



## mineral resources

Department:

Mineral Resources

**REPUBLIC OF SOUTH AFRICA**

### **SCOPING REPORT**

#### **FOR LISTED ACTIVITIES ASSOCIATED WITH MINING RIGHT AND/OR BULK SAMPLING ACTIVITIES INCLUDING TRENCHING IN CASES OF ALLUVIAL DIAMOND PROSPECTING**

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED)

**NAME OF APPLICANT:** Moonstoone Mining (Pty) Ltd  
**TEL NO:** 084 208 9088 (Roelien)  
**CEL NO:** 082567 7940 (BRAAM)  
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**FILE REFERENCE NUMBER SAMRAD:** (NC) 30/5/1/1/2/12399 PR

## IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1)(c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

**It is therefore an instruction that** the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

**It is therefore an instruction that** the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

**OBJECTIVE OF THE SCOPING PROCESS**

The objective of the scoping report is to, through a consultative process—

- (a) identify the relevant policies and legislation relevant to the activity;
- (b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- (c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- (e) identify the key issues to be addressed in the assessment phase;
- (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- (g) identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

**PART A**

**SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**2) Contact Person and Correspondence Address**

**a) Details of:-**

**i) Details of the EAP who prepared the report:**

Name of the Practitioner: **ROELIEN OOSTHUIZEN**  
Tel No.: **084 208 9088**  
Fax No.: **086 510 7120**  
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Physical Address: **4 Millin Street, Hadisonpark, 8301**  
Postal Address: **P.O. Box 110823, Hadisonpark, 8306**

**ii) Appointed by:**

Moonstoone Mining (Pty) Ltd

**iii) Expertise of the EAP**

**(1) The qualifications of the EAP**

Masters in Environmental Management (UFS)  
B-Comm in Human and Industrial- Psychology (NWU)  
(with evidence attached as **Appendix 1**)

**(2) Summary of the EAP's past experience**

(In carrying out the Environmental Impact Assessment Procedure)

Relevant past experiences in carrying out the Environmental Impact Assessment Procedures include Environmental Impact Assessments, Environmental Management Plans/Programmes/ Reports, Performance assessments, Rehabilitation progress assessments, Environmental Liability assessments, Environmental compliance monitoring, Scoping Reports, etc.  
See attached CV.

(with evidence attached as **Appendix 2**)

## b) Description of the property

<b>Farm Name:</b>	<p>FARM 508, REMAINING EXTENT, PORTION 1 AND PORTION 3 OF THE FARM 509, REMAINING EXTENT AND PORTION 2 OF THE FARM 510, Administrative district of Hay and</p> <p>PORTION 1 (DROOGEHART) OF THE FARM 10, REMAINING EXTENT OF THE FARM 11, REMAINING EXTENT OF THE FARM 12, PORTION 1 (WOODVILLE) OF THE FARM 12, FARM 13, PORTION 1 (VLAKFONTEIN) OF THE FARM 14, AND PORTION 1 (LANGLAAGTE) OF THE FARM 15, Administrative district of Herbert</p> <p>IN EXTENT: 20 136.5446 HA</p> <p>Farm No: 508 Farm Name: Plaas 508 Portion: 0 Magisterial District: Hay Province: Northern Cape Title Deed No: T1663/1990 Extent: 2699.4362 ha Owner: Steenkamp Phillipus Christoffel C03100000000050800000</p> <p>Farm No: 509 Farm Name: Plaas 509 Portion: 0 (Remaining Extent) Magisterial District: Hay Province: Northern Cape Title Deed No: T133/2004 Extent: 1284.7980 ha Owner: Steenkamp Phillipus Christoffel C03100000000050900000</p> <p>Farm No: 509 Farm Name: Plaas 509 Portion: 1 Magisterial District: Hay Province: Northern Cape Title Deed No: T3195/2005 Extent: 725.3345 ha Owner: Langstrand Familie Trust C03100000000050900001</p> <p>Farm No: 509 Farm Name: Plaas 509 Portion: 3 Magisterial District: Hay Province: Northern Cape Title Deed No: T3195/2005 Extent: 528.5491ha Owner: Langstrand Familie Trust C03100000000050900003</p>
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	<p>Farm No: 510  Farm Name: Plaas 510  Portion: 0 (Remaining Extent)  Magisterial District: Hay  Province: Northern Cape  Title Deed No: T97/2006  Extent: 2178.5033ha  Owner: Madelene Gers Familie Trust  C03100000000051000000</p> <p>Farm No: 510  Farm Name: Plaas 510  Portion: 2  Magisterial District: Hay  Province: Northern Cape  Title Deed No: T116/2007  Extent: 59.6219 ha  Owner: Madelene Gers Familie Trust  C03100000000051000002</p> <p>Farm No: 10  Farm Name: Farm 10  Portion: 1  Magisterial District: Herbert  Province: Northern Cape  Title Deed No: T3732/2011  Extent: 1276.4645ha  Owner: Irusma Boerdery CC  C03200000000001000001</p> <p>Farm No: 11  Farm Name: Plaas 11  Portion: 0 (Remaining Extent)  Magisterial District: Herbert  Province: Northern Cape  Title Deed No: T477/1977  Extent: 1639.3623ha  Owner: Brits Aletta Johanna  C03200000000001100000</p> <p>Farm No: 12  Farm Name: PLaas 12  Portion: 0 (Remaining Extent)  Magisterial District: Herbert  Province: Northern Cape  Title Deed No: T269/2014  Extent: 2114.9631ha  Owner: Genna Familietrust  C03200000000001200000</p> <p>Farm No: 12</p>
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	<p>Farm Name: Plaas 12  Portion: 1  Magisterial District: Herbert  Province: Northern Cape  Title Deed No: T942/2018  Extent: 856.5320ha  Owner: Genna Familietrust  Co3200000000001200001</p> <p>Farm No: 13  Farm Name: Plaas 13  Portion: 0  Magisterial District: Herbert  Province: Northern Cape  Title Deed No: T1166/1979  Extent: 3717.5016ha  Owner: De Jager Johannes Lodewikus  Co3200000000001300000</p> <p>Farm No: 14  Farm Name: Plaas 14  Portion: 1  Magisterial District: Herbert  Province: Northern Cape  Title Deed No: T286/1987  Extent: 1636.6228ha  Owner: Nederduits Gereformeerde Gemeente Douglas te Douglas  Co3200000000001400001</p> <p>Farm No: 15  Farm Name: Plaas 15  Portion: 1  Magisterial District: Herbert  Province: Northern Cape  Title Deed No: T462/2015  Extent: 1418.8553ha  Owner: Irusma Boerdery CC  Co3200000000001500001</p> <p>Total Extent of application area: 20 136.5446ha</p>
<b>Application area (Ha)</b>	20 136.5446ha (Twenty thousand one hundred and thirty six comma five four four six hectares.)
<b>Magisterial district:</b>	Hay and Herbert
<b>Distance and direction from nearest town</b>	The properties are about 150 km west of Kimberley. The proposed prospecting area falls within the ZF Mgcawu District Municipality and Kgatelopele local Municipality located at Danielskuil town, situated in Hay and Herbert District, Northern Cape, South Africa.

21 digit Surveyor General Code for each farm portion	Farm No: 508 Magisterial District: Hay <b>C03100000000050800000</b>
	Farm No: 509 Portion: 0 (Remaining Extent) Magisterial District: Hay <b>C03100000000050900000</b>
	Farm No: 509 Portion: 1 Magisterial District: Hay <b>C03100000000050900001</b>
	Farm No: 509 Portion: 3 Magisterial District: Hay <b>C03100000000050900003</b>
	Farm No: 510 Portion: 0 (Remaining Extent) Magisterial District: Hay <b>C03100000000051000000</b>
	Farm No: 510 Portion: 2 Magisterial District: Hay <b>C03100000000051000002</b>
	Farm No: 10 Portion: 1 Magisterial District: Herbert <b>C03200000000001000001</b>
	Farm No: 11 Portion: 0 (Remaining Extent) Magisterial District: Herbert <b>C03200000000001100000</b>
	Farm No: 12 Portion: 0 (Remaining Extent) Magisterial District: Herbert <b>C03200000000001200000</b>
	Farm No: 12 Portion: 1 Magisterial District: Herbert <b>C03200000000001200001</b>
Farm No: 13 Portion: 0	



	<p>Magisterial District: Herbert <b>C03200000000001300000</b></p> <p>Farm No: 14 Portion: 1 Magisterial District: Herbert <b>C03200000000001400001</b></p> <p>Farm No: 15 Portion: 1 Magisterial District: Herbert <b>C03200000000001500001</b></p>
<b>Locality map</b>	Attach a locality map at a <b>scale not smaller than 1:250000 and attach as Appendix 2</b>
<p><b>Description of the overall activity.</b> (Indicate Mining Right, Mining Permit, Prospecting right, Bulk Sampling, Production Right, Exploration Right, Reconnaissance permit, Technical co-operation permit, Additional listed activity)</p>	<p>Moonstone Mining (Pty) Ltd is in the process of applying for a Prospecting Right with Bulk Sampling, for the prospecting of Alluvial diamonds, Diamonds in general and Kimberlite diamonds on the listed properties. They therefore seek to apply for Environmental Authorisation for this area.</p> <p>The prospecting operation is based on non invasive and invasive phases. In the bulk sampling phase Alluvial diamondiferous gravels will be sampled by means of opencast pitting and trenching methods using heavy earthmoving machinery. Vegetated soil is stripped where required and the underlying gravels are excavated, screened and treated through a Pan Plant. No ore processing reagents are required or used in the treatment of the ore. The rough diamond product is then removed from site for further beneficiation. The total duration of the prospecting and evaluation activities is planned for five years, during which a total of 2000 000 m<sup>3</sup> (trenching) and 1 350 m<sup>3</sup> (pitting) of ore will be processed.</p> <p>Prospecting activities will primarily make use of existing roads and tracks, but additional haul roads will be created in order to access new pits and trenches.</p> <p>The typical infrastructure that are most likely to be related to the prospecting operation footprint include mine roads, office complex, a workshop, oil and diesel depot floor, wash bay floor, break test ramp, plant ramps, central processing plant, a slimes dam, pipeline infrastructure for the transportation of water and slimes, water storage dam, return water dam, open pits, overburden stockpiles, gravel stockpiles and topsoil stockpiles.</p>

c) Locality map  
(show nearest town, scale not smaller than 1:250000)

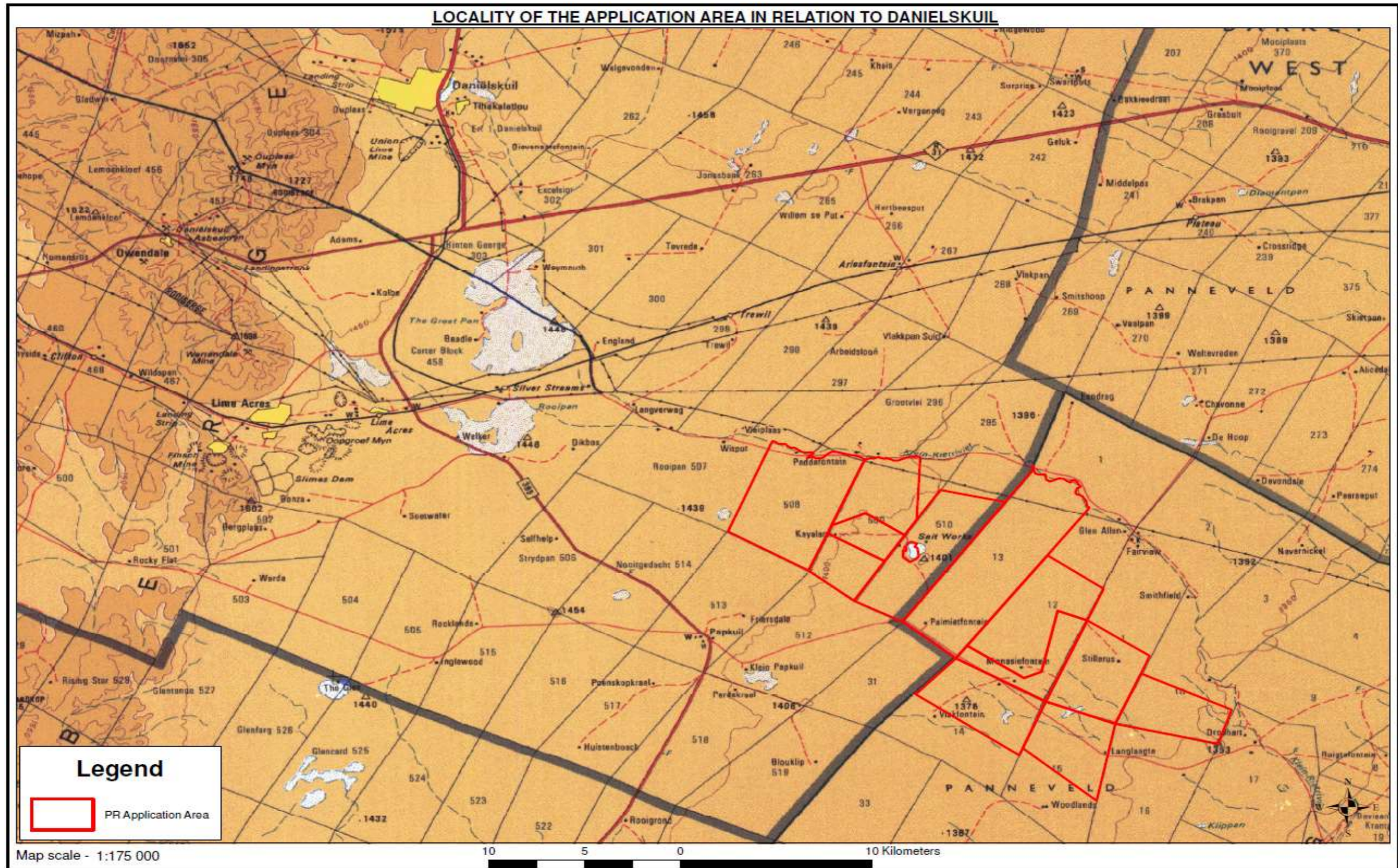


Figure 1: 1:250 000 topocadastral map KIMBERLEY 2824 indicating the application area with RED BLOCKS.

d) Description of the scope of the proposed overall activity

i) Listed and specified activities

(provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site)

