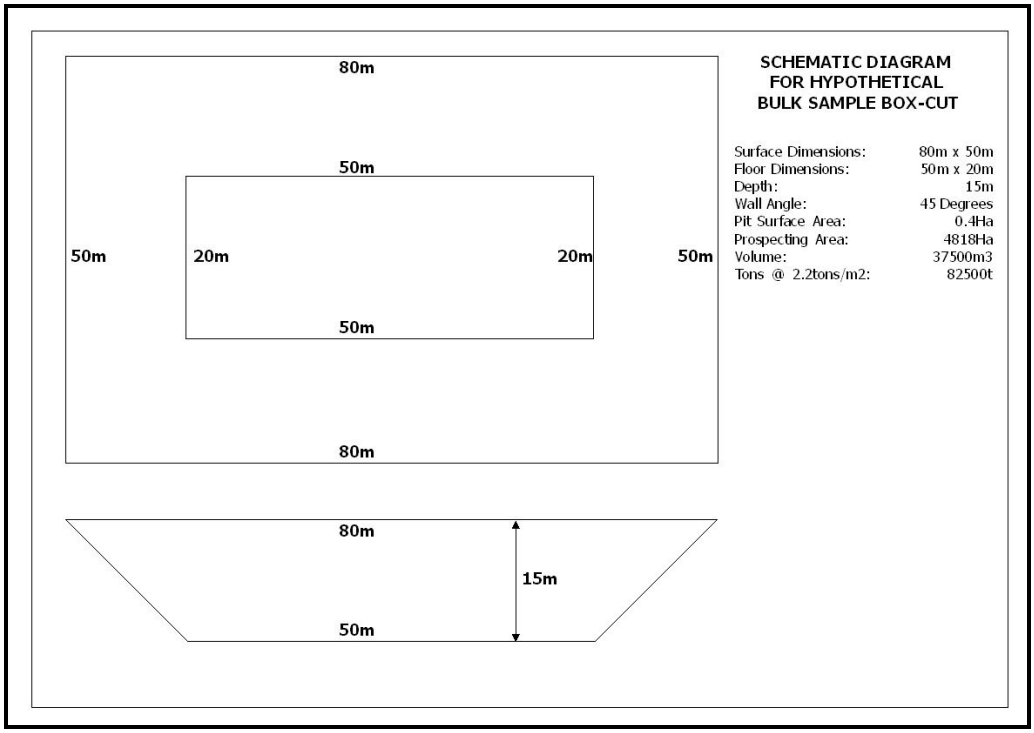


Figure 8-shows a hypothetical sample pit on a 0.5Ha kimberlite body under 15m of cover

Bulk sampling and treatment:

The dimensions and tonnages stated in the diagram are what would be expected for such an excavation. The excavation would allow for a bulk sample of at least 10,000 tonnes of kimberlite to be excavated, which would be treated at Petra's existing reduction and treatment facilities at Sedibeng/ Finsch Diamond Mine.

Rehabilitation:

Rehabilitation of drill holes will be done immediately after each hole is finished to prevent degradation of the environment and to prevent injuries.

Once the bulk sampling material is processed at Sedibeng Diamond Mine the dry debris or tailings including the oversize materials will be transported back to the prospecting site to rehabilitate the opened excavation or pit.

Once the exaction/pit is filled up according to the topography of the area the topsoil stored separately will be spread on top to finalise the rehabilitation.

2.1.3 Description of construction, operational, and decommissioning phases.

Construction phase:

The construction phase will commence on the 2nd year upon granting of the Prospecting Right application as the applicant will spend the first year focusing on a desktop study by means of sourcing published geological reports, infrastructure mapping, satellite imagery and existing geophysical information if available.

The proposed operation site will be established during this phase whereby the dedicated areas will be demarcated. This phase will include erecting temporary structures, e.g. toilets and water storage tanks.

During this phase consultation is required with the surface owners on the identification of the existing routes to be used by prospecting vehicles and machinery without opening new road.

Operational phase:

The operational phase will be conducted in broken stages as explained below and on item 2.2.1. The prospecting has been broken down to three stages; Loam Sampling and Geophysics, Drilling, and Excavation or pitting, transporting of kimberlites bulk sampling material, and rehabilitation.

The operational phase itself will have impacts on the environment and these impacts will have immediate effects. If the site is monitored on a continual basis during the operational phase, it is possible to identify these impacts as they occur. These impacts can then be mitigated through the contingency plans identified in 3.2.3.

As previously stated, during Phase I and the airborne geophysics survey undertaken as part of Phase II will not result in any ground disturbance. The description of the construction, operational and decommissioning activities that will be undertaken during the remainder of Phase II and Phase III are outlined below.

The table below indicates the description of the construction, operational and decommissioning activities that will be undertaken during the remainder of Phase II and Phase III.

Phase		**Activities**
Phase II: Soil sampling	Construction	No construction or site establishment activities will be undertaken
	Operation	Soil sampling will be undertaken at identified sites in accordance with the following method: Site access will be gained through the use of existing roads and / or tracks. In instances where access cannot be gained to the identified sites via established roads and tracks, vehicle access will be gained to sampling sites through the veld and the establishment of tracks to gain repeated access to a soil sample site will not be required. A maximum of 20kg soil samples will be taken.
	Decommission	No decommissioning activities will be required.
Phase II: Diamond drilling	Construction	Site access will be gained through the use of existing roads and / or tracks. In instances where access cannot be gained to the identified sites via established roads and tracks, vehicle access to drill sites will be gained through the establishment of access tracks. No formal road construction activities will be undertaken. Site establishment will include: Vegetation clearing of drill pad area; Topsoil stripping and stockpiling; Drill pad compaction; Excavation and lining

		of drill water sump; Erection of temporary site office shaded area, potable ablution faculties and water storage tanks and core bay; and Erection of safety barrier.
	Operation	Exploration drilling; and Core sample collection and storage.
	Decommission	Removal of temporary site office shaded area, potable ablution faculties and water storage tanks and core bay; and Drill pad rehabilitation will include: Ripping of drill pad; Re-spreading of stockpiled topsoil; and Re-vegetation.
Phase 3: Bulk sampling	Construction	Site access will be gained through the use of existing roads and / or tracks. In instances where access cannot be gained to the identified sites via established roads and tracks, vehicle access to bulk sample site will be gained through the establishment of access tracks. No formal road construction activities will be undertaken. Site establishment will include: Vegetation clearing of sample pit area; Topsoil stripping and subsoil excavation and stockpiling; Erection of temporary site office, potable ablution faculties and water storage tanks.
	Operation	Bulk sampling will be drilled if necessary using conventional open pit drilling equipment.
	Decommission	Removal of temporary site office, potable ablution faculties and water storage tanks. Sample pit backfilling. Site rehabilitation will include: Ripping of compacted areas; Re-spreading of stockpiled topsoil; and Re-vegetation.