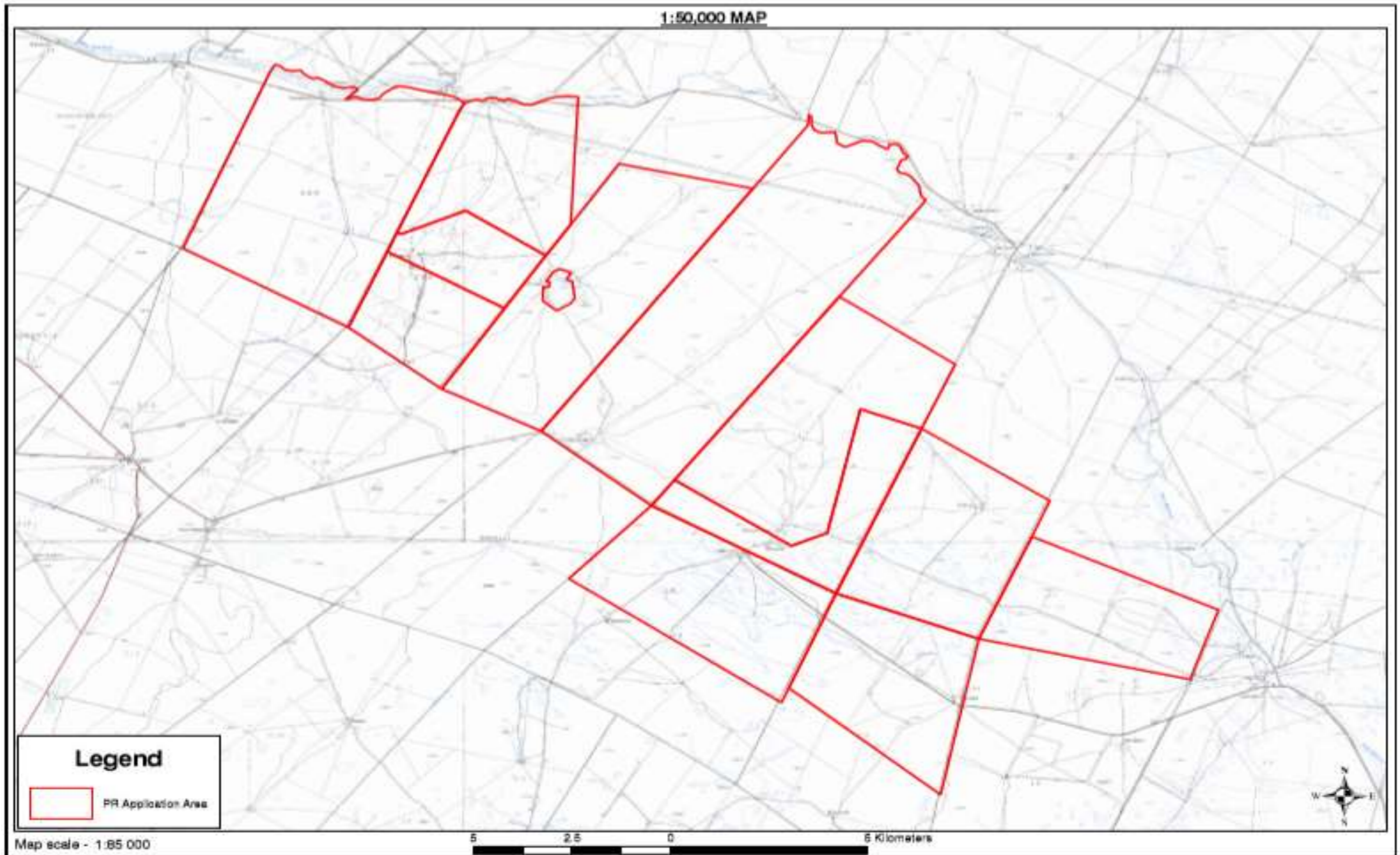


Figure 2. A map of the area indicating the overall location and extent the proposed processing area is indicated with a red block.

## LOCATION OF LISTED ACTIVITIES

### LISTED ACTIVITIES ON ABOVE MAP DESCRIBED

#### MAP LEGEND ENTRY

Prospecting right area

#### ASSOCIATED ACTIVITIES

- The operation directly relates to prospecting of a mineral resource (diamonds) and requires a prospecting right.
- The operation directly relates to prospecting of a mineral resource (diamonds) and requires permission in terms of Section 20 (MPRDA), for the removal and disposal of bulk samples of any minerals.

#### Endorheic pans

- The possible excavation of soil, sand, shells, shell grit, pebbles or rock of more than 10 m<sup>2</sup> from endorheic pans.

#### Core diamond gravel deposits

- The clearance of an area of more than 20 ha of indigenous vegetation.
- The development of haul roads 15 m wide with no reserve.
- The continuous lengthening (and rehabilitation) of haul roads 15 m wide with no reserve.
- The development of access roads 6 m in width with no reserve.
- The continuous establishment and reclamation of temporary stockpiles resulting from activities which require a prospecting right.

#### Plant site (fictional)

The exact location of the plant site is directly related to locality of pits and trenches. This will only be determined once non-invasive prospecting activities have been completed.

- The operation is directly relates to activities associated with the primary processing of a mineral resource.
- The development of infrastructure for the storage and handling of dangerous goods (fuel), in containers with a combined capacity of 30 - 80 m<sup>3</sup>.
- The establishment of a residue deposit (slimes dam) resulting from activities which require a prospecting right.
- General site infrastructure, including office complexes, workshop facilities, storage facilities, concrete bund walls and diesel depots, ablution facilities, water storage tanks and pipelines

**Table 1: Listed and Specified Activities**

<b>NAME OF ACTIVITY</b>  e.g. for prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route, etc...etc...etc.  e.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.	<b>Aerial extent of the Activity</b> <b>Ha or m<sup>2</sup></b>	<b>LISTED ACTIVITY</b> <b>Mark with an X</b> <b>where applicable or affected</b>	<b>APPLICABLE LISTING NOTICE</b> <b>(GNR 544, GNR 545 or GNR 546)/NOT LISTED</b>
<b>Activity 9 of Listing Notice 1</b>  "The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water- (vii) with an internal diameter of 0.36 metres or more; or (viii) with a peak throughput of 120 litres per second or more;	Water distribution Pipelines	X	NEMA: LN1 (GNR327)
<b>Activity 12 of Listing Notice 1</b>  "The development of— The development of- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more;  where such development occurs— (a) within a watercourse; (b) in front of a development setback; or	Clean and dirty water system It is anticipated that the operation will establish storm water control berms and trenches to separate clean and dirty water on the prospecting site.	X	NEMA: LN1 (GNR327)

<p><b>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse”</b></p> <p>Regulation GN R704, published on 4 June 1999 in terms of the National Water Act (Use of water for prospecting and related activities).</p>			
<p><b>Activity 20 of Listing Notice 1</b></p> <p>Any activity including the operations of that activity which requires a prospecting right in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including</p> <p>(a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource,</p> <p>(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;</p>	<p>20 136.5446ha application lodged for the farms</p>	<p>X</p>	<p>GNR 327</p>
<p><b>Activity 19 of Listing Notice 1</b></p> <p>The infilling or depositing of any material of more than 10 cubic metres into, or dredging, excavating, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from-</p> <p>(i) A watercourse (pans)</p>	<p>Will be determined by a specialist</p>	<p>X</p>	<p>GNR 327</p>
<p><b>Activity 19 of Listing Notice 2</b></p> <p>The removal and disposal of minerals contemplated in terms of Section 20 of the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including</p>	<p>20 136.5446ha application lodged for the farms</p>	<p>X</p>	<p>GNR 325</p>

(a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource, (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing.			
<b>Activity 15 of NEMA Listing Notice 2</b>  The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of vegetation is required for – The undertaking of a linear activity; or Maintenance purposes undertaken in accordance with a maintenance management plan.	Pits+Trenches COMBINED is 150 pits 2m X 3m 50 trenches 200m X 100m  300m <sup>2</sup> 1000000m <sup>2</sup>  100.03ha	X	GNR 325
<b>Activity 4 of NEMA Listing Notice 3</b>  The development of a road wider than 4 metres with a reserve less than 13,5 metres.  Access roads 6 m in width with no reserve. Roads (both access and haulage road on the mine site): Although it is recommended that the operation utilize existing roads as far as possible, it is anticipated that the prospecting operation will create an additional 5 km of roads, with a width of 6 meter.	3ha	X	NEMA: LN3 (GNR324)
<b>Activity 10 of NEMA Listing Notice 3</b>	± 80 m <sup>3</sup>	X	NEMA: LN3 (GNR324)

The development of infrastructure for the storage and handling of dangerous goods (fuel), in containers with a combined capacity of between 30 and 80 m <sup>3</sup> .			
<b>Activity 9 of Category A under the National Environmental Management: Waste Act 59 of 2008</b> <b>A Mine Residue Dam and return water dam</b>	0.7ha The disposal of inert waste of 10 000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by other legislation. 0.7ha		GNR 633
<b>Activity 15 of Category A under the National Environmental Management: Waste Act 59 of 2008</b>  The continuous establishment and reclamation of temporary stockpiles resulting from activities which require a Prospecting Right.	0.05 ha		GNR 633
<b>OTHER ACTIVITIES (Associated infrastructure not considered to be listed activities)</b>  Temporary Workshop Facilities Storage Facilities Concrete Bund walls for diesel Depots Ablution Facilities Topsoil Stockpiles Overburden Stockpiles	±0.07 ha ±3000m <sup>2</sup> ±250m <sup>2</sup> ±25m <sup>2</sup> ±0.65 ha ±1.8 ha		Not Listed



**ii) Description of the activities to be undertaken**

(Describe methodology or technology to be employed, including the type of commodity to be mined and for a linear activity, a description of the route of the activity)

The entire proposed prospecting project will be conducted in four phases as described below over a period of 60 months. This prospecting will consist of non-invasive and invasive (Bulk Sampling) activities. The review of available information that exists over the area of interest will be undertaken by means of conducting a literature review from satellite images and other available information.

**DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:**

(These activities do not disturb the land where prospecting will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc)

**PHASE 1****Review of Past Exploration Results**

In order to direct the exploration programme in an efficient manner, there will be a review of all information and data gathered during previous exploration. A site investigation of the target areas will be undertaken to identify infrastructure and determine any potential problems that may need to be addressed.

**Imagery Analysis & Geological Mapping**

High-resolution satellite images will be studied and used to geologically map the application area. Contacts between various lithologies will be mapped and specific attention will be given to delineate and define areas underlain by alluvial gravels.

**DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:**

(These activities result in land disturbances e.g. sampling, drilling, bulk sampling, etc)

**PHASE 2**

RC-drilling – Drilling is done in phases, over anomalous target areas, using reconnaissance lines or a grid of 200m X 200m or 100m X 50m depending on the level of confidence in the targets and the level of information required. The holes will be approximately 5 metres deep depending on local depth to bedrock (It is envisaged that at least 300 holes will be drilled). If initial drilling proves that only Rooikoppie gravels exist on the property and gravels only go 1m or less deep, drilling will cease and pitting will continue.

**PHASE 3****Invasive Prospecting Pits**

Invasive Prospecting Pits will be positioned also on a grid of 200m X 200m or 100m X 50 m on positive areas.

**PHASE 4****Bulk Sampling****DESCRIPTION OF BULK SAMPLING ACTIVITIES****Table 6.1: Bulk Sampling Activities**

ACTIVITY		DETAILS		
Number of pits/trenches planned		150 pits/ 50 trenches		
	Number of pits/trenches	Length	Breadth	Depth
	150 pits	2m	3m	0.5 - 5m
	50 trenches	200m	100m	0.5 – 5m
Locality		The location of the trenches will be verified during a site reconnaissance visit and after the pre-feasibility studies has been compiled.		
Volume Overburden (Waste)		Pits 2250m <sup>3</sup> Trenches 2500 000m <sup>3</sup>		
Volume Ore		Pits 1350 m <sup>3</sup> Trenches 2000 000 m <sup>3</sup>		
Density Overburden		2.2		
Density Ore		2.2		
Phase(s) when bulk sampling will be required		Month 25 – 49 Phase 4 and 5		
Timeframe(s)		From time to time during Month 25 - 49		

**PHASE 5****Analytical Desktop Study**

The project geologist monitors the programme, consolidates and processes the data and amends the programme depending on the results. This is a continuous process throughout the programme and continues even when no prospecting is done on the ground.

Each physical phase of prospecting is followed by desktop studies involving interpretation and modelling of all data gathered. These studies will determine the manner in which the work programme is to proceed in terms of activity, quantity, resources, expenditure and duration.

A GIS based database will be constructed capturing all exploration data.

## **ii. Infrastructure**

No known infrastructure except farm roads will be affected by prospecting activities.

The following equipment will be temporarily installed as part of the prospecting activities whereby it will be removed during the decommissioning phase.

1 x front-end loader

1 x Excavator

2 x 40ton ADT's

Transport Bakkie

Recovery Unit, c/w storage/transfer bins, sizing screen, conveyers, classifier

Water pump with pipeline

3 x 6 meters containers (offices, tea room, ablutions)

2 x 16 feet washing pan with conveyers

All temporary infrastructures, equipment and other items used during the proposed prospecting period will be removed from the site.

No ESKOM power will be available on the site. All prospecting will be done with gensets.

## **iii. Rehabilitation**

The prospecting method involves a continuous backfilling open cast process in the bulk sampling phase. Topsoil will be stripped and hauled to already backfilled areas. If there are no backfilled areas available immediately, topsoil will be temporarily stockpiled on the surface for later use. No materials will be permanently dumped on the surface. Washed and screened material will be backfilled into the already prospected areas and will be covered with the overburden and topsoil that has been allocated for this purpose.

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 material on the surface will be removed to the original topsoil level where possible. This material will then be backfilled into the open pits or trenches. 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 prospecting period will be removed from the site.

## **Water**

### **Surface Water**

Water will be abstracted from a borehole if the bulk sampling phase of the project is reached and gravels that was found during drilling needs to be tested. No waste material

resulting from the proposed prospecting operation will be dumped or pumped into any source of surface water. No source of surface water will therefore intentionally in any way be affected by the proposed prospecting operation.

#### **Ground Water**

Boreholes for watering of game and livestock should be present in the application area, this will be confirmed with specialist studies. The prospecting might have an impact on groundwater if the bulk sampling phase is reached.

#### **Waste Management**

Proper sanitation facilities will be provided for employees. No person will pollute the workings with faeces or urine, misuse the facilities provided or inappropriately foul the surrounding environment with faeces or urine. Acceptable hygienic and aesthetic practices will be adhered to. Non-biodegradable refuse such as glass bottles, plastic bags, etc. will be sorted and stored in separate lockable containers at a central point. It will be disposed of at a recognised disposal facility twice a month. Biodegradable refuse will either be handled as indicated, or be buried in a pit excavated for that purpose and covered with layers of soil when almost full. A final 0,5m thick layer of topsoil will be incorporated where practicable. Provision will be made for the future subsidence of the covering. Refuse will not be dumped in the vicinity of the prospecting area. Waste material with regard to vehicle repairs will be kept in 200 litres steel containers in the maintenance/farmstead area. This material will be disposed of at a recognised disposal facility once a month.

#### **Access Roads**

The property is accessed via the R31 tar road and gravel roads, as well as tracks on the properties. Activities associated with the Moonstone Prospecting that is expected to make use of these roads include:-

- o The transportation of prospecting personnel to and from the site;
- o Delivery of supplies and materials;
- o The transportation of the product for the market.

These transport operations will make use of passenger vehicles, light delivery vehicles and very limited heavy vehicles.

#### **Haul Roads**

There will be one Haul road to the plant area and one haul road to the prospecting site. No other haul roads will be constructed. Main haul roads will have a minimum width of 6m. No roads will be wider than 6m. Existing roads will be used as far as practically possible.

## e) Policy and Legislative Context

**Table 2: Applicable legislation and guidelines used to compile the report**

Applicable Legislation and Guidelines used to compile the report (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.)	Reference where applied	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT (E.g In terms of the National Water Act:-Water Use License has/has not been applied for).
Conservation of Agricultural Resources Act (Act 43 of 1983) and Regulations (CARA)	<ul style="list-style-type: none"> <li>- Section 5: Implementation of control measures for alien and invasive plant species;</li> <li>- Section 6: Control measures.</li> <li>- Regulation GN R1048, published on 25 May 1984, in terms of CARA</li> </ul>	- Control measures are to be implemented upon the approval of the EMPR.
Constitution of South Africa (Act 108 of 1996)	<ul style="list-style-type: none"> <li>- Section 24: Environmental right</li> <li>- Section 25: Rights in Property</li> <li>- Section 27: Water and sanitation right</li> </ul>	- To be implemented upon the approval of the EMPR.
Environment Conservation Act (Act 73 of 1989) and Regulations (ECA)	<ul style="list-style-type: none"> <li>- Sections 21, 22, 25, 26 and 28: EIA Regulations, including listed activities that still relate to the existing section of ECA.</li> <li>- Section 28A: Exemptions.</li> </ul>	- To be implemented upon the approval of the EMPR.
Fencing Act (Act 31 of 1963)	- Section 17: States that any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5m on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora.	- Control measures are to be implemented upon the approval of the EMPR.
Hazardous Substances Act (Act 15 of 1973) and Regulations read together with NEMA and NEMWA	- Definition, classification, use, operation, modification, disposal or dumping of hazardous substances.	- Noted and Considered measures are to be implemented upon the approval of the EMPR.