Decommissioning phase:

The decommissioning phase will only commence once all the prospecting is completed. During decommissioning all this phase all erected structures, e.g. chemical toilets, fences on demarcated areas, equipment, drill sites, and excavation on permission of the surface owners will be rehabilitated to their previous state.

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

According to Listing Notice 1: List of activities and competent authorities identified in terms of Sections 24(2) and 24D of the National Environmental Management Act, 1998 (Act no. 107 of 1998) of Government Gazette no 33306, No. R. 544 the following activities are applicable according to NEMA EIA regulations:

Activity 19	Any activity requiring a Prospecting right in terms of Section 16 and 18 respectively of the Mineral and Petroleum Resources Development Act, 2002 (Act no 28 of 2002) or renewal thereof.

2.2 Identification of potential impacts

2.2.1 Potential impacts per activity and listed activities.

	No.	Factor	Aspect (activity that impacts factor)	Potential impacts	Type of impa	Extent	Duration	Intensity	Probabili ty	Significa nce
	Road access, Loam sampling, airborne magnetic or ground magnetic and/or gravity									
Phase 1	1	Biodiversity, vegetation, flora, weeds, terrestrial fauna, heritage surface water	Clearing for prospecting activities (loam sampling, drilling, haul roads, infrastructure)	Vegetation loss Loss of fauna habitat Interference to cultural sites Alter natural drainage lines and divert surface water flows. Dust generation from exposed areas and machinery movement.	Negative	Local	Long	High	Definite	High
	2	Surface water	Storm water contaminated with sediment running off site.	Erosion off disturbed areas Sedimentation of surface water channels	Negative	Site	Short	Low	Definite	Low
	3	Air quality (dust)	Dust emissions from active / disturbed areas	Dust deposition on vegetation		Site	Short	Medium	Definite	Medium
	4	Soil, surface water	Minor hydrocarbon spillages	Localised contamination of soil and surface water.		Local	Long	High	Definite	High
	5	Vegetation, flora, soil	Use of saline water as dust suppressant on active areas	Impact to adjacent vegetation and soil from saline water.	Negative	Local	Long	High	Definite	High
	6	Air quality (greenhouse emissior	Combustion products from engine exhausts	Greenhouse gas emissions	Negative	Site	Short	Medium	Definite	Medium

	No.	Factor	Aspect (activity that impacts factor)	Potential impacts	Type of impa	Extent	Duration	Intensity	Probabili ty	Significa nce
	Drilling									
Phase 2	1	Terrestrial fauna	Drill holes become fauna traps.	Subsidence Fauna injury / fatality	Negative	Local	Long	High	Definite	High
	2	Biodiversity, vegetation, flora, weeds, terrestrial fauna, heritage surface water	Surface disturbance for drill pads, and other exploration activities.	Dust. Vegetation loss. Weeds may colonise disturbed areas. Diversion of natural flows	Negative	Local	Long	High	Definite	High
	3	Surface water, soil	Drill cuttings and soil samples	Contamination of soil and surface water.	Negative	Local	Long	Medium	Definite	High
	4	Terrestrial fauna, soil, surface water	Sumps for drilling.	Fauna drowning/ injury. Contamination of soil due to poor water quality. Overflow of sump.	Negative	Local	Long	Medium	Definite	High
	5	Visual amenity	Field storage of sample bags.	Aesthetics	Negative	Site	Long	Low	Definite	Low

	No.	Factor	Aspect (activity that impacts factor)	Potential impacts	Type of impa	Extent	Duration	Intensity	Probabili ty	Significa nce
	Excavation/pitting									
Phase 3	1	Vegetation, flora, soil	Loss of topsoil during excavation	Insufficient topsoil available for rehabilitation.	Negative	Local	Long	High	Definite	High
	2	Biodiversity, vegetation, flora, terrestrial fauna	Clearing for surface excavation operations	Loss of a few individuals of Priority species in project areas. Loss of small amount of habitat	Negative	Local	Long	High	Definite	High
	3	Groundwater, subterranean faun	Surface pitting operations; excavation, Dewatering impacts on local / regional aquifer.	Direct impact to fauna habitat by excavating open pit. Decrease in groundwater level which may impact subterranean fauna in the area. Change in groundwater quality	Negative	Site	Long	Medium	Definite	Medium
	4	Groundwater, subterranean faun terrestrial fauna	Impact over time after pit closure.	Change in groundwater levels and quality (primarily salinity and pH) Attract animals (native and introduced) to water source Pit wall collapse Fauna trap Third party use	Negative	Site	Long	Medium	Definite	Medium

2.2.2 Potential cumulative impacts.

Description	
Air Quality	○ Dust from the unpaved gravel road. ○ Prospecting activities such as drilling, excavation and gravel roads from where the tar road end to the prospecting site will add Nuisance dust to the environment.
Fauna	○ Disturbance and/or destruction of habitat by prospecting activities. ○ Agriculture and the creation of agricultural land also has a destructing effect on habitat of fauna
Flora	○ Disturbance and/or destruction of vegetation by mining activities. ○ Agriculture and the creation of agriculture land also has a destructing effect on flora.
Ground Water	○ Minimal utilization of groundwater for domestic purposes by the surface owners for his animals. ○ No impact to groundwater by mining activities is expected.
Noise	○ Noise created by prospecting activities. ○ Noise created by animal herders on the property utilized by the surface owner.
Soil	○ Removal and disturbance of soil structure by prospecting activities. ○ Removal and disturbance of soil for agricultural purpose to create agricultural lands.
Topography	○ Changing of natural slopes by prospecting activities.
Visual	○ Changing of natural view by prospecting activities. ○ Agriculture also has a visual impact on the eye of the beholder.

2.2.3 Potential impact on heritage resources

Potential heritage sites will be identified during the planning phase to ensure that such areas are avoided. Each prospecting site will be visited prior to any work starting to identify possible heritage sites.

The presence of heritage resources is not known to the land owner however caution should be taken not to destroy or measures should be taken to relocate possible meaningful heritage resources without causing any negative impact on the environment.

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

There are negative impacts from existing mining activities on the surrounding area, agricultural holdings, and existing farming of cattle, cow and sheep. The farm owners within the prospecting area and at the adjacent site will be impacted on by the visual, noise and dust generated from the proposed prospecting of diamond project.

Noise generation is likely to be one of the biggest impacts at the site during the prospecting operation. All efforts should be made to reduce noise levels via the use of efficient, well maintained equipment and the location of any noise generating equipment in noise checked areas or at distant locations from sensitive receptors.

The biggest impact envisaged will be on the individuals that depend on this land which will be the land owner and his workers to make a living.

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

The description of the environment was discussed with the interested and affected parties communicated with via email, registered letters and telephonically.

Refer to the background information document (BID) in Appendix A used for information sharing purposes, which included information on the baseline environment, and the record of consultation included in Appendix C for confirmation that the landowner and Interested and affected parties were given the opportunity to comment on the BID.

2.2.6 Confirmation of specialist report appended.

There is no specialist report appended.

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

3.1 Assessment of the significance of the potential impacts

3.1.1 Criteria of assigning significance to potential impacts

ASSESSMENT CRITERIA TERMINOLOGY

The assessment of the impacts has been conducted according to a synthesis of criteria required by the integrated environmental management procedure.

Nature of impact

This is an appraisal of the type of effect the activity would have on the affected environmental component. Its description should include what is being affected, and how.

Extent

The physical and spatial size of the impact. This is classified as follows:

Local	The impacted area extends only as far as the activity, e.g. a footprint.
Site	The impact could affect the whole, or a measurable portion of the property.
Regional	The impact could affect the area including the neighbouring farms, transport routes and the adjoining towns.
Cumulative	The impact could have a cumulative effect with the surrounding land uses.

Duration

The lifetime of the impact which is measured in the context of the lifetime of the proposed phase (i.e. construction or operation).

Short term	The impact will either disappear with mitigation or will be mitigated through natural process in a short time period.
Medium term	The impact will last up to the end of the Prospecting period, where after it will be entirely negated.
Long term	The impact will continue or last for the entire operational life of the mine, but will be mitigated by direct human action or by natural processes thereafter.
Permanent	The only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.

Intensity

This describes how destructive, or benign, the impact is. Does it destroy the impacted environment, alter its functioning, or slightly alter it. These are rated as:

Low	This alters the affected environment in such a way that the natural processes or functions are not affected.
Medium	The affected environment is altered, but function and process continue, albeit in a modified way.
High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

This will be a relative evaluation within the context of all the activities and the other impacts within the framework of the project.

Probability

This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows:

Improbable	The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
Probable	There is a possibility that the impact will occur to the extent that provisions must be made therefore.
Highly probable	It is most likely that the impacts will occur at some or other stage of the development.
Definite	The impact will take place regardless of any preventative plans, and mitigation measures or contingency plans will have to be implemented to contain the impact.

Determination of significance

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The classes are rated as follows:

No significance	The impact is not likely to be substantial and does not require any mitigatory action.
Low	The impact is of little importance, but may require limited mitigation.
Medium	The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
High	The impact is of great importance. Failure to mitigate, with the objective to reduce the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

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

Prospecting activity	Impact on	Extent	Duration	Intensity	Probability	Significance
Roads & Hauling	Air quality	Site	Short	Medium	Definite	Medium
	Fauna	Local	Long	High	Definite	High
	Flora	Local	Long	High	Definite	High
	Noise	Site	Short	Low	Definite	Low
	Visual	Site	Long	Low	Probable	No significance

Drilling	Air quality	Site	Short	Medium	Definite	Medium
	Fauna	Local	Long	High	Definite	High
	Flora	Local	Long	High	Definite	High
	Noise	Site	Short	Low	Definite	Medium
	Soil	Local	Long	High	Definite	High
	Topography	Local	Long	Medium	Definite	Low
	Visual	Site	Long	Low	Definite	No significance
Excavation	Air quality	Site	Short	Medium	Definite	Medium
	Fauna	Local	Long	High	Definite	High
	Flora	Local	Long	High	Definite	High
	Noise	Site	Short	Low	Definite	Medium
	Soil	Local	Long	High	Definite	High
	Topography	Local	Long	Medium	Definite	Low
	Visual	Site	Long	Low	Definite	No significance
Temporary topsoil storage area	Fauna	Local	Long	High	Definite	High
	Flora	Local	Long	High	Definite	High
	Soil	Local	Long	High	Definite	High
	Topography	Local	Long	Medium	Definite	Low
	Visual	Site	Long	Low	Definite	No significance

3.1.3 Assessment of potential cumulative impacts.

	Extent	Duration	Intensity	Probability	Significance
Air Quality	Site	Short	Medium	Definite	Medium
Fauna	Local	Long	High	Definite	High
Flora	Local	Long	High	Definite	High
Ground Water	Site	Short	Low	Definite	Low
Noise	Site	Short	Medium	Definite	Medium

Soil	Local	Long	Medium	Definite	High
Surface Water	Site	Long	Medium	Definite	Medium
Topography	Site	Long	Medium	Definite	Medium
Visual	Site	Long	Low	Definite	Low

3.2 Proposed mitigation measures to minimise adverse impacts.

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

- Air quality
- Fauna
- Flora
- Noise
- Soil

3.2.2 Concomitant list of appropriate technical or management options

- Air quality:

  To limit the creation of nuisance dust the following management guidelines will be followed:

  - ✓ Avoidance of unnecessary removal of vegetation;
  - ✓ Routine spraying of unpaved site areas and roads with water;
  - ✓ Re-vegetation of rehabilitated areas not occupied by prospecting infrastructure to take place as soon as possible.

- Fauna & Flora
  - ✓ Indigenous vegetation to be used for landscaping to minimize watering requirements.
  - ✓ If any endangered species are found on the prospecting area they will be relocated. If this is not

possible potential changes in the habitat of endangered species will be monitored.

- ✓ The above programme will also focus on species that depend on specific host plants or on specific symbiotic relationships, with specific reference to possible impacts on such related to emissions from the prospecting site.
- ✓ If monitoring shows that endangered species are being negatively affected to the degree that they are at risk of die-off, measures will be put in place to safeguard their continued existence.
- ✓ Any area that is rehabilitated or decommissioned will be seeded with a seed mixture reflecting the natural vegetation as is currently found. If this is not found to be feasible during rehabilitation a general seed mixture of the area will be used.
- ✓ Management will also take responsibility to control declared invader or exotic species on the prospecting site. The following control methods will be used:

  - ✓ "The plants will be uprooted, felled or cut off and can be destroyed completely."
  - ✓ "The plants will be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide."

- ✓ The end objective of the re-vegetation program will be to achieve a stable self-sustaining habitat unit.
- ✓ Vegetation on flat surfaces will be established using the dry lands technique requiring no irrigation.
- ✓ Valid permits from Northern Cape Nature Conservation will be obtained before any protected plant species are removed.

- ✓ Any form of poaching by workers of the proposed prospecting will result in the maximum form of punishment as allowed for by common law. Any form of snares or traps on the site will be removed.
- ✓ If any endangered species are encountered the Department of Nature Conservation will be contacted.