Intergovernmental Relations Act (Act 13 of 2005)	- This Act establishes a framework for the National, Provincial and Local Governments to promote and facilitate intergovernmental relations.	
Mine, Health and Safety Act (Act 29 of 1996) and Regulations	- Entire Act.	- Control measures are to be implemented upon the approval of the EMPR.
Mineral and Petroleum Resources Development Act (Act 28 of 2002) and Regulations as amended	- Entire Act. - Regulations GN R527	- A Prospecting Right has been applied for (NC) 30/5/1/1/2/12399 PR. - Rights and obligations to be adhered to.
National Environmental Management Act (Act 107 of 1998) and Regulations as amended	- Section 2: Strategic environmental management principles, goals and objectives. - Section 24: Foundation for Environmental Management frameworks. - Section 24N: - Section 24O: - Section 28: The developer has a general duty to care for the environment and to institute such measures to demonstrate such care. - Regulations GN R547, more specifically Chapters 5 and 7, where applicable (the remainder was repealed) published on 18 June 2010 in terms of NEMA (Environmental Management Framework Regulations) - Regulations GN R982 to R985, published on 4 December 2014 in terms of NEMA (Listed Activities) - Regulations GN R993, published on 8 December 2014 in terms of NEMA (Appeal) - Regulations GN R994, published on 8 December 2014 in terms of NEMA (exemption) - Regulations GN R205, published on 12 March 2015 in terms of NEMA (National appeal Amendment Regulations)	- Control measures are to be implemented upon the approval of the EMPR.

	<ul style="list-style-type: none"> <li>- Regulations GN R1147, published on 20 November 2015 in terms of NEMA (Financial Provision)</li> </ul>	
National Environmental Management: Air Quality Act (Act 39 of 2004)	<ul style="list-style-type: none"> <li>- Section 32: Control of dust</li> <li>- Section 34: Control of noise</li> <li>- Section 35: Control of offensive odours</li> <li>- Regulation GN R551, published on 12 June 2015 (amended Categories 1 to 5 of GN 983) in terms of NEM:AQA (Atmospheric emission which have a significant detrimental effect on the environment)</li> <li>- Regulation GN R283, published on 2 April 2015 in terms of NEM:AQA (National Atmospheric Emissions Reporting Regulations) (Group C-Mines)</li> </ul>	<ul style="list-style-type: none"> <li>- Control measures are to be implemented upon the approval of the EMPR.</li> <li>- This is also legislated by Mine Health and Safety from DMR and is to be adhered to.</li> </ul>
National Environmental Management: Biodiversity Act (Act 10 of 2004)	<ul style="list-style-type: none"> <li>- Section 52 of The National Environmental Management Act: Biodiversity Act (NEMBA) (Act 10 of 2004) states that the MEC/Minister is to list ecosystems that are threatened and in need of protection.</li> <li>- Section 53 states that the Minister may identify any process or activity in such a listed ecosystem as a threatening process.</li> <li>- A list of threatened and protected species has been published in terms of Section 56(1) GG 29657 GNR 151 and GNR 152, Threatened or Protected Species Regulations.</li> </ul> <p>Commencement of Threatened or Protected Species Regulations 2007 : 1 June 2007 GNR 150/GG 29657/23-02-2007</p> <p>Publication of lists of critically endangered, vulnerable and protected species GNR 151/GG 29657/23-02-2007 *</p>	<ul style="list-style-type: none"> <li>- A permit application regarding protected plant species need to be lodged with DENC if any protected species is encountered. Control measures are to be implemented upon the approval of the EMPR.</li> </ul>

	<p>Threatened or Protected Species Regulations GNR 152/GG 296547/23-02-2007 *</p> <ul style="list-style-type: none"> <li>- Sections 65 – 69: These sections deal with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to alien species.</li> <li>- Sections 71 and 73: These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species.</li> <li>- Regulation GN R151, published on 23 February 2007 (List fo Critically Endangered, Vulnerable and Protected Species, 2007) in terms of NEM: BA</li> <li>- Regulation GN R152, published on 23 February 2007 (TOPS) in terms of NEM:BA</li> <li>- Regulations GN R507 to 509 of 2013 and GN 599 of 2014 in terms of NEM:BA (Alien Species)</li> </ul>	
<p>The National Environmental Management Act: Protected Areas Act (NEMPAA) (Act 57 of 2003) provides for the protection of ecologically viable areas that are representative of South Africa's natural biodiversity and its landscapes and seascapes.</p>	<ul style="list-style-type: none"> <li>- Chapter 2 lists all protected areas.</li> </ul>	<ul style="list-style-type: none"> <li>- Not applicable.</li> </ul>
<p>National Environmental Management: Waste Management Act (Act 59 of 2008)</p>	<ul style="list-style-type: none"> <li>- Chapter 4: Waste management activities</li> <li>- Regulations GN R634 published on 23 August 2013 in terms of NEM:WA (Waste Classification and Management Regulations)</li> <li>- Regulations GN R921 published on 29 November 2013 in terms of NEM:WA (Categories A to C – Listed activities)</li> </ul>	<ul style="list-style-type: none"> <li>- To be implemented upon the approval of the EMPR.</li> </ul>



	<ul style="list-style-type: none"> <li>- National Norms and Standards for the Remediation of contaminated Land and Soil Quality published on 2 May 2014 in terms of NEM:WA (Contaminated land regulations)</li> <li>- Regulations GN R634 published on 23 August 2013 in terms of NEM: WA (Waste Classification and Management Regulations)</li> <li>- Regulations GN R632 published on 24 July 2015 in terms of NEM: WA (Planning and Management of Mineral Residue Deposits and Mineral Residue Stockpiles)</li> <li>- Regulations GN R633 published on 24 July 2015 in terms of NEM: WA (Amendments to the waste management activities list published under GN921)</li> </ul>	
National Forest Act (Act 84 of 1998) and Regulations	<ul style="list-style-type: none"> <li>- Section 15: No person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister.</li> </ul>	<ul style="list-style-type: none"> <li>- A permit application regarding protected tree species need to be lodged with DAFF if necessary and determined by a specialist study.</li> <li>- Control measures are to be implemented upon the approval of the EMPR.</li> </ul>
National Heritage Resources Act (Act 25 of 1999) and Regulations	<ul style="list-style-type: none"> <li>- Section 34: No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.</li> <li>- Section 35: No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site.</li> <li>- Section 36: No person may, without a permit issued by SAHRA or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any</li> </ul>	<ul style="list-style-type: none"> <li>- Control measures are to be implemented upon the approval of the EMPR. Fossil finds procedure are attached to the PIA.</li> </ul>

	<p>grave or burial ground older than 60 years which is situated outside a forma cemetery administered by a local authority.</p> <ul style="list-style-type: none"> <li>- Section 38: This section provides for HIA which are not already covered under the ECA. Where they are covered under the ECA the provincial heritage resources authorities must be notified of a proposed project and must be consulted during HIA process.</li> <li>- Regulation GN R548 published on 2 June 2000 in terms of NHRA</li> </ul>	
<p>National Water Act (Act 36 of 1998) and regulations as amended, <i>inter alia</i> Government Notice No. 704 of 1999</p>	<ul style="list-style-type: none"> <li>- Section 4: Use of water and licensing.</li> <li>- Section 19: Prevention and remedying the effects of pollution.</li> <li>- Section 20: Control of emergency incidents.</li> <li>- Section 21: Water uses In terms of Section 21 a licence is required for: <ul style="list-style-type: none"> <li>(a) taking water from a water resource;</li> <li>(b) storing water;</li> <li>(c) impeding or diverting the flow of water in a watercourse;</li> <li>(f) Waste discharge related water use;</li> <li>(g) disposing of waste in a manner which may detrimentally impact on a water resource;</li> <li>(i) altering the bed, banks, course or characteristics of a watercourse;</li> <li>(j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and;</li> </ul> </li> <li>- Regulation GN R704, published on 4 June 1999 in terms of the National Water Act (Use of water for prospecting and related activities)</li> </ul>	<ul style="list-style-type: none"> <li>- A water use application must be submitted and will be submitted as soon as the EIA EMP had been finalized.</li> <li>- Control measures are to be implemented upon the approval of the EMPR.</li> </ul>

	<ul style="list-style-type: none"> <li>- Regulation GN R1352, published on 12 November 1999 in terms of the National Water Act (Water use to be registered)</li> <li>- Regulation GN R139, published on 24 February 2012 in terms of the National Water Act (Safety of Dams)</li> <li>- Regulation GN R398, published on 26 March 2004 in terms of the National Water Act (Section 21 (j))</li> <li>- Regulation GN R399, published on 26 March 2004 in terms of the National Water Act (Section 21 (a) and (b) )</li> <li>- Regulation GN R1198, published on 18 December 2009 in terms of the National Water Act (Section 21 ( c ) and (i) – rehabilitation of wetlands)</li> <li>- Regulations GN R1199, published on 18 December 2009 in terms of the National Water Act (Section 21 ( c ) and (i) )</li> <li>- Regulations GN R665, published on 6 September 2013 in terms of the National Water Act (Amended GN 398 and 399 – Section 21 (e), (f), (h), (g), (j))</li> </ul>	
Nature Conservation Ordinance (Ord 19 of 1974)	<ul style="list-style-type: none"> <li>- Chapters 2, 3, 4 and 6: Nature reserves, miscellaneous conservation measures, protection of wild animals other than fish, protection of Flora.</li> </ul>	<ul style="list-style-type: none"> <li>- Control measures are to be implemented upon the approval of the EMPR.</li> </ul>
Northern Cape Nature Conservation Act (Act 9 of 2009)	<ul style="list-style-type: none"> <li>- Addresses protected species in the Northern Cape and the permit application process related thereto.</li> </ul>	<ul style="list-style-type: none"> <li>- A permit application regarding provincially protected plant species as well as for large-scale harvesting of indigenous flora need to be lodged with DENC if necessary and will be determined by the specialist study.</li> <li>- Control measures are to be implemented upon the approval of the EMPR.</li> </ul>

Occupational Health and Safety Act (Act 85 of 1993) and Regulations	<ul style="list-style-type: none"> <li>- Section 8: General duties of employers to their employees.</li> <li>- Section 9: General duties of employers and self-employed persons to persons other than their employees.</li> </ul>	- Control measures are to be implemented upon the approval of the EMPR.
Road Traffic Act (Act 93 of 1997) and Regulations	- Entire Act.	- Control measures are to be implemented upon the approval of the EMPR.
Water Services Amendment Act (Act 30 of 2007)	- It serves to provide the right to basic water and sanitation to the citizens of South Africa (giving effect to section 27 of the Constitution).	- Control measures are to be implemented upon the approval of the EMPR.
National Land Transport Act, (Act 5 of 1998)		- To take note.
Northern Cape Planning and Development Act (Act 7 of 1998)	- To control planning and development	- To be implemented upon the approval of the EMPR.
Spatial Planning and Land Use Management (Act 16 of 2013 (SPLUMA) and regulations	<ul style="list-style-type: none"> <li>- To provide a framework for spatial planning and land use management in the Republic;</li> <li>- To specify the relationship between the spatial planning and the land use management, amongst others</li> <li>- Regulations GN R239 published on 23 March 2015 in terms of SPLUMA</li> </ul>	- To be implemented upon the approval of the EMPR.
Subdivision of Agricultural Land Act, 70 of 1970 and regulations	- Regulations GN R373 published on 9 March 1979 in terms of Subdivision of Agricultural Land	- To take note.
Basic Conditions of Employment Act (Act 3 of 1997) ) as amended	- To regulate employment aspects	- To be implemented upon the approval of the EMPR
Community Development (Act 3 of 1966)	- To promote community development	- To be implemented upon the approval of the EMPR
Development Facilitation (Act 67 of 1995) and regulations	- To provide for planning and development	- To take note.
Development Facilitation (GN24, PG329, 24/07/1998)	- Regulations re Northern Cape LDO's	- To take note.

Development Facilitation (GNR1, GG20775, 07/01/2000)	- Regulations re application rules S26, S46, S59	- To take note.
Development Facilitation (GN732, GG14765, 30/04/2004)	- Determines amount, see S7(b)(ii)	- To take note.
Land Survey Act (Act 8 of 1997) ) and regulations, more specifically GN R1130	- To control land surveying, beacons etc. and the like; - Agriculture, land survey S10	- To take note.
National Veld and Forest Fire Act (Act 101 of 1998) ) and regulations, more specifically GN R1775	- To regulate law on veld and forest fires - (Draft regulations s21)	- To be implemented upon approval of the EMPR
Municipal Ordinance, 20/1974	- To control pollution, sewers etc.	- To be implemented upon approval of the EMPR
Municipal Ordinance, PN955, 29/08/1975	- Nature conservation Regulations	- To be implemented upon approval of the EMPR
Cape Land Use Planning Ordinance, 15/85	- To control land use planning	- To take note.
Cape Land Use Planning Ordinance, PN1050, 05/12/1988	- Land use planning Regulations	- To take note.

**f) Need and desirability of the proposed activities**

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location)

Taking into consideration all the information captured in this report, the most appropriate procedure for planning and developing the proposed prospecting operation will involve the following:

**(a) Prospecting Method**

The location of the mine is determined by the possible geological location of the mineral resource. This site has shown potential to have alluvial diamonds. Prospecting for alluvial diamonds by means of the method described, with the understanding that the formulation of an effective Environmental Management Programme and the implementation thereof, as well as the obtainment of an authorisation for the abstraction of water from a resource for prospecting purposes from the Department of Water and Sanitation in terms of the National Water Act, 1998 (Act No. 36 of 1998, is an inseparable part of the proposed operation.

**(b) Labour Force**

Employing people who originate from within the boundaries of Kgatelopele Municipality. This will guarantee benefits such as a positive contribution to the local economy; a decrease in local unemployment figures; a decrease in the social phenomena normally associated with unemployment, such as crime and alcohol abuse; and a positive contribution to cultural cohabitation.

**(c) Rehabilitation**

Making financial provision for the implementation of a rehabilitation strategy as is required by Section 41 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) and NEMA.

**(d) Environmental Monitoring**

Carrying out environmental monitoring on a regular basis, as is required by Regulation 55 of the Regulations published in Government Notice No. 26275 under the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) and in the NEMA regulations published 20 November 2015.

**(e) General**

Being open to possible comments, suggestions and complaints received from neighbouring communities or members of the general public that might result from the implementation of the proposed prospecting operation.

**g) Period for which the environmental authorisation is required**

5 years with the option to renew the Prospecting Right for another 3 years.

**h) Description of the process followed to reach the proposed preferred site**

NB!! – This section is not about the impact assessment itself; It is about the determination of the specific site layout having taken into consideration (1) the comparison of the originally proposed site plan, the comparison of that plan with the plan of environmental features and current land uses, the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout as a result.

The location of the mine is determined by the possible geological location of the mineral resource.

**i) Details of the development footprint alternatives considered**

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

The registered description of the land to which the prospecting right application relates:

<b>Farm Name</b>
FARM 508, REMAINING EXTENT, PORTION 1 AND PORTION 3 OF THE FARM 509, REMAINING EXTENT AND PORTION 2 OF THE FARM 510, PORTION 1 (DROOGHART) OF THE FARM 10, REMAINING EXTENT OF THE FARM 11, REMAINING EXTENT OF THE FARM 12, PORTION 1 (WOODVILLE) OF THE FARM 12, FARM 13, PORTION 1 (VLAKFONTEIN) OF THE FARM 14, AND PORTION 1 (LANGLAAGTE) OF THE FARM 15, Herbert and Hay

The properties on which the Prospecting Right was applied for is determined by the possible geological location of the mineral resource. Therefore, there are no alternatives for the location of the activity, except for not proceeding with the operation. This will however cause the underutilisation of a national economic resource.

The area is accessible via gravel roads from different directions.

Infrastructure in the Kgatelopele Local Municipality area is well developed with good road and rail networks, electricity grid and water. Experienced labour is available in the area as is an extensive network of secondary industries geared

towards small and large-scale diamond mining. Water for Processing Plant will be a crucial element that needs to be secured towards the successful operating of the project. A water application will be submitted to the Department of Water and Sanitation.

**Alternatives considered:-**

As the area covered under the Prospecting Right had been selected based on the assumption of alluvial gravels and indication of the presence of alluvial gravels, it will not be viable to consider an alternative site for the prospecting. Alternatives for land are thus not available, as the prospecting right application can not be considered over another area.

Therefore there are no alternatives to the area.

**(a) The type of activity to be undertaken:**

The planned prospecting technique is:

**PHASE 1**

**Review of Past Exploration Results**

In order to direct the exploration programme in an efficient manner, there will be a review of all information and data gathered during previous exploration. A site investigation of the target areas will be undertaken to identify infrastructure and determine any potential problems that may need to be addressed.

**Imagery Analysis & Geological Mapping**

High-resolution satellite images will be studied and used to geologically map the application area. Contacts between various lithologies will be mapped and specific attention will be given to delineate and define areas underlain by alluvial gravels.

**DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:**

(These activities result in land disturbances e.g. sampling, drilling, bulk sampling, etc)

**PHASE 2**

RC-drilling – Drilling is done in phases, over anomalous target areas, using reconnaissance lines or a grid of 200m X 200m or 100m X 50m depending on the level of confidence in the targets and the level of information required. The holes will be approximately 5 metres deep depending on local depth to bedrock (It is envisaged that at least 300 holes will be drilled). If initial drilling proves that only Rooikoppie gravels exist on the property and gravels only go 1m or less deep, drilling will cease and pitting will continue.

**PHASE 3**

**Invasive Prospecting Pits**



Invasive Prospecting Pits will be positioned also on a grid of 200m X 200m or 100m X 50 m on positive areas.

#### PHASE 4

##### Bulk Sampling

#### DESCRIPTION OF BULK SAMPLING ACTIVITIES

Table : Bulk Sampling Activities

ACTIVITY		DETAILS		
Number of pits/trenches planned		150 pits/ 50 trenches		
	Number of pits/trenches	Length	Breadth	Depth
	150 pits	2m	3m	0.5 - 5m
	50 trenches	200m	100m	0.5 – 5m
Locality		The location of the trenches will be verified during a site reconnaissance visit and after the pre-feasibility studies has been compiled.		
Volume Overburden (Waste)		Pits 2250m <sup>3</sup> Trenches 2500 000m <sup>3</sup>		
Volume Ore		Pits 1350 m <sup>3</sup> Trenches 2000 000 m <sup>3</sup>		
Density Overburden		2.2		
Density Ore		2.2		
Phase(s) when bulk sampling will be required		Month 25 – 49 Phase 4 and 5		
Timeframe(s)		From time to time during Month 25 - 49		

#### PHASE 5

##### Analytical Desktop Study

The project geologist monitors the programme, consolidates and processes the data and amends the programme depending on the results. This is a continuous process throughout the programme and continues even when no prospecting is done on the ground.

Each physical phase of prospecting is followed by desktop studies involving interpretation and modelling of all data gathered. These studies will determine the manner in which the work programme is to proceed in terms of activity, quantity, resources, expenditure and duration.

A GIS based database will be constructed capturing all exploration data.

**Alternatives considered:-**

There are no alternatives to the prospecting methods as this is the most appropriate method being used by the diamond industry.

**(b) The design or layout of the activity:**

The site infrastructure for the bulk sampling will need to be strategically placed by incorporating prospecting project demands and environmental sensitivities identified during the Environmental Impact Assessment process. Thus, the site layout will primarily be based on proximity to the nearby access roads, proximity to the areas earmarked for bulk sampling as well as limited additional impact on the environmental (non-perennial drainage lines, ephemeral pans, wind direction and possible heritage resources).

The following infrastructure will be established for bulk sampling and will be associated with the prospecting operation:

- Processing Plant : 2 X 16 feet
- Ablution Facilities: In terms of sewage the decision was made to use chemical toilets which can be serviced regularly by the service provider.
- Clean & Dirty water system: Berms  
It is anticipated that the operation will establish stormwater control berms and trenches to separate clean and dirty water on the mine site.
- Fuel Storage facility (Concrete Bund walls and Diesel tanks):  
It is anticipated that the operation will utilize 2 x 23 000 litre diesel tanks. These tanks must be placed in bund walls, with a capacity of 1.5 times the volume of the diesel tanks. A concrete floor must be established where the re-fuelling will take place.
- Processing plant: 2 X 16 feet pan with conveyers and recovery
- Roads (both access and haulage road on the mine site):  
Although it is recommended that the operation utilize existing roads as far as possible, it is anticipated that the prospecting operation will create an additional 2 - 4 km of roads, with a width of 6 meters.
- Salvage yard (Storage and laydown area).
- Product Stockpile area.
- Waste disposal site

The operation will establish a dedicated, fenced waste disposal site with a concrete floor and bund wall. The following types of waste will be disposed of in this area:

- Small amounts of low level hazardous waste in suitable receptacles;
  - Domestic waste;
  - Industrial waste.
- Temporary Workshop Facilities and Wash bay.
  - Water distribution Pipeline.
  - Water tank :  
It is anticipated that the operation will establish 1 x 10 000 litre water tanks with purifiers for potable water.

**Alternatives considered:-**

Alternatives for fuel storage include surface storage, underground storage and the storage of fuel in mobile tanks with a metal bund wall. Underground storage has an adverse negative pollution potential, because it is not easy to monitor leakages. Remediation measures are also not as effective as compared to surface storage tanks. Mobile tanks are a viable option for infield screening activities, but the best viable long term option is the instalment of fuel tanks within a concrete bund wall. The final location of the fuel storage tanks will be determined based on proximity to site operations.

In terms of water use alternatives; the operation is located next to the Klein Riet River which is a non perennial river. If the bulk sampling stage of the project is reached ground water must be secured as there is no other water available. Plastic pipelines are considered to be the best long term option for transferring water, due to their temporary nature which causes minimum environmental disturbances.

Therefore, a pipeline route will be designed based on the principle of minimum impacts to the environment.

In terms of power generation the options available was for Generators or Eskom power. All of the electricity needs for the operations will be generated by a diesel generator and there would therefore be no additional pressure on the Eskom Electricity Grid.

In terms of sewage the decision was made to use chemical toilets which can be serviced regularly by the service provider.

**(c) The technology to be used in the activity:**

- Technique

The area will be excavated (opencast method) with an excavator up to bedrock, stockpiled next to an open area and loaded onto the trucks by a frond end loader. The trucks will transport the gravel via a newly constructed road, which will be constructed to the required safety standard. No provincial roads will be used.

At the processing plant the run of mine will be fed onto a grizzly for the screening out oversize material. The gravel will be processed through a screening section for delivery to a recovery plant and associated equipment. In terms of the processing it should take place outside the 1:100 year floodline and a processing area will be negotiated with the Pniel CPA. This area will be used for all processing and stockpiling operations with an agreement entered into with the relevant Department).

- Technology

At the processing plant the run of mine will be fed onto a grizzly for the screening out oversize material. The gravel will be processed through a screening section for delivery to a recovery plant and associated equipment. In terms of the processing it should take place outside the 1:100 year floodline and a processing area will be negotiated with the Department. This area will be used for all processing and stockpiling operations with an agreement entered into with the Pniel CPA).

**Alternatives considered:-**

The planned prospecting activities include (non invasive and invasive methods). The operation is also associated with processing techniques that make use of modern technologies. These are the most economic viable method currently being used by the diamond fraternity. There is no other feasible, alternative prospecting method for the prospecting and bulk sampling of alluvial diamonds.

**(d) The operational aspects of the activity:**

The gravels will be loaded with an excavator on to dump trucks for conveyance to the Processing Plant. At the Processing Plant the run of mine gravels will be fed onto a grizzly for screening out oversize material. The material will be processed through a screening section for delivery to a recovery plant. Concentrate from the recovery plant will be processed through an X-Ray/Sortex plant to extract the diamonds. The expected lifespan of the prospecting operation is 5 years with the option to renew for 3 years.

Prospecting activities will primarily make use of existing roads, but there is a possibility for additional roads that could be created.

**Alternatives considered:-**

The conventional opencast load-haul-mining method has been proven to be the most economic viable method currently being used by the diamond fraternity for bulk sampling. There is no other feasible, alternative prospecting method for the prospecting and bulk sampling of alluvial diamonds.

**(e) The option of not implementing the activity:**

Potential land use is mostly stockfarming on the application area. Therefore, prospecting activities can prove to be an economically beneficial option for the area.

Mining forms an integrated part of the social and economical growth of South Africa and more specifically the Northern Cape Province.

### **Socio-Economy**

The operation will make provision for 10 job opportunities. This will be lost if the project does not proceed. Substantial tax benefits to the State and Local Government will also be lost.

### **Biodiversity**

A ecological study which will include biodiversity will be done on the area to establish if any protected areas or species is existing on the application area.

### **Heritage and Cultural Resources**

No information is available on any heritage features on the area of application. The necessary Heritage and Palaeontological specialist studies will be done to be included into the EIA/EMP documents.

Should any other heritage features and/or objects be located or observed, a heritage specialist will be contacted immediately. Observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that a heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. If the prospecting operation is approved, the heritage resources if any other had been encountered will be protected through the demarcation of no-go zones and fencing off.

## **ii) Details of the Public Participation Process Followed**

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

Description of the consultation process:-

- Notification letters were sent to all interested and/or affected parties on 22 January 2020. Attached to each of these letters was a Basic Information Document (BID) containing information relating to proposed project.
- Notification letters were sent to all interested and/or affected parties. Attached to each of these letters was a draft Scoping report on a disc containing information relating to proposed project.

- A newspaper advert was placed in the DFA (Diamond Fields Advertiser) local newspaper on the 24 January 2020.
- Notices were also placed at the Spar in Lime Acres and the other shopping centre as well as at the farms Vleiplaas, Witput, Paddafontein, Palmietfontein and Langlaagte.
- Comments or replies received will be handled individually.

Proof of notification and consultation is attached as Appendix 3. The consultation process is still in process. The draft Environmental Impact Assessment and EMP will be circulated to all registered interested and affected parties.

### Summary of issues raised by I&APs

(Complete the table summarising comments and issues raised, and reaction to those responses)

**Table 3: Consultation with I&Aps**

Interested and Affected Parties		Date Comments Received	Issues Raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted					
<b><u>AFFECTED PARTIES</u></b>					
<b>Landowner/s</b>	<b>X</b>				
PC Steenkamp PO Box 196 Danielskuil 8405	Registered letter				
Langstrand Familie Trust Johanna.smit@lantic.net	NO address could be obtained as yet. Emailed to address				
Madelene Gers Familie Trust PO Box 324 Danielskuil 8405	Registered letter				
Irusma Boerdery CC PO Box 441 Douglas 8730	Registered letter				
Brits Aletta Johanna Milnerweg 12 Waverly Bloemfontein 9301	Registered letter				
Genna Familietrust 12 Frans Street Villiers 9840	Registered letter				
De Jager Johannes Lodewikus PO Box 490 Danielskuil	Registered letter				

8405					
Nederduits Gereformeerde Gemeente Douglas te Douglas  NG Kerk Douglas Kantoor Rhodesstr Pastorie Arnotstr 4 Douglas 8730	Registered letter				
<b>Lawful occupier/s of the land</b>					
<b>Landowners or lawful occupiers on adjacent properties</b>	X				
<b>Municipal Councillor</b>	X				
<b>Municipality</b>	X				
Kgatelopele Municipality PO Box 43, Danielskuil, 8405  Baker Street, Danielskuil Tel 053 384 8600 Fax 053 384 0326	X Registered letter				
ZF Mgcawu District Municipality Private Bag X6039 Upington 8800	X Registered letter				
<b>Organs of State (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWS)</b>					
SANRAL P.O. Box 415 Pretoria 0001	X Registered letter				



Transnet PO Box 32696 Braamfontein 2017	X Registered letter				
Department of Agriculture, Forestry & Fisheries Directorate: Forestry Management P.O. Box 2782 Upington 8800	X Registered letter				
Dept. of Agriculture, Land Reform & Rural Development Private Bag X5108 Kimberley 8300	X Registered letter				
Department of Rural Development and Land Reform Private Bag X5007 Kimberley 8300	X Registered letter				
ESKOM Holdings SOC Limited Northern Cape Operating Unit: Land Development P.O. Box 606 Kimberley 8300	X Registered letter				
Eskom Environmental Division PO Box 356 Bloemfontein 9300	X Registered letter				
Department of Water & Sanitation Private Bag X6101 Kimberley 8300	X Registered letter				
SAHRA P.O. Box 4637 Cape Town 8000	X Registered letter				
Northern Cape Department of Roads and Public works PO Box 3132 Squarehill Park Kimberley 8300	X Registered letter				

DAFF Upington P O Box 3229 Upington 8800	X Registered letter				
<b>Communities</b>					
<b>Dept. Land Affairs</b>					
Department of Land Affairs and Rural Development Private Bag X5018 Kimberley 8300	X Registered letter				
<b>Traditional Leaders</b>					
No Traditional Leaders					
<b>Dept. Environmental Affairs</b>					
Dept. of Environment & Nature Conservation Private Bag X6102 Kimberley 8300	X Registered letter				
<b>Other Competent Authorities affected</b>					
<b><u>OTHER AFFECTED PARTIES</u></b>					
<b><u>INTERESTED PARTIES</u></b>					

**iv) The Environmental attributes associated with the development footprint alternatives** (The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

**(1) Baseline Environment**

**(a) Type of environment affected by the proposed activity**

(its current geographical, physical, biological, socio-economic, and cultural character)

**(1) GEOLOGY:**

Alluvial gravels, extending from the Kimberley to Barkly West to Prieska districts along the Orange, Vaal, Harts and Riet Rivers and on the Northern and Western Cape coasts, yield diamonds commonly of a better quality than those found in the original kimberlite. The early diamond rushes at Hopetown and near Kimberley, were followed by a succession of rushes to alluvial diamond fields further northwards and what is now known as the North West Province. Examples were those in the 1920s and 1930s at Kimberley, Bakerville and the Mafikeng district.