❖ Noise

- ✓ As a minimum, ambient noise levels emanating from the prospecting will not exceed 82 dBA at the site boundary.
- ✓ Finsch Diamond Mine (Pty) Ltd will comply with the occupational noise regulations of the Occupational Health and safety Act, Act 85 of 1993.
- ✓ Finsch Diamond Mine (Pty) Ltd will comply with the measures for good practice with regard to management of noise related impacts during construction and operation.
- ✓ The management objective will be to reduce any level of noise, shock and lighting that may have an effect on persons or animals inside the prospecting site.
- ✓ When the equivalent noise exposure, as defined in the South African Bureau of Standards Code of Practice for the Measurement and Assessment of Occupational Noise for Hearing Conservation Purposes, SABS 083 as amended, in any place at or in any prospecting area or works where persons may travel or work, exceeds 82 dB (A), the site manager will take the necessary steps to reduce the noise below this level.
- ✓ Hearing protection will be available for all employees where attenuation cannot be implemented.

- ✓ If any complaints are received from the public or state department regarding noise levels the levels will be monitored at prescribed monitoring points.

Mechanical equipment:

- ✓ All mechanical equipment will be in good working order and vehicles will adhere to the relevant noise requirements of the Road Traffic Act.
- ✓ All vehicles in operation will be equipped with a silencer on their exhaust system.
- ✓ Safety measures, which generate noise such as reverse gear alarms on large vehicles, will be appropriately calibrated/adjusted.

❖ Soil

- ✓ In all places of development the first 100mm of loose or weathered material found will be classified as a growth medium.
- ✓ The growth medium/topsoil will be used during the rehabilitation of any impacted areas, after sloping in order to re-establish the same land capability.
- ✓ If any soil is contaminated during the life of the prospecting, it will either be treated on site or be removed together with the contaminant and placed in acceptable containers to be removed with the industrial waste to a recognized facility or company.
- ✓ Erosion control in the form of re-vegetation and contouring of slopes will be implemented on disturbed areas in and around the site.

✓ Topsoil will be kept separate from overburden and will not be used for building or maintenance of access roads.

✓ The stored topsoil will be adequately protected from being blown away or being eroded.

3.2.3 Review the significance of the identified impacts

(After bringing the proposed mitigation measures into consideration)

	No.	Factor	Potential impacts	Control (mitigation)	Extent	Duration	Intensity	Probability	Significance
	Road access, Loam sampling, airborne magnetic or ground magnetic and/or gravity								
Phase 1	1	Biodiversity, vegetation, flora, weeds, terrestrial fauna, heritage surface water	Vegetation loss Loss of fauna habitat Interference to cultural sites Alter natural drainage lines and divert surface water flows. Dust generation from exposed areas and machinery movement.	Implement clearing procedure Undertake heritage survey Implement Vegetation Management Procedure. Water sprays used in active areas for dust suppression	Local	Long	High	Definite	Medium
	2	Surface water	Erosion off disturbed areas Sedimentation of surface water channels	Inspection and maintenance of stormwater facilities	Site	Short	Medium	Definite	Low
	3	Air quality (dust)	Dust deposition on vegetation	Water sprays on active areas Progressive rehabilitation of disturbed areas	Site	Short	Medium	Definite	Low
	4	Soil, surface water	Localised contamination of soil and surface water.	Inspection, maintenance of equipment. Implement spill cleanup procedure	Local	Long	High	Definite	Medium
	5	Vegetation, flora, soil	Impact to adjacent vegetation and soil from saline water.	Dribble bars used to water haul roads Sumps used to contain water in moderate rainfall events	Local	Long	High	Definite	Medium
	6	Air quality (greenhouse emission	Greenhouse gas emissions	reduces vehicle use and greenhouse gas emissions. Service / maintain engines for efficient combustion	Site	Short	Medium	Definite	Low

	No.	Factor	Potential impacts	Control (mitigation)	Extent	Duration	Intensity	Probability	Significance
	Drilling								
Phhase 2	1	Terrestrial fauna	Subsidence Fauna injury / fatality	PVC collars on drill holes Plug holes immediately after use.	Local	Long	High	Definite	Medium
	2	Biodiversity, vegetation, flora, weeds, terrestrial fauna, heritage surface water	Dust. Vegetation loss. Weeds may colonise disturbed areas. Diversion of natural flows	Water Spray. Raised blade to minimise surface disturbance. Progressive rehabilitation.	Local	Long	High	Definite	Medium
	3	Surface water, soil	Contamination of soil and surface water.	Collect cuttings in bags and remove or bury cuttings in drilling sumps.	Local	Long	Medium	Definite	Medium
	4	Terrestrial fauna, soil, surface water	Fauna drowning/ injury. Contamination of soil due to poor water quality. Overflow of sump.	Slope sump walls to allow fauna egress Maintain freeboard during drilling. Rehabilitate sumps.	Local	Long	Medium	Definite	Medium
	5	Visual amenity	Aesthetics	sites rehabilitated at conclusion of programme.	Site	Long	Medium	Definite	Low

	No.	Factor	Potential impacts	Control (mitigation)	Extent	Duration	Intensity	Probability	Significance
	Excavation/pitting								
Phase 3	1	Vegetation, flora, soil	Insufficient topsoil available for rehabilitation.	Stockpile topsoil and mark stockpiles	Local	Long	High	Definite	Medium
	2	Biodiversity, vegetation, flora, terrestrial fauna	Loss of a few individuals of Priority species in project areas. Loss of small amount of habitat	Implement clearing procedure to ensure only those areas necessary are cleared	Local	Long	High	Definite	Medium
	3	Groundwater, subterranean fauna	Direct impact to fauna habitat by excavating open pit. Decrease in groundwater level which may impact subterranean fauna in the area. Change in groundwater quality	Monitor groundwater levels and surrounding subterranean fauna populations during prospecting period. Investigate groundwater reinjection if significant impacts are detected	Site	Long	Medium	Definite	Low
	4	Groundwater, subterranean fauna terrestrial fauna	Change in groundwater levels and quality (primarily salinity and pH) Attract animals (native and introduced) to water source Pit wall collapse Fauna trap Third party use	Drillers must monitor ground water levels and quality over time. Saline water not preferred for animals Access ramps retained for fauna egress. Abandonment bund and signage installed at closure.	Site	Long	Medium	Definite	Low

4 REGULATION 52 (2) (d): Financial provision. The applicant is required to-

4.1 Plans for quantum calculation purposes.

The main invasive prospecting activities will be drilling and one excavation/ pit. The exact position of drilling and a bulk sample excavation is impossible to pinpoint at this stage, as no known kimberlites are currently known in the area applied for.

The quantum of the financial provision required to manage and rehabilitate the environment takes the following into account:

- Rehabilitation of one excavation (50m x 20m x 15m) in accordance with the hypothetical Bulk Sample Box Cut.
- Rehabilitation of five boreholes for percussion drilling and 4 boreholes for diamond drilling will be identified and drilled.
- Access tracks that will be rehabilitated on levelling of the site area have been estimated to less than 1000m².

4.2 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).