Despite having been the hub of the world diamond industry for over a hundred years, Kimberley remains the centre of one of the most exciting exploration provinces anywhere. The Kimberley region is well known for its high quality gemstones and is generally regarded as a priority target for the discovery of large stones. Extensive areas of terrace gavels flanking a number of important rivers have yet to be fully evaluated; and known diamondiferous kimberlite pipes and fissures await the application of modern mining and processing technology.

Alluvial deposits in this region are well known for their high quality gemstones, both in terms of size and quality, with a regional average value of about US\$ 600 to 1500 per carat. These deposits are amenable to low cost opencast mining and are situated in a region with excellent infrastructure.

**Alluvial Geology of the Kimberley Area**

The erosion of diamondiferous kimberlites liberates diamonds onto the land surface, for redistribution by streams and rivers. The processes that lead to the deposition and concentration of diamond in river sediments are obviously of direct importance in the formation of economic alluvial diamond deposits (or diamond placers).

The South African alluvial deposits are distributed in a southwest-trending belt that stretches from the Limpopo River to the

Namaqualand coast. The major deposits are concentrated along the Vaal and Orange River valleys and some tributaries of the Vaal River. The deposits invariably consist of gravel resting on Precambrian bedrock. This bedrock contains trap sites for diamonds in the form of scour channels, potholes, gulley's and plunge pools, and in all cases, its competence and irregularity is sufficient to trap coarse debris that, in turn, act to entrain diamonds.

The bedrock comprises a wide variety of rock types, including granite, gneiss, lava, dolomite, tillite, shale and quartzite, and cross-cutting dykes perpendicular to the fluvial channels and paleo channels are important in the development of trap sites.

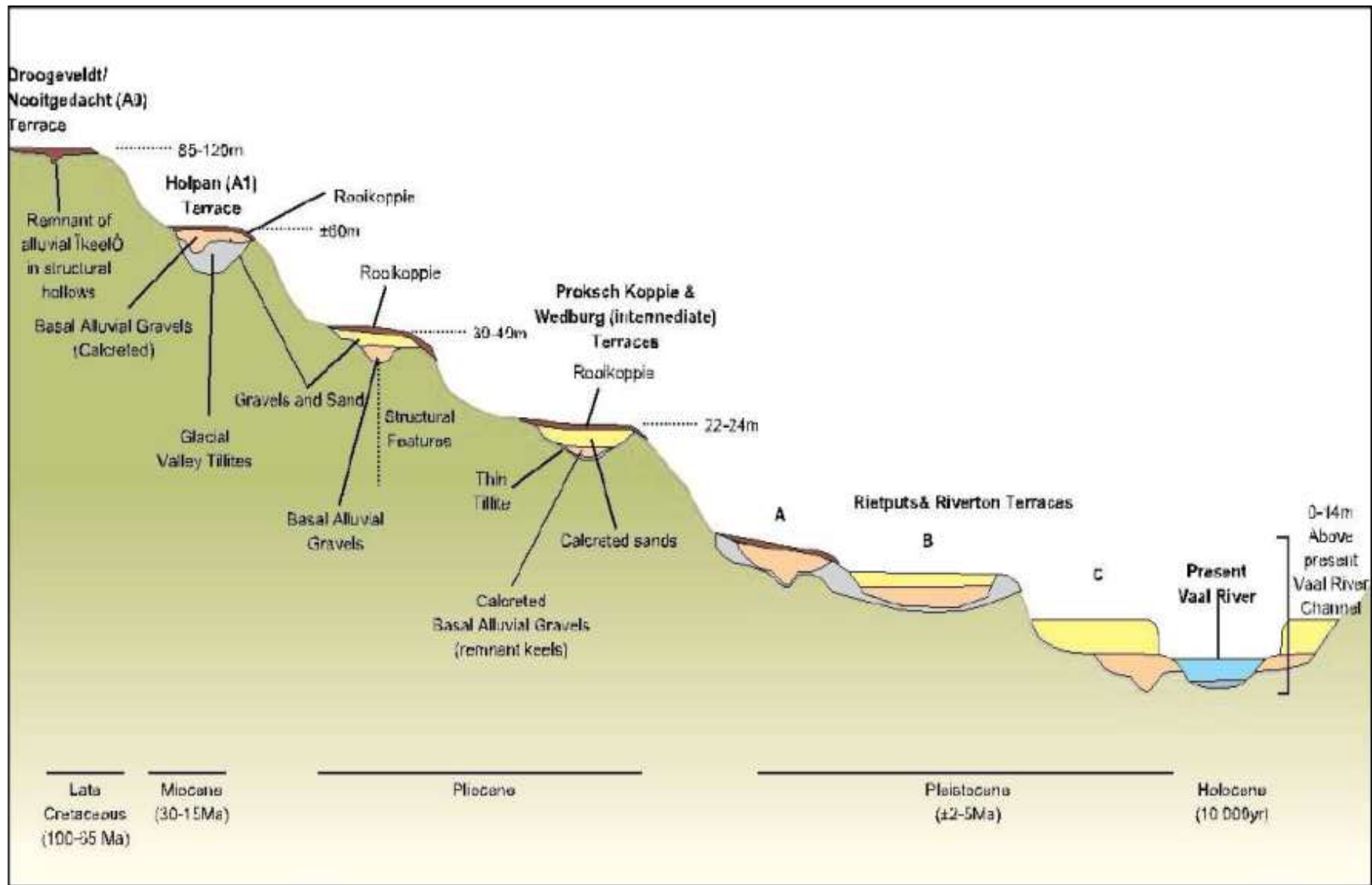
The diamonds were originally derived from kimberlites on the Kalahari Craton, mostly within South Africa and transported by rivers to their placer sites. Many of these placers were subsequently reworked during the Cenozoic and redeposited as younger placers in downstream locations.

The paucity of alluvial placers on the Karoo Supergroup is due to the fact that the horizontally bedded sedimentary rocks are generally insufficiently lithified for the formation of trap sites, except where dolerite intrusions are present. Where rivers and palaeo-rivers leave the Karoo base along the northern rim of the Karoo Basin, and encounter the pre-Karoo surface, especially where this is composed of Ventersdorp Supergroup rocks, significant placer development occurs.

The age of the alluvial placers ranges from Late Cretaceous to Quaternary with depositional peaks coinciding with fluvial phases during the Late Cretaceous, Miocene and Plio-Pleistocene. These ages post-date the emplacement of all the diamondiferous kimberlites on the Kalahari Craton from which the diamonds were derived. As a result of erosion during the Cenozoic era, only six Late Cretaceous placers are preserved. These comprise Droogeveld, 25 km west-northwest of Barkly West, which is placer gravel in bedrock-bounded channels of a paleo-Vaal River and Nooitgedacht, 15 km southeast of Barkly West which is unrelated to the paleo-Vaal drainage and represents colluvial gravel that contains diamonds, which were directly eroded and washed from the nearby Kimberley pipes.

Deposits of Miocene, Pliocene and Pleistocene age occur along the Vaal River valley between Christiana and Douglas and along the Orange River valley between Hopetown and Prieska. These deposits are located at elevations between present river level and 120m above present river levels.

The diamonds were probably transported from kimberlites located near Kroonstad, Welkom, Theunissen, Boshof, Koffiefontein, and in northern Lesotho via former drainage courses of the Vals, Vet, Riet and Orange Rivers and a so-called Kimberley River that tapped the Boshof kimberlites prior to being captured by the Modder River during the Pliocene. The deposits are relatively small but numerous large stones have been produced from these gravels with a 511-carat stone from Nooitgedacht near Barkly West the largest. Diamond grades vary between 0.1 and 2 carats per hundred tonnes (cpht).



**Figure 3:** The age of the alluvial placers ranges from Late Cretaceous to Quaternary with depositional peaks coinciding with fluvial phases during the Late Cretaceous, Miocene and Plio-Pleistocene

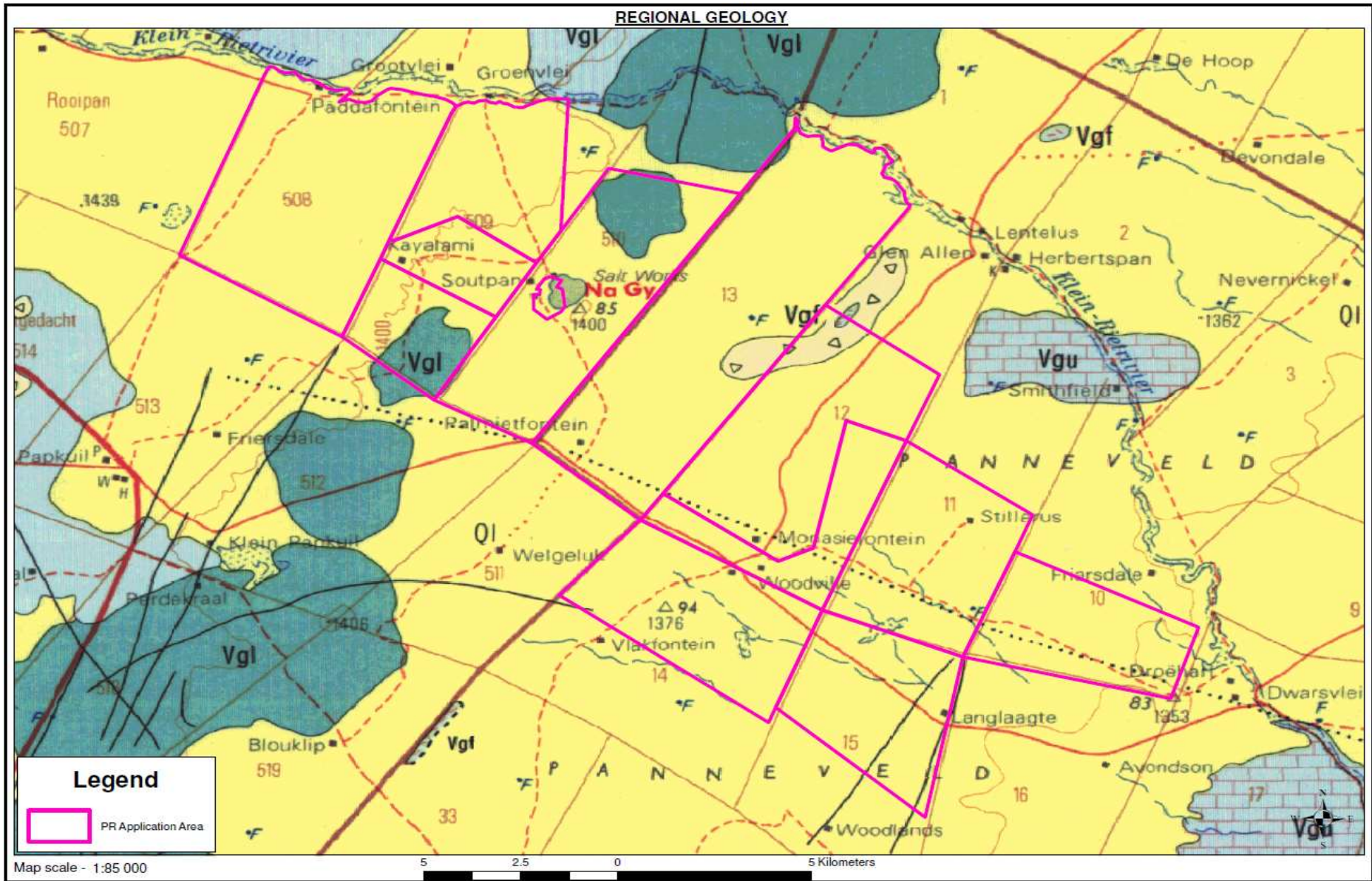


Figure 4 : Geological Map application area indicated with purple blocks.

LITHOLOGY LITOLOGIE	
Qa	Alluvial diamondiferous gravel Alluviale diamantdraende gruis
Qc	Calcrete, calcified pandune and surface limestone Kalkkreet, verkalkte panduin en oppervlakkalksteen
~	Alluvium and scree Alluvium en glooiingspuin
Qs	Sand: Red and grey aeolian dune sand Sand: Rooi en grys eoliese duinsand
	Kimberlite pipe (♦), fissure (—♦—) Kimberlietpyp (♦), -spleet (—♦—)
Jd	Dolerite: dolerite dyke shown as (—♦—) Doleriet: dolerietgang aangetoon deur (—♦—)
Pa	Mudstone, sandstone Moddersteen, sandsteen
Ppr	Shale Skalie
Pt	Shale, siltstone, sandstone Skalie, sliiksteen, sandsteen
Pw	White-weathering carbonaceous shale Witverwerende koolstofhoudende skalie
C-Pd	Tillite, sandstone, mudstone, shale Tilliet, sandsteen, moddersteen, skalie

#### ECONOMIC DATA EKONOMIESE GEGEWENS

✕	Mine in production Myn in produksie	✕	Mine not in production Myn nie in produksie nie
DA	Diamond (alluvial) Diamant (alluviaal)	LS	Limestone Kalksteen
DK	Diamond (in kimberlite) Diamant (in kimberliet)	Na	Salt Sout
Gpp	Apophyllite Apofilliet	QB	Building Sand Bousand
Gy	Gypsum Gips	St	Stone aggregate Klipaggregaat
He	Helium Helium	To	Torbanite/Oil shale Torbaniet/Olieskalie

## (2) CLIMATE:

### **Regional Climate**

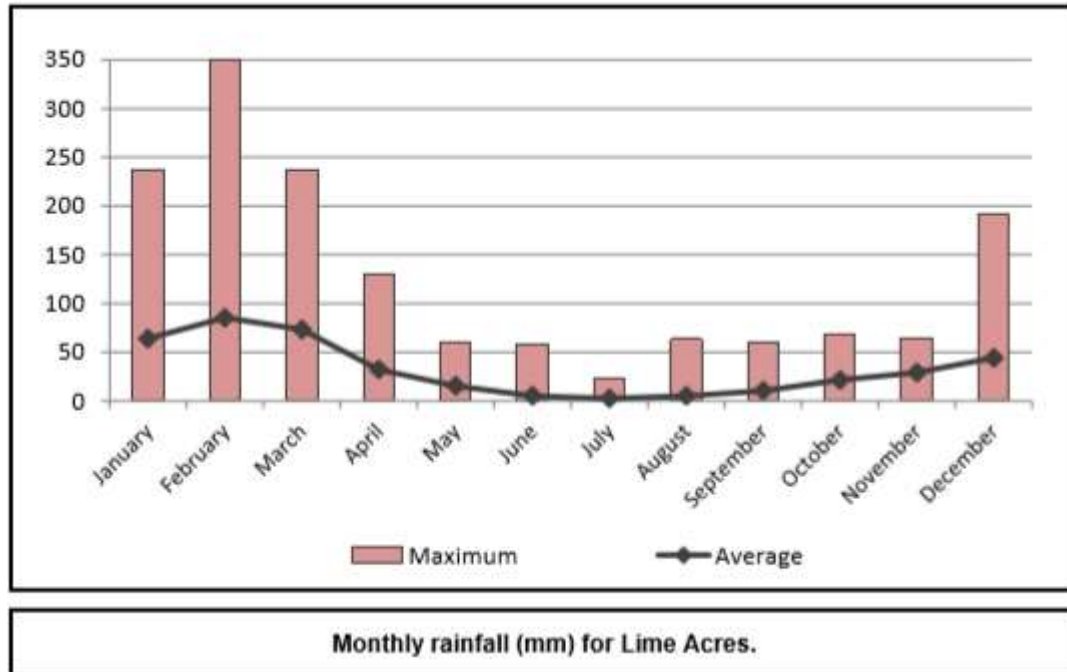
The prospecting right area is located in a semi-arid region. Rainfall is on average about 200 mm in the west to 500 mm on its eastern boundary. The rainfall is largely due to showers and thunderstorms falling from October to March, with the peak of the rainy season normally in March or February. The summers are very hot with cold winters. The nearest station of the South African Weather Bureau is found in Postmasburg.