Closure objectives:

- ✓ The main closure objective of Finsh Diamond Mine (Pty) Ltd, group of Petra Diamond (Pty) Ltd planned Prospecting operation is to restore the site to its current land capability in a sustainable matter.
- ✓ To prevent the sterilization of any ore reserves.
- ✓ To prevent the establishment of any permanent structures or features.
- ✓ To manage and limit any impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained, when a closure certificate is issued.

- ✓ The prospecting also has the objective to establish a stable and self sustainable vegetation cover.
- ✓ To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability of the prospecting area.
- ✓ To limit and manage the visual impact of the prospecting site.
- ✓ To safeguard the safety and health of humans and animals on the prospecting site.
- ✓ The last closure objective is that the disturbed prospecting area is closed efficiently, cost effectively and in accordance with government policy.

Rehabilitation Plan:

- Infrastructure areas

On completion of the Prospecting operation, the various surfaces, including the access road, the office area, storage areas and the plant site, will finally be rehabilitated as follows: All tailings or other material on the surface will be removed to the original topsoil level. This material will then be backfilled into the open pits. Any compacted area will then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.

All infrastructures, equipment, plant, and other items used during the operational period will be removed from the site.

On completion of operations, structures or objects on the site will be dealt with in accordance with regulation 44 of the Minerals and Petroleum Resources Development Act, 2002, which states:

Regulation 44:

1. *When a Mining right, Prospecting right, retention permit or Mining permit lapses, is cancelled or is abandoned or when any mining or Prospecting operation comes to an end, the holder of such right or permit may not demolish or remove any building, structure or object-*

(a) which may not be demolished or removed in terms of any other law;

(b) which has been identified in writing by the Minister for purposes of this section; or

(c) which is to be retained in terms of an agreement between the holder and the owner or occupier of the land, which agreement has been approved by the Minister in writing.

2. The provision of subsection (1) does not apply to bona fide Prospecting equipment, which may be removed.

- Rehabilitation of the secured storage areas

  On completion of the Prospecting operation, the above areas will be cleared of any remaining contaminated soil which will be placed in acceptable containers and removed with the industrial waste to a recognized disposing facility or by a waste removal company.

  The surface will be ripped or ploughed to a depth of at least 300 mm, where possible, and the topsoil, previously stored adjacent the site, distributed evenly to its original depth over the whole area. The area will then be fertilized if necessary (based on a soil analysis).

  The site will be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

  Any other disturbed areas will be rehabilitated as described under the relevant activities.

- Residue deposits
  - Disposal facilities

    Waste material of all description inclusive of receptacles, and rubble will be removed entirely from the Prospecting area and

disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

- Ongoing seepage, control of rain water.
  No monitoring of ground or surface water will take place, except if so requested by the DWA - Kimberley.

- Long term stability and safety
  It will be the objective of the project management to ensure the long term stability of all rehabilitated areas including the backfilled pit or excavation. This will be done by the monitoring of all areas until a closure certificate has been issued.
- Final rehabilitation in respect of erosion and dust control
  Self sustaining vegetation will result in the control of erosion and dust and no further rehabilitation is planned.

- Rehabilitation of dangerous excavation
  Due to the removal of bulk sampling material, one pit could be created that can be classified as dangerous. All available material will be used during backfilling to avoid the existence of dangerous excavation.

- Final rehabilitation of one excavation/pit-haul ramps and final voids
  After rehabilitation has been completed, fertilized and seeded, providing the landowner does not want them to remain that way and with written approval from the Director Mineral Development of the Department of Mineral Resources.

- Submission of information
  Reports on rehabilitation and monitoring will be submitted annually to the Department of Mineral Resources - Kimberley, as described in regulation 55.

- Maintenance (Aftercare)

Maintenance after closure will mainly concern the regular inspection and monitoring and/or completion of the re-vegetation programme.

The aim of this Environmental Management Plan is for rehabilitation to be stable and self-sufficient, so that the least possible aftercare is required.

The aim with the closure of the prospecting will be to create an acceptable environment and land-use. Therefore all agreed commitments will be implemented by Finsch Diamond Mine management

4.3 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 regulation54 (1) in respect of each of the phases referred to).

		CALCULATION OF THE QUANTUM					
Applicant:	Finsch Diamond (Pty) Ltd				Location:	Northern Cape	
Evaluators:					Date:	Oct-13	
No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and pow erlines)	m3	0	10.94	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	152.33	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	224.49	1	1	0
3	Rehabilitation of access roads	m2	300	27.26	1	1	8178
4 (A)	Demolition and rehabilitation of electrified railw ay lines	m	0	264.58	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railw ay lines	m	0	144.31	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	304.66	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0.45	155057.15	0.52	1	36283.3731
7	Sealing of shafts adits and inclines	m3	0	81.78	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0.02	106471.51	1	1	2129.4302
8 (B)	Rehabilitation of processing w aste deposits and evaporation ponds (non-polluting potential)	ha	0	132608.34	1	1	0
8 (C)	Rehabilitation of processing w aste deposits and evaporation ponds (polluting potential)	ha	0	38157.48	1	1	0
9	Rehabilitation of subsided areas	ha	0	89153.85	1	1	0
10	General surface rehabilitation	ha	0.3	84343.39	1	1	25303.017
11	River diversions	ha	0	84343.39	1	1	0
12	Fencing	m	0	96.21	1	1	0
13	Water management	ha	0	32069.73	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0.2	11224.41	1	1	2244.882
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
					Sub Total 1		74138.7023
1	Preliminary and General		8896.644276		weighting factor 2 1		8896.644276
2	Contingencies		7413.87023				7413.87023
					Subtotal 2		90449.22
					VAT (14%)		12662.89
					Grand Total		103112

4.4 Undertaking to provide financial provision

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

Finsch Diamonds Mine (Pty) Ltd take an undertaking to provide the required amount as calculated in the financial quantum. Petra Diamonds Annual Report for 2011 as documentary proof of financial capacity was submitted with the submission of the PWP at the DMR.

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

5.1 List of identified impacts requiring monitoring programmes.

- Air quality
- Fauna
- Flora
- Noise

5.2 Functional requirements for monitoring programmes.

Due to the small scale and temporary nature of the proposed prospecting operations as well as the low significance of the identified impacts, no formal monitoring programmes are required. On-going and regular reporting on the progress of the implementation of the EMP will be done. In addition to this inspections and monitoring will be carried out on the implementation of the EMP.

Occasional interviews with the nearby household to evaluate the extent of noise and dust if it has been an issue.

a) Air quality:

- Access roads on site must be regularly watered to control dust.
- Active earth work areas, stockpiles and loads of material being transported must be sprayed to limit dust. Measure must be taken to immediately mitigate a situation in which excessive fugitive dust is observed.
- Works being undertaken must be undertaken with caution, or phase down while the source is being actively investigated and suppression measures are implemented.
- All areas disturbed during closure of the site that are not required for a specific activity must be re-vegetated.
- Diesel exhaust emissions from heavy machinery on site (excavators, front end loaders and hauling trucks) must be controlled and minimised by regular checks and servicing of vehicles.

- Any construction vehicle found to be emitting excessive smoke should be stopped from the operations for some mechanical attention before it could continue.

  Responsible party: Project Manager/ Environmental Officer/ Foreman
  Frequency: Weekly/ continuous

b) Surface and ground water

- The prospecting operation must preferably take place during the dry season. If the proposed operation activities take place in the wet months appropriate measures must be taken to control storm water and implemented to prevent erosion.
- Ensure that excavated and stockpiled soil material is stored and designated on the higher lying areas.
- Adequate provision must be made for sanitation for the workers. Chemical toilets on site are to be emptied weekly.
- Operational vehicles are to be maintained in good working order, to reduce the probability of leakage of fuels and lubricants. No servicing of vehicles is to be undertaken in close proximity to watercourses.

  Responsible party: Project Manager/ Environmental Officer/ Foreman
  Frequency: Weekly/ continuous

c) Noise

- Noise generation is likely to be one of the biggest impacts at the site during the proposed prospecting phase. Every attempt should be made to reduce noise levels via the use of efficient, well maintained equipment and the location of any noise generating equipment in noise damped areas or at distant locations from sensitive receptors.

- The proposed prospecting operation should be limited between 07h00 and 18h00 on weekdays.

- Ensure that the prospecting operation vehicles are under the control of competent personnel and are in proper working order.

- Prospecting operation must abide by the national noise laws and the municipal noise by-laws with regard to the abatement of noise caused by mechanical equipment. In the absence of bylaws, national regulations on noise control must be complied with.

- Occasional interviews with the nearby household to evaluate the extent of noise if it has been an issue to the farmers residing on site.

Responsible party: Project Manager/ Environmental Officer/ Foreman
Frequency: Weekly/ continuous

5.3 Roles and responsibilities for the execution of monitoring programmes.

Mine Manager	• Appoint the Environmental Manager to oversee implementation of the EMP. • Ensure the EMP is effectively implemented. • Review performance of the EMP on an annual basis. • Review any environmental non-conformances and remediation actions; • Allocate resources to manage environmental issues; and • Ensure contractors comply with environmental

	requirements.
Site Environmental Officer	• Ensure the EMP is implemented and required records are maintained. • Prepare Quarterly Environmental Report for Mine Manager. • Prepare Annual Environmental Report, with Environmental Manager, for external reporting. • Ensure prestart/ toolbox meetings address environmental issues as required and these are documented in meeting minutes. • Ensure that appropriate communications are in place between Finsch Diamond and the contractors. • Confirm all personnel have been inducted prior to commencing work. • Implement environmental monitoring and audit programmes. • Ensure that environmental records and files are maintained.
Employees	• Employees are expected to conduct all activities in an environmentally responsible manner during the course of their employment. • Supervisors shall make all employees aware of their responsibilities for environmental management. • Employees will comply with any environmental instruction relating to work Practices. • Employees will report and rectify unacceptable environmental conditions and practices when they are identified. • Employees are encouraged to take ownership of environmental issues through participation in decision-making and accountability in all areas of

	their workplace.
Contractors	• Contractors are obligatory to maintain Finsch Diamond Mine environmental standards and commitments referred to in the Environmental Management Plan. • The project manager and the Environmental officer shall ensure that all contractors in their area of responsibility are knowledgeable of their environmental responsibilities and that their performance is monitored.

5.4 Committed time frames for monitoring and reporting.

Quarterly reports on fall-out and nuisance dust and noise monitoring will be conducted as required by legislation. The results of these studies will be compiled into annual reports and forwarded to the Principle Inspector of Mine Health and Safety, Department of Mineral Resources, Kimberley.

The EMP will be reviewed on an annual basis when the Performance Assessment Report is compiled.

Annual performance Assessment and financial quantum reports will also be conducted.

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

6.1 Rehabilitation plan

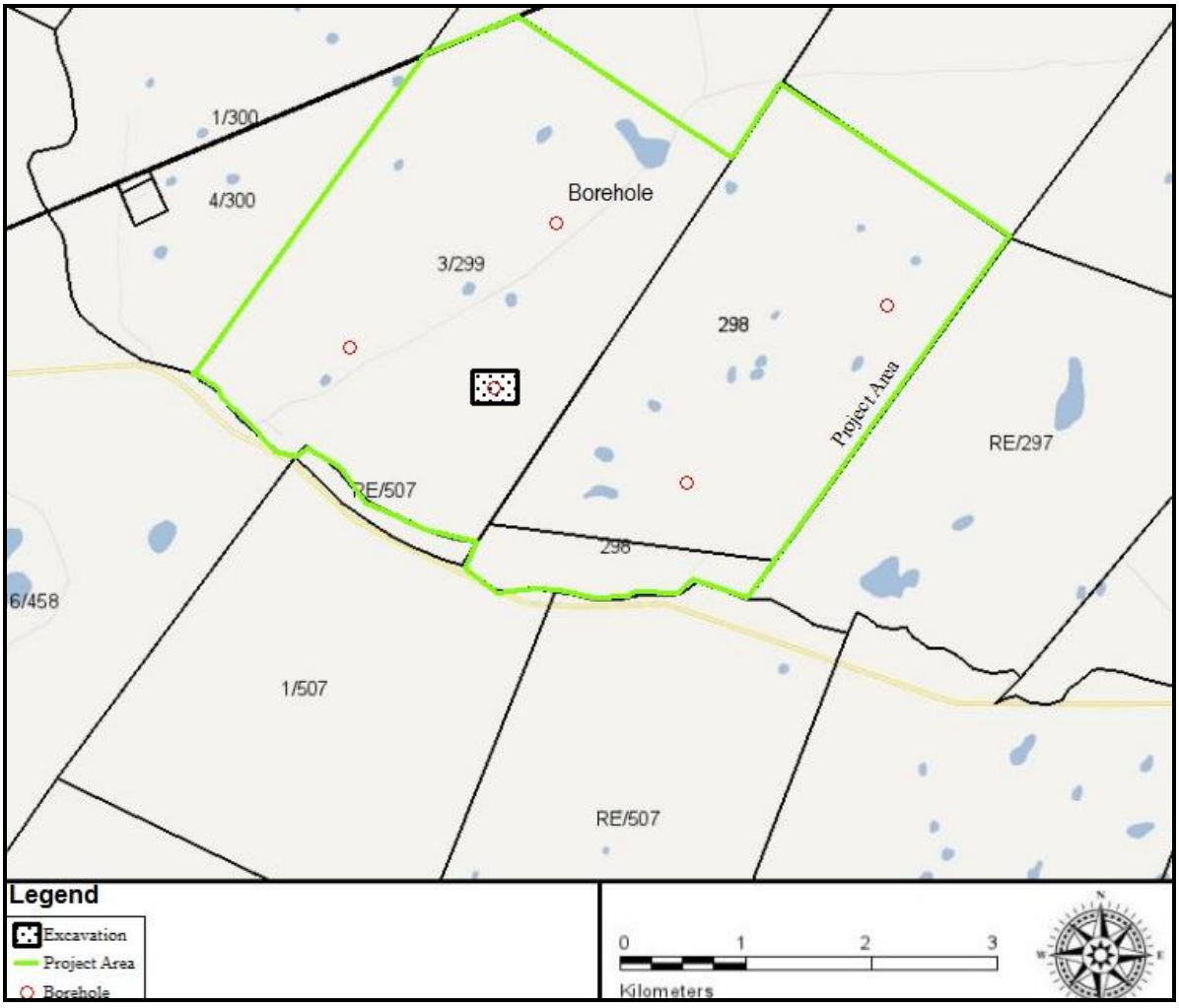
Location of the boreholes to be drilled will be selected based on the information gathered from the results of the geophysics, and loam and alluvial sediment sampling.