The Finsch mine installed a metrological station at the Lime Acres Air Field in 1998, but data is not continuous.

### Rainfall

Monthly rainfall recorded at Lime Acres is presented in the figure below. The highest rainfall was recorded in February, while July received the lowest amount of precipitation. The average annual rainfall recorded for the area is 390 mm.



### Temperatures

Monthly temperatures recorded at Postmasburg are presented in the table below. November to March are the warmest, while June and July are the coldest.

MONTH	AVERAGE °C	MAXIMUM °C	MINIMUM °C
January	23.7	32.7	16.1
February	22.8	31.7	16.1
March	21.3	30.3	14.6
April	17.0	26.4	11.0
May	11.9	22.2	5.5
June	8.9	20.0	2.3
July	8.4	19.5	1.3
August	11.3	22.3	3.5
September	15.7	26.5	7.0
October	19.7	29.7	10.9
November	21.7	31.4	12.9
December	23.8	33.3	15.5

**Wind**

The prevailing wind direction for Postmasburg is north-east, but north-north-west in Lime Acres. Average wind speeds of up to 8 m/s for Postmasburg and 10 m/s for Lime Acres can be expected. The strongest wind speeds can generally be expected during the early summer months. In a year, approximately 18 % of the days in Postmasburg are wind free.

Incidents of Extreme Weather Conditions

**Thunderstorms and hail**

Hail is sometimes associated with thunderstorms and mainly occurs in early to late summer (November to February). Although thunderstorms can occur around 27 days per year, hail only occurs on average three times a year. These storms may sometimes be severe and cause much damage, but they usually only impact on a relatively small area.

**Frost**

The period during which frost can be expected lasts for about 120 days (May to August). With extreme minimum temperatures to below -8 °C at night in the winter, frost development can be severe.

**Droughts:**

Droughts are common and may vary from mild to severe. During these periods dust storms sometimes occur, depending mainly on denudation of the surface. ☒ Wind

High winds are unusual and the highest wind speeds recorded for the region are around 90 km/hr, which occur once or twice a year. At these speeds, the winds are classified as whole gale winds. When they occur they can uproot trees and take off roofs.

**(3) TOPOGRAPHY:****Regional Description**

The topography may best be described as an undulating plateau with low hills. The Ghaap plateau is bounded to the east by the Harts River and to the west by the Kuruman hills which form part of the Asbesberge

The application area lies between 1400m 1440m above sea level.

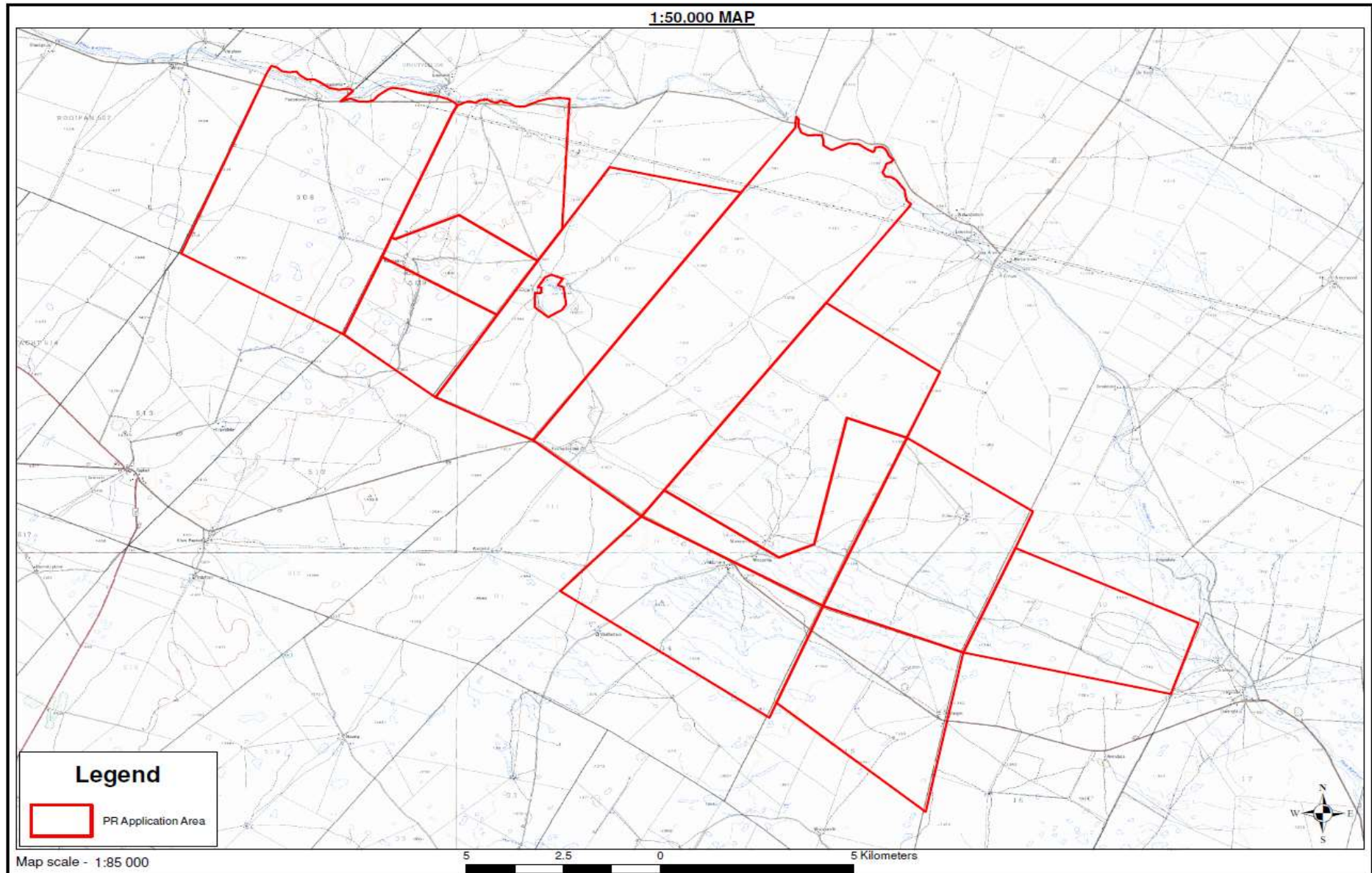


Figure 5 : Topographical Map Delportshoop 2824AD 1:50 000 application area indicated by red arrow.

**(4) SOILS:**

Most of the soils are derived from the banded ironstone formation. The natural soils of the area are predominantly shallow and rocky. The approximate depth the soils can be excavated varies between 30-50cm.

A specialist ecological study will be done on the application area which will include soil to identify all soil horizons on the application area.

**(5) LAND CAPABILITY AND LAND USE:**

Land use in the Province is predominated by stock farming, with an increasing game farming component (96%), while only 2% of the land is used for crop farming, and 1% is reserved for conservation. Mines and quarries constitute only 0.1% of the total land area. Grazing capacity of the natural veld ranges between 10 and 12ha / LSU and most of the former land use in the Lime Acres area was grazing. Except for the surrounding old asbestos mines, soil pollution is limited. Like most land in the province, there is a local potential susceptibility to desertification and management should be directed towards its prevention.

A specialist ecological study will be done on the application area which will include land capability and land use.

**(6) NATURAL FAUNA:**

**According to Section 3(a) and 4(a) of the Northern Cape Nature Conservation (NCNCA) Act No. 9 of 2009, no person may, without a permit by any means hunt, kill, poison, capture, disturb, or injure any protected or specially protected animals. Furthermore, Section 12 (1) of NCNCA states that no person may, on a land of which he or she is not the owner, hunt a wild animal without the written permission from the landowner.**

**The ecological assessment performed by Dr Betsie Milne also identified faunal distribution, habitats and species of conservation concern within the study area. The results of this assessment are provided below.**

**The landscape features, i.e. plains, hills and ephemeral pans provide the potential for a variety of habitats to faunal communities. The micro-habitats provided by pristine terrestrial vegetation are likely to host a variety of small mammals, while the ephemeral pans are likely to accommodate a number of aquatic species and important bird species when inundated.**

## Mammals

As many as 50 terrestrial mammals and nine bat species have been recorded in the region (see Appendix 2 of the specialist report), of which the Greater Kudu, South African Ground Squirrel, Suricate, Springbok, Blesbok and signs of recent Aardvark, Cape Porcupine and Springhare activity were encountered during the site visit.

Virtually all mammals of the study area are protected; either according to Schedule 1, 2 or 3 of NCNCA. Eighteen mammal species of conservation concern potentially occur in the area, of which 12 are listed either in the IUCN or South African Red Data Book.

Of these, Aardvark activities were evident on site, especially in the shrubby grassland near the ephemeral stream, where many active aardvark holes occur. Termitaria are also scattered across the plains and are prominent features on the study area and are strongly linked to aardvark activities. The protected bat species, Bushveld Gerbil, Aardwolf, Cape Fox, Bateared Fox, African Striped Weasel, African Wild Cat, Honey Badger and Striped Polecat all have a high chance of occurring across the site, given their wide habitat tolerances and preference for the habitat found on site. The Lesser Dwarf Shrew also has a high possibility to occur on site based on its termite mound affinity.

**Mammal species of conservation concern that are likely to occur in the region**  
**Conservation values are indicated in terms of the international (IUCN) Red List, the South African Red Data Book (SA RDB) and Schedule 1 of the Northern Cape Nature Conservation Act (NCNCA).**

Scientific name	Common name	IUCN	SA RDB	NCNCA
<i>Eidolon helvum</i>	African Straw-coloured Fruit-bat	NT		
<i>Rhinolophus denti</i>	Dent's Horseshoe Bat		NT	
<i>Rhinolophus clivosus</i>	Geoffroy's Horseshoe Bat		NT	
<i>Rhinolophus darlingi</i>	Darling's Horseshoe Bat		NT	
<i>Orycteropus afer</i>	Aardvark			X
<i>Gerbilliscus leucogaster</i>	Bushveld Gerbil		DD	
<i>Manis temminckii</i>	Ground Pangolin	VU	VU	X
<i>Suncus varilla</i>	Lesser Dwarf Shrew		DD	
<i>Atelerix frontalis</i>	South African Hedgehog		NT	
<i>Proteles cristata</i>	Aardwolf			X
<i>Felis silvestris</i>	African Wild Cat			X
<i>Felis nigripes</i>	Black-footed Cat	VU		X
<i>Vulpes chama</i>	Cape Fox			X
<i>Hyaena brunnea</i>	Brown Hyena	NT		X
<i>Otocyon megalotis</i>	Bat-eared Fox			X
<i>Poecilogale albinucha</i>	African Striped Weasel		DD	X
<i>Ictonyx striatus</i>	Striped Polecat			X
<i>Mellivora capensis</i>	Honey Badger		NT	X

Ground Pangolin, South African Hedgehog and Black-footed cat may potentially occur on site on account of their preferences for arid areas. They are however rather skittish and therefore they will most likely occur very seldomly. The Brown Hyaena might be present, but has a low potential to be found on site mainly based on the fact that farm fences are restricting their occurrences across their natural distribution range.

The core prospecting activities are associated with the alluvial channel, which include the shrubby grassland and the open shrubland. Listed mammals that are most likely to be impacted in the form of species- and/or habitat loss resulting from the prospecting activities include those that are associated with these habitats.

#### Reptiles

The prospecting area lies within the distribution range of at least 36 reptile species. No listed species are known to occur in the area, but most reptiles of the study area are protected either according to Schedule 1 or 2 of NCNCA. Specially protected species include *Karusasaurus polyzonus* (Southern Karusa Lizard) and *Chamaeleo dilepis dilepis* (Namaqua Chamaeleon).

The habitat diversity for reptiles in the study area is fairly high, with the rocky hills considered to be the most important habitat for reptiles at the site. It is however not foreseen that the prospecting activities will take place here and therefore the prospecting operation is not considered to cause significant habitat loss for the local reptile population.

#### Amphibians

Eleven amphibian species are known from the region, indicating that the site does not potentially have a diverse frog community. This is however normal for an arid area. No natural permanent water was observed in site that would represent suitable breeding habitats for most of these species, but the ephemeral pans will be important during periods of inundation. As a result, only those species which are relatively independent of water are likely to occur regularly in the area.

The Giant Bull Frog (*Pyxicephalus adspersus*) is listed as Near Threatened and is protected according to Schedule 1 of the NCNCA. They prefer seasonal shallow grassy pans, vleis and other rain-filled depressions in open flat areas of grassland or savanna, but mainly remain buried up to 1 m underground until conditions become favourable. The site lies within the known distribution of this species and the numerous ephemeral pans on site could potentially provide the ideal habitat for this species. All other amphibians of the study area are protected according to Schedule 2 of NCNCA.

Impacts on amphibians are however likely to be low and restricted largely to habitat loss from prospecting, but if any of the ephemeral pans are destroyed the impacts will be more profound, because these pans are not well known and could potentially host unique species assemblages that are currently dormant due to their adaptations to ephemerality.

## Avifauna

The study site does not fall within or near; i.e. within 100 km, of any of the Important Bird Areas (IBA) defined by Birdlife South Africa. A total number of 261 bird species have been recorded from the region and all of these species are protected either according to Schedule 1, 2 or 3 of NCNCA (see Appendix 2 of the specialist report). This suggests that the area has been reasonably well sampled and that the species list is likely to be fairly comprehensive.

As many as 25 listed bird species are known from the region, all of which are classified as Vulnerable, Near Threatened or Endangered. All birds are protected either according to Schedule 1, 2 or 3 of NCNCA. A number of these are expected to occur on site either as residents or by occasionally passing over the area.

In general, bird species of the study area are likely to experience habitat loss as a result of the Werda prospecting activities. The most significant impacts are expected to be on the plains as well as in the pan habitats, which will also lead to the subsequent loss of ecological connectivity. This will especially impact the wetland birds that rely on these habitats for breeding, nesting and foraging during wet periods.

Direct disturbances will be very local and confined to the core sites and will be in the form of noise and movement. Birds are however highly mobile and are expected to move to similar adjacent habitats, if necessary.

Apart from general disturbances and habitat loss, other potential impacts would come from electrocution and collisions with power lines and the accidental or intentional killing of birds. Not all species are vulnerable to powerlines, but flamingos, bustards and storks are highly vulnerable to collisions, while many of the raptors, including vultures, are susceptible to electrocution and collision. Furthermore, owls and vultures are often killed due to cultural believes and practises. Monitoring during the prospecting operation would be vital in order to ensure no or low impact.

(7) **NATURAL VEGETATION:**

The proposed mine is located in the Southern Kalahari Salt Pans, Ghaap Plateau Vaalbosveld.

**Southern Kalahari Salt Pans** are distributed in the Northern Cape and North-West Provinces as well as neighbouring Kalahari regions of Botswana and Namibia at altitudes between 800 and 1 500 m. The largest concentration of these pans in South Africa is found near Groot-Mier in western Gordonia. Although many of the pans are devoid of vegetation, the vegetation is typically presented as low grasslands on pan bottoms, dominated by *Sporobolus* sp. A mixture of dwarf shrubs dominated by *Lycium* and/or *Rhigozum* usually forms the outer belt in the salt pan zonation system.