Assuming that one of these anomalies will be caused by a kimberlite intrusion, then a further delineation drilling exercise would be undertaken to estimate the dimensions and shape of the body, as well as to obtain material for Indicator mineral (HMA) sampling and Microdiamond (MiDa) sampling to assess the diamond potential of the kimberlite.

Should the deposit indicate a sufficient size and diamond potential from KIM and MiDa sampling to make it potentially economically viable, an appropriate bulk sampling program will be undertaken in order to confirm grade, diamond quality and size frequency distribution.
The excavation would allow for a bulk sample of at least 10,000 tonnes of kimberlite to be excavated, which would be treated at Petra's existing reduction and treatment facilities at Sedibeng Mine.

Once the bulk sampling material is processed at Sedibeng Diamond Mine the dry debris or tailings including the oversize materials will be transported back to the prospecting site to rehabilitate the opened excavation or pit.

Once the exaction/pit is filled up according to the topography of the area the topsoil stored separately will be spread on top to finalise the rehabilitation.



The goal of rehabilitation with respect to the area where drilling and excavation will take place is to leave the area to similar to its previous state before the prospecting activity took place. All other equipment and material used during the prospecting operation will be removed from the area as in the case of other refuse.

6.2 Closure objectives and their extent of alignment to the pre-Prospecting environment.

Closure objectives:

- ❖The main closure objective of Finsh Diamond Mine (Pty) Ltd, group of Petra Diamond (Pty) Ltd planned Prospecting operation is to restore the site to its current land capability in a sustainable manner.

- ❖To prevent the establishment of any permanent structures or features.
- ❖To manage and limit any impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained, when a closure certificate is issued.
- ❖The prospecting also has the objective to establish a stable and self-sustainable vegetation cover.
- ❖To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability of the prospecting area.
- ❖To limit and manage the visual impact of the prospecting site.
- ❖To safeguard the safety and health of humans and animals on the prospecting site.
- ❖The last closure objective is that the disturbed prospecting area is closed efficiently, cost effectively and in accordance with government policy.

6.3 Confirmation of consultation

The company is waiting for the response from the consulted parties on the environmental points.

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

7.1 Identification of interested and affected parties.

There are no group of previously deprived persons, with interest or rights within the vicinity. The community members have not exercise communal rights in terms of an agreement, or custom or law.

There is no community stated on the proposed prospecting area. The below-mentioned towns are the nearest community identified close to the proposed application area.

Lime Acres - ±16km North East of the town Lime Acres,
Danielskuil - ±19km South East of the town Danieskuil, and
Barkly West - ±81km North West of the town Barkly West.

IDENTIFIED STAKEHOLDERS.

Surface Owners

- Farm 299 : Langverwa (Portion 3) - Mr GP du Plessis
- Farm 298 : Vleiplaas (Portion 1) - Mr B. Markram
- Remaining extent : Vleiplaas(Re) - Mr B. Markram

Area of interest: Surrounding /Adjacent Farms

- Farm no 297: Seekoelvlei-(RE/297) - Me. A. Rainier
- Arbeidsloon (Ptn 1): PC Steenkamp
- Farm no 298: Content (Ptn 2) - AW Fourie
- Farm no 300: England (Ptn 1 and 4) - Mnr. TCB Vermeulen
- Farm no 458: Dikbos (Ptn 16/458) - W De Jager
- Farm no 507: Witput (RE/507) - GP du Plessis
- Farm no 507: Olienspuruit (RE/507) - C. York

Other stakeholders

- Kgatlelopele Municipality- Local
- Department of Rural Development Land Reform
- Department of Water Affairs
- South African Heritage Resources Agency

7.2 The details of the engagement process.

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

The parties to be affected by the proposed operation were informed of intended prospecting activities to take place. They were requested to give their comments and concerns with regards to the proposed operations.

A copy of the background information document ('BID") and other necessary document was sent by registered mail to the identified interest and affected parties.

All other interested and affected parties were invited to lodge their comments or objection on the proposed prospecting operation by means of an advertisement in the local newspaper (Kathu Gazette).

Please note that confirmation of the background information document including record of tracking and tracing parcel has been submitted at the DMR with the separate document on the report on the results of consultation.

7.2.2 List of which parties indentified in 7.1 above that were in fact consulted, and which were not consulted.

Consulted

Surface Owners

- Farm 299 : Langverwag (Portion 3) - Mr GP du Plessis
- Farm 298 : Vleiplaas (Portion 1) - Mr B. Markram
- Remaining extent : Vleiplaas(Re) - Mr B. Markram

Area of interest: Surrounding /Adjacent Farms

- Farm no 297: Seekoelvlei-(RE/297) - Me. A. Rainier
- Arbeidsloon (Ptn 1): PC Steenkamp
- Farm no 298: Content (Ptn 2) - AW Fourie
- Farm no 300: England (Ptn 1 and 4) - Mnr. TCB Vermeulen
- Farm no 458: Dikbos (Ptn 16/458) - W De Jager
- Farm no 507: Witput (RE/507) - GP du Plessis
- Farm no 507: Olienspuruit (RE/507) - C. York

Other stakeholders

- Kgatlelopele Municipality- Local
- Department of Rural Development Land Reform
- Department of Water Affairs

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

Stakeholders	Organisation	Comments
Mr GP du Plessis	Owner of Langverwag-Ptn 3/299	5 year prospecting activities are not inline with future plans.
		Environmental disruption could have long term impact on cattle farming.
		Limited water resources Impact on game such as Steenbok, Duiker and Kudu
Mr AW Fourie	Owner of Content- Ptn 2/298	Security

7.2.4 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 Mining or Prospecting operation.