Most of the pans formed on the sandy sediments of the Cenozoic Kalahari Group, but in the south-east some formed on the dolomites of the Campbell Group (Vaalian-age Griqualand Wes Supergroup) and in the west some formed on diamictites of the Dwyka Group (Karoo Supergroup). The pan soil consist of white (washed) sand in shallow pans, rocky soils on calcrete outcrops and most typically of clays and sandy clays rich in Na, K and Mg. These soils are usually characterised by a high pH of 9. The pan bottoms are exposed for most of the year and carry shallow pools for a short time only after very good rains. The unit is classified as being least threatened, with about 8 % being statutorily conserved in the Kgalagadi Transfrontier Park. The vegetation on the pans is subject to natural degradation controlled by concentration of grazing animals. No endemic species are known from this unit.

**Ghaap Plateau Vaalbosveld** is described as flat plateau with well developed shrub layer with *Tarchonanthus camphoratus* and *Acacia karroo* and a tree layer with *Olea europaea* subsp. *africana*, *Acacia tortilis*, *Ziziphus mucronata* and *Rhus lancea*. According to Mucina & Rutherford (2006) *Olea* are more important in the southern parts of the unit, while *Acacia tortilis*, *Acacia hebeclada* and *Acacia mellifera* are more important in the north and part of the west of the unit, while much of the central parts of this unit have remarkably low cover of *Acacia* species for an arid savannah and is dominated by the non-thorny *Tarchonanthus camphoratus*, *Rhus lancea* and *Olea europaea* subsp. *africana*. Acocks (1953) described this vegetation as Kalahari Thornveld and Shrub Bushveld while Low & Rebelo (1996) described this vegetation as Kalahari Plateau Bushveld.



According to Mucina & Rutherford (2006) important taxa includes the following:

Tall tree: *Acacia erioloba*

Small trees: *Acacia mellifera* subsp. *detinens*, *Rhus lancea*, *Acacia karroo*, *Acacia tortilis* subsp. *heteracantha* and *Boscia albitrunca*.

Tall shrubs: *Olea europaea* subsp. *africana*, *Rhigozum trichotomum*, *Tarchonanthus camphoratus*, *Diospyros austro-africana*, *D. pallens*, *Ehretia rigida* subsp. *rigida*, *Euclea crispa*, *Grewia flava*, *Gymnosporia buxifolia*, *Lessertia frutescens* and *Rhus tridactyla*.

Low shrubs: *Acacia hebeclada*, *Aptosimum procumbens*, *Chrysocoma ciliate*, *Helichrysum zeyheri*, *Hermannia comosa*, *Lantana rugosa*, *Leucas capensis*, *Melolobium microphyllum*, *Peliostomum leucorrhizum*, *Pentzia globoza*, *P. viridis* and *Zygophyllum pubescens*.

Succulent Shrubs: *Hertia pallens* and *Lycium cinereum*.

Woody climber: *Asparagus africanus*.

Graminoides: *Antheophora pubescens*, *Cenchrus ciliaris*, *Digitaria eriantha*, *Enneapogon scoparius*, *Eragrostis lehmanniana*, *Schmidtia pappohoroides*, *Themeda triandra*, *Aristida adscensionis*, *A. congesta*, *A. diffusa*, *Cymbopogon pospischilii*, *Enneapogon* species, *Eragrostis* species, *Heteropogon* species, *Sporobolus* species *Stipagrostis* species and *Tragus* species.

Herbs: *Barleria macrostegia*, *Geigeria filifolia*, *G. ornativa*, *Gisekia africana*, *Helichrysum cerastioides*, *Heliotropium ciliatum*, *Hibiscus marlothianus*, *H. pusillus*, *Jamesbrittenia aurantiaca*, *Limeum fenestratum*, *Lippia scaberrima*, *Selago densiflora*, *Vahlia capensis* and *Aloe grandidentata*.

A specialist ecological study will be done on the application area which will include flora to identify any protected species.

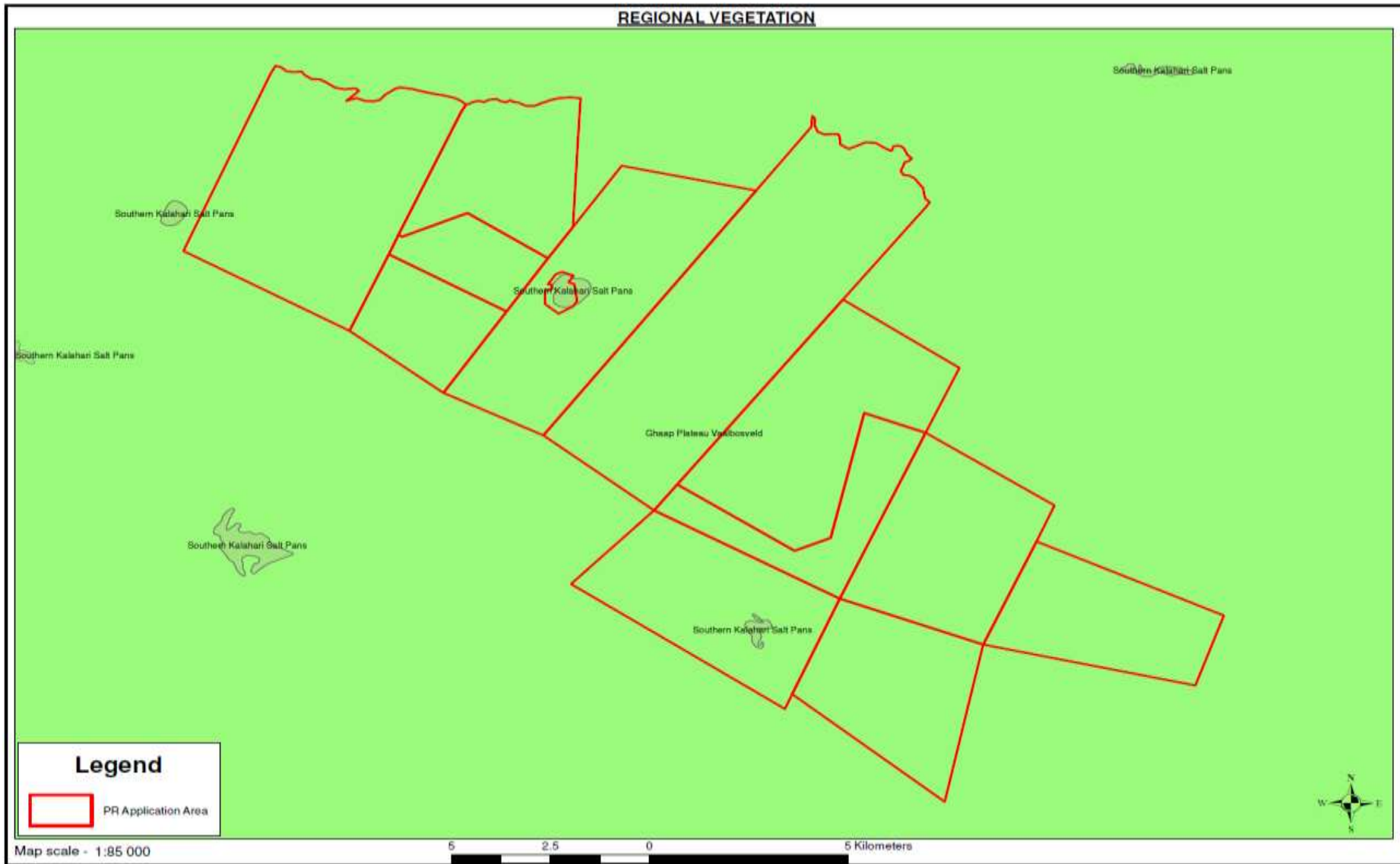


Figure 6 : Regional Vegetation Map, the prospecting right application is indicated in red.

**(8) SURFACE WATER**

The application area borders the Klein riet river which is a non perennial river and have ephemeral pans on the application area.

The Klein Riet River drains out of three seasonal pans (Great Pan, Rooi Pan and one unnamed pan), from where the river runs in a south easterly direction till it drains into the Vaal River some 60km away.

See Figure 7 for an indication of where the application area is situated within the catchment.

**The catchment area**

The quaternary catchment is C92A and a very small area falls within C92C. Figure 7 below.

A specialist ecological study with a wetland study will be done on the application area to identify any wetlands and ephemeral pans which must be avoided during prospecting

**The average annual run-off**

Surface run-off only occurs during periods of high rainfall (days with more than 10mm precipitation). It is only during storm event that surface run-off is expected to flow into the klein Riet River (owing to low rainfall and high evaporation figures).

The low lying area (part of the C92C quaternary catchment) is located within the application area and is draining towards the southeast on an east – west axis that swings to a northwest – southeast axis. This water drains towards the Vaal River system (North sub-catchment).

There are a few streams indicated on the 1:50,000 map and most of these are non –persistent drainage channels which feed the groundwater in the dolomites of the Ghaap Plateau or flow into seasonal pans. The whole region is considered to be endorheic, which means that precipitation does not reach river systems, but is either evaporated or reports to groundwater.

**Normal dry weather run-off**

The streams and pans within the study area do not normally contain water during the dry season.

**Surface water quality:**

With the alluvial gravels not having any harmful or toxic substance, water emanating from the mine property will not contaminate any surface water source.

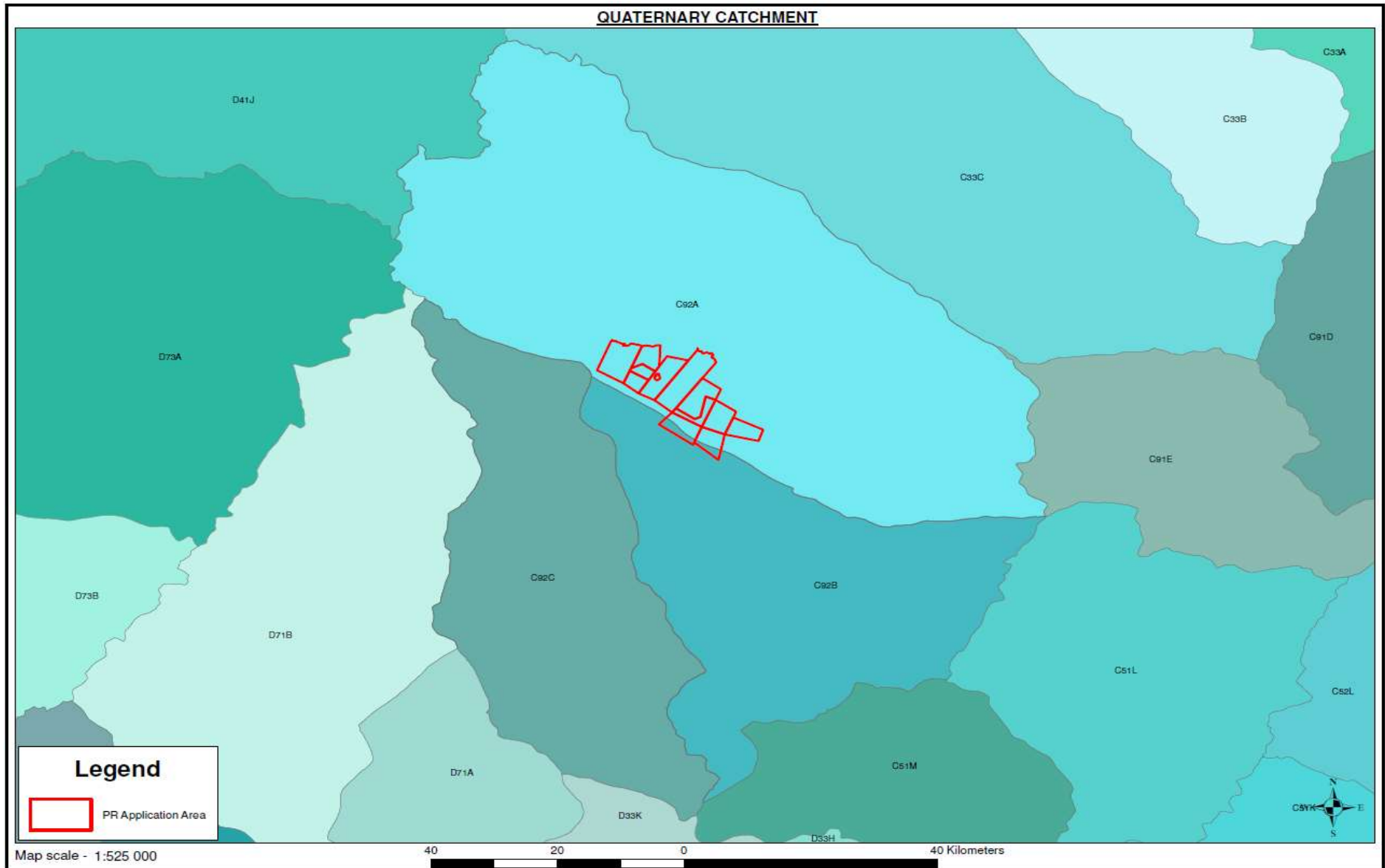


Figure 7: Catchment Map with application area indicated in red.

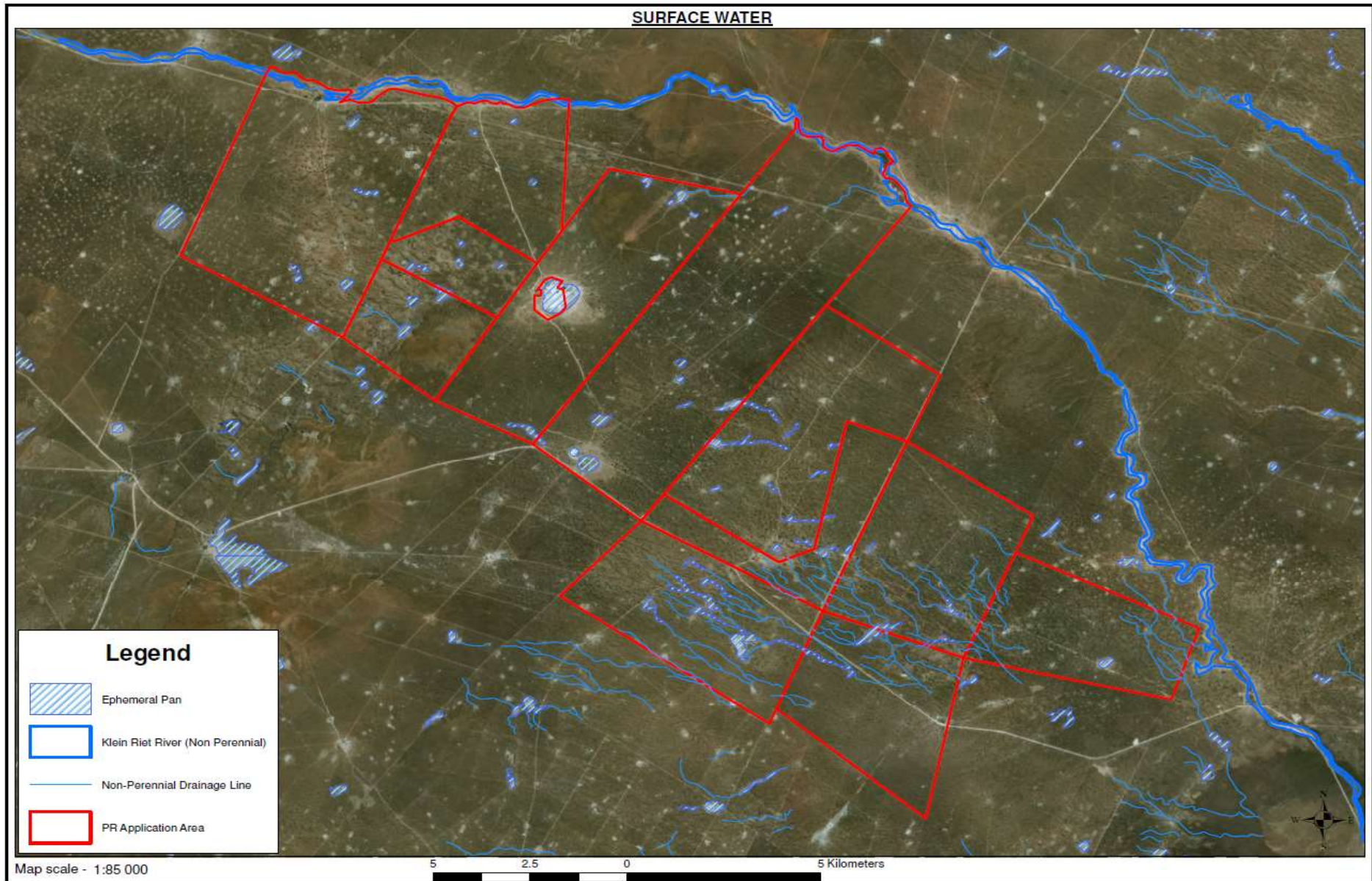


Figure 8: Surface Water Map with the Prospecting Right indicated in red.