Kindly refer to item 7.2.3 above

7.2.5 Other concerns raised by the aforesaid parties.

Kindly refer to item 7.2.3 above

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

Comments from Mr GP du Plessis surface owner of Portion 3 of the Farm 299 (Langverwag) and AW Fourie the neighbouring of Portion 2 of the farm 298 (Content) has been attached as Appendix B.

7.2.7 Information regarding objections received.

No objections were received from the interested and affected parties except the aforementioned concerns-refer to item 7.2.3 above.

7.3 The manner in which the issues raised were addressed.

Mr GP du Plessis Concerns: Five years of prospecting activities are not in line with future plans. Environmental disruption could have long term impact on cattle farming. There are limited water resources on site, and Impact on game such as Steenbok, Duiker and Kudu.

The surface owner/farmer is entitled to compensation in terms of South African Rands for any partial or wholly damage to any of the aforementioned features. Compensation should be calculated taking all the necessary impacts into account.

Response:

The impact of the prospecting operations will be short-term and with mitigation measures in place to manage impacts the impact will be controllable.

Soil or loam samples will be collected from predetermined sites on a wide-spaced grid, and will be analysed primarily for kimberlite indicator minerals (KIM).

Up to 20kg of soil sampling will be collected at each sample site from the topsoil to a depth of around 1cm.

Geophysical surveys will take the form of airborne magnetic or ground magnetic and/or gravity surveying. It is not envisaged that airborne surveys will have any effect on the environment. Ground based surveys may involve thinning of vegetation where necessary.

Location of the boreholes to be drilled will be selected based on the information gathered from the results of the geophysics, and loam and alluvial sediment sampling.

Assuming that one of these anomalies will be caused by a kimberlite intrusion, then a further delineation drilling exercise would be undertaken to estimate the dimensions and shape of the body, as well as to obtain material for Indicator mineral (HMA) sampling and Microdiamond (MiDa) sampling to assess the diamond potential of the kimberlite.

Should the deposit indicate a sufficient size and diamond potential from KIM and MiDa sampling to make it potentially economically viable, an appropriate bulk sampling program will be undertaken in order to confirm grade, diamond quality and size frequency distribution.
The excavation would allow for a bulk sample of at least 10,000 tonnes of kimberlite to be excavated, which would be treated at Petra's existing reduction and treatment facilities at Sedibeng Mine.

Once the bulk sampling material is processed at Sedibeng Diamond Mine the dry debris or tailings including the oversize materials will be transported back to the prospecting site to rehabilitate the opened excavation or pit.

Once the exaction/pit is filled up according to the topography of the area the topsoil stored separately will be spread on top to finalise the rehabilitation.

The topsoil obtained (i.e. the top 10-30 cm of soil) from site clearing and bulldozing activities should be stockpiled in a suitable place in order to be used to rehabilitate cleared areas, or to landscape the area after the completion of prospecting activities.

Only drinking water for the employees will be needed. This will be arranged with the surface owner if necessary. There will be water required for the drilling sampling as well. It is estimated that drilling will use a minimum of ±10000 Litre per day. On-site water storage tanks for water supply to the drill will be installed and the applicant will supply the water.

Mr AW Fourie concern: Security

It is not foreseen that the prospecting activities will lessen the security of the adjacent farmers. The applicant will have a surface agreement with the surface owners and the issues of the security will be addressed on the surface agreement as well. There is a possibility that the exploration work will be conducted by the Du Plessis family seeing that they have got a Geological Consulting company rendering services as such. Such negotiations will only be finalised once the permit is granted.

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

8.1 Employee communication process

The company Finsch Diamond will ensure that potential employees and contractors receive an environmental safety induction and site orientation prior to commencing work, and they will sign acknowledgement of the induction. In addition, through education and awareness campaigns, staff, contractors and stakeholders will be provided the opportunity to learn more about health and safety related issues at work. This will prevent the squalid conditions at work place and avoid possibility of probable impacts.

Environmental awareness will focus on means on enhancing ability of personnel to ensure compliance with environmental requirements.

Warning and safety signs will be placed at various areas on site, depending on the kind of work performed at specific area and hazardous conditions of the chemicals and equipments to be used. These will also assist in facilitating the induction and site orientation. An induction process is the primary opportunity for environmental training and awareness and must cover a range of issues relating to the environment.

Aspects covered within this process include:

- The definition of Environmental Management and the impacts humans have on the environment;
- How mining/prospecting relies on the environment and its resources. This addresses what resources the mine uses;
- Sustainability - Responsibility Mining with regard to issues such as:

Water, soil and air pollution prevention;

- Land rehabilitation; and
- The impacts to biodiversity and how these impacts can be reduced or avoided.
- Environmental policies will be availed to contractors;
- Environmental inductions will be conducted for contractors and employees.
-

8.2 Description of solutions to risks

Detailed environmental awareness performance criteria will form part of the job descriptions of employees, to make sure diligence and full responsibility at all levels of the organisational work force.

General environmental awareness will be fostered among the projects workforce to encourage the implementation of environmentally sound

practices throughout its duration. This will ensures that environmental accidents are minimized and environmental compliance maximized.

8.3 Environmental awareness training.

Environmental awareness will commence with the development of an environmental awareness plan to ensure that:

- Training needs are identified and all personnel whose work may create a significant impact upon the environment have received appropriate training;
- All employees are aware of the impact of their activities (activities and the environmental components they are likely to impact on are shown in question 2.2.
- Procedures are established and maintained to make appropriate employees aware of:
  - The significant environmental impacts, actual or potential, of their work activities and environmental benefits of improved personal performance
  - Their roles and responsibilities in achieving conformance with environmental policy, procedures and any implementation measures
  - The potential consequences of departure from specified operating procedures Personnel performing tasks, which can cause significant environmental impacts, are competent in terms of appropriate education, training and /or experience

I. Responsibilities and frequency of training

The responsibilities in terms of environmental awareness training lie with Finsch diamond management, which handles overall training for the company. The responsible management of Finsch mine will undertake the generalized environmental awareness training such as inductions which are done on a continuous basis (at least weekly).

II. Identification of training needs

The identification of environmental training and development needs will be derived from the analysis of role descriptions. The role description is used to confirm the category of occupation as per Finsch mine structure templates. Descriptions of activities, aspects and impacts will be sourced from the Environmental Implementation Plan.

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

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

The annual cost to manage and rehabilitate the environment was calculated to an amount of R 103 112.00 as indicated on 4.3.

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

The amount required to cover the prospecting operation was calculated to an amount of R2, 900,000 as reflecting on the Prospecting Work Programme.

10 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	**Clive Fanti**
Identity Number	**7701085712087**

-END-