**(9) GROUND WATER:**

“GROUNDWATER UTILIZATION IS IMPORTANT IN THE AREA AND CONSTITUTES THE ONLY SOURCE OF WATER OVER MUCH OF THE RURAL AREAS WITHIN THE ENVIRONMENTAL MANAGEMENT FRAMEWORK AREA. AS A RESULT OF THE LOW RAINFALL OVER THE AREA, THE GROUNDWATER IS MAINLY USED FOR RURAL DOMESTIC WATER SUPPLIES, STOCK WATERING AND WATER SUPPLIES TO INLAND TOWNS. RECHARGE OF GROUNDWATER IS LIMITED AND ONLY SMALL QUANTITIES CAN BE ABSTRACTED ON SUSTAINABLE BASIS. AQUIFER CHARACTERISTICS (BOREHOLE YIELDS AND STORAGE OF GROUND WATER) ARE ALSO TYPICALLY UNFAVORABLE BECAUSE OF THE HARD GEOLOGICAL FORMATION UNDERLYING MOST OF THE MUNICIPAL AREA” (SIYANDA EMF, 2008: 24).

**Depth of water-table(s):**

Groundwater flow is in the direction of the Klein Riet River following the surface drainage direction from the higher grounds.

**Mean Depth of Water-Table**

Some boreholes should be present in the application area the depth of the water table will be determined by a specialist study.

**Ground-water use:**

At present ground water supplies drinking water to the game and live stock present on the application area.

**Ground-water zone:**

The alluvial diamond prospecting does not affect the quality of the ground water in any manner. There are no harmful or toxic properties in the gravels being mined. The recycling of the water only requires sediment settling.

If the project is positive with the prospecting, water will be needed for bulk sampling.

**(10) AIR QUALITY AND NOISE:**

*With reference to the Scheduled processes under the Second Schedule to the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965): No scheduled process relates to any proposed prospecting activity on the farm.*

*Existing sources*

*The current source of air pollution in the area stems from numerous mining operations within the area (Lime Acres, manganese mines and from vehicles traveling on the gravel roads of the area.*

#### *New source*

*The source of air pollution on the farm will be nuisance dust generated by the opencast bulk sampling process if drilling was positive, the loading of gravels onto the transport trucks, the dumping of gravels over each site primary screen or feeder bins as well as from the movement of trucks and vehicles on the prospecting roads. Gas emissions from machinery will be within legal limits.*

#### *Areas of impact*

*As the prevailing wind direction for the area is north to North West for the months January to September and changing from north to sometimes westerly winds during October to December, there is a potential for fall-out dust to impact on the surrounding farm properties – which can be described as the nearest potential area of impact. The dust management programme recommended should include daily dosing of access roads and stockpile areas if bulk sampling is reached during the prospecting project.*

*The dust is controlled by watering down the roadway used by these trucks. The mineral processing is a wet process, thus no dust is generated.*

A complain register for surrounding owners and the community will be kept on site and the management of dust would be guided by these additionally comments of public.

#### **Noise**

##### **Existing sources:**

Noise on site will come from the large vehicles (ADT trucks, front-end loader, back actor), from the working pan if bulk sampling is reached. There are numerous mining operations in the vicinity of the proposed prospecting operation.

The impact would be of more importance regarding the direct worker environment that should adhere to the requirements in terms of the Mine Health and Safety Act. These noise levels will be continuous and the operators will be issued with earplugs.

Noise is normally encountered during the normal operation hours at the processing plant. Processing plant noise and mine vehicles are limited between 7am and 5pm every day during the week. Noise levels will be

monitored on the prospecting area and where necessary, protective equipment is used in certain areas where machinery is used.

(11) **VISUAL ASPECTS:**

The position of the plant site if bulk sampling stage is reached and drilling was positive is not known at this stage. If bulk sampling is reached the negative visual impacts associated with open excavations and the washing pan will however have a low negative impact since it will only be visible to the landowners. There is however no method of reducing the impact during prospecting operations (operational phase), it can only be mitigation by doing concurrent rehabilitation of open excavations as prospecting progress.

(12) **BROAD-SCALE ECOLOGICAL PROCESSES:**

Transformation of intact habitat on a cumulative basis could contribute to the fragmentation of the landscape and could potentially disrupt the connectivity of the landscape for fauna and flora and impair their ability to respond to environmental fluctuations.

A specialist ecological study will be done on the application area which will include biodiversity to identify any broadscale ecological processes.

(13) **SOCIO-ECONOMIC STRUCTURE OF THE REGION:**

The Kgatelopele Local Municipality is a Category B municipality found in the Northern Cape Province within the ZF Mgcawu District. It was formerly known as Danielskuil Municipal District or Area. It is bordered by the John Taolo Gaetsewe District in the north, the Pixley ka Seme District in the south, the Frances Baard District in the east, and Tsantsabane in the west. It is the smallest of the five municipalities that make up the district, accounting for only 2% of its geographical area.

**Basic Municipal Profile – Kgatelopele local Municipality**

[Information obtained from the IDP 2018 -2019]

**DEMOGRAPHIC PROFILE OF THE MUNICIPALITY**

Population The Kgatelopele Local Municipality has a total population of 20691, 52.5% of the population being male, while 47.5% are female as per census Statistics for 2016. The population growth rate has been 3.49% between 2011 and 2016. The municipality has 6206 households, with 3.49% of households being female-headed (Stats SA, Census, 2011 and 2016). The average household size is 3.5 The majority of people residing



in the municipal area are Black Africans, followed by Coloured people. The two least represented racial groups are Whites and Indian/Asians. The most commonly spoken language is Afrikaans at 58%, followed by Setswana at 33%.

**Age groups** The majority of people residing in Kgatelopele Local Municipality are children of 0 – 4 years old, followed by those in the 15 – 34 years old group and from this group we have a total of 5202 persons aged 20 years + who have completed their Grade 12. This is an indication that programmes and projects need to be more responsive to the needs of children and young people. The population of the municipality resembles that of most developing nations, where there are high birth rates, slow growth rates and a population with a short life expectancy.

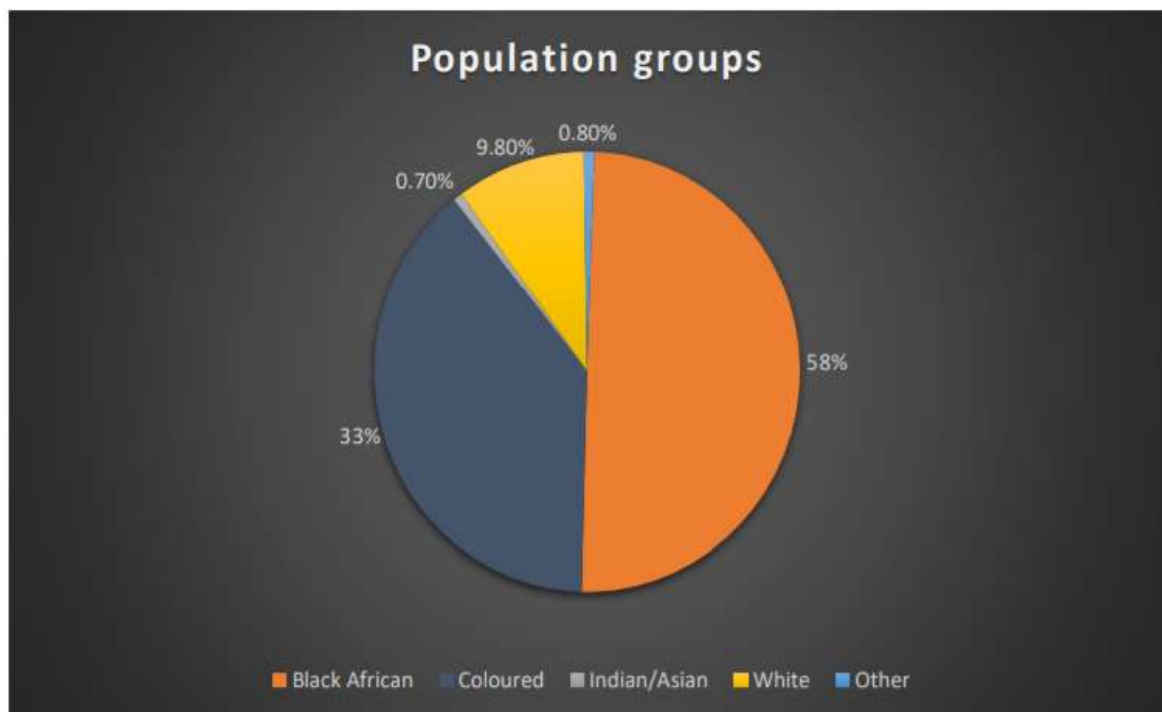


Figure 9: Population pyramid

### Socio economic analysis

**Education levels** The majority of people in the municipal area has some secondary education and has completed their secondary schooling. There are those that have no schooling, some primary and others have completed primary schooling. This means that these people did not receive their senior certificate, which limits their chances of getting a decent job or employment opportunities. The numbers of those who completed secondary school and got a higher education is high, so there is a large capacitated workforce to contribute to the economy of the municipality or the region.

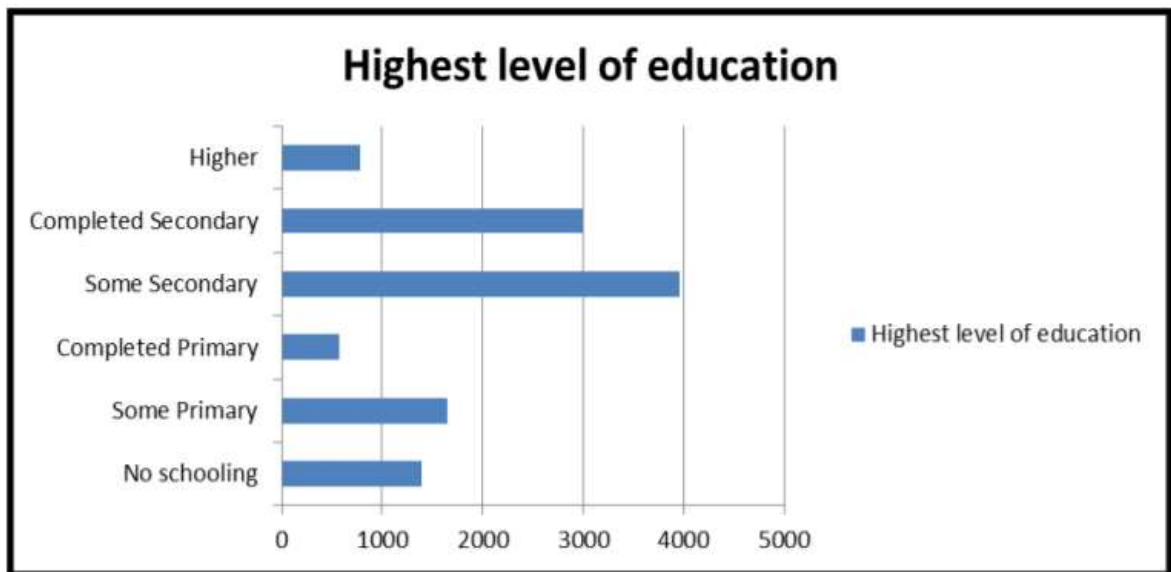


Figure 10: Highest level of education

### Employment levels

The number of those economically active is slightly greater than those not economically active, hence the dependency ratio of 50.6% which is very high. Stats SA (2011) indicates that the unemployment rate is at 22.3% while 29.1% of the total unemployed people are young people. There is need to address the challenges of those not employed particularly the youth.

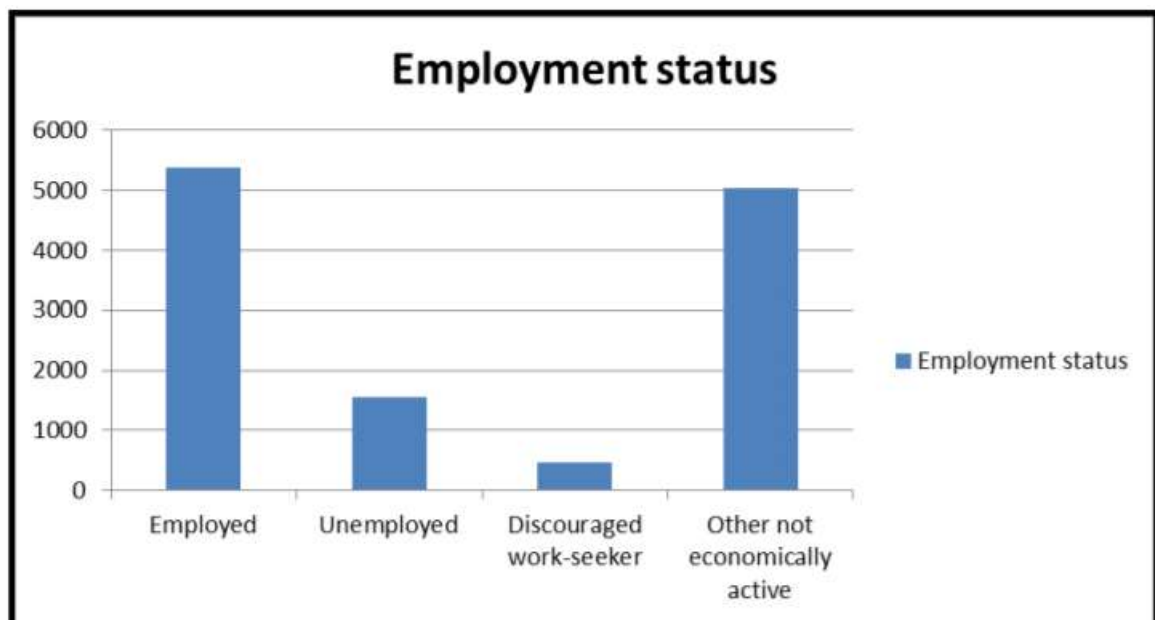


Figure 11: Employment status

### Income distribution

The income distribution of the municipality shows a very interesting pattern given the education levels in the municipality. A large number of people in the municipal area receive income above the poverty line (large capacitated workforce). It is of great concern from a municipal

perspective for those who have no income at all. This income group may most likely be highly depended on government grants and are thus not able to spend money in the municipal area or pay their rates.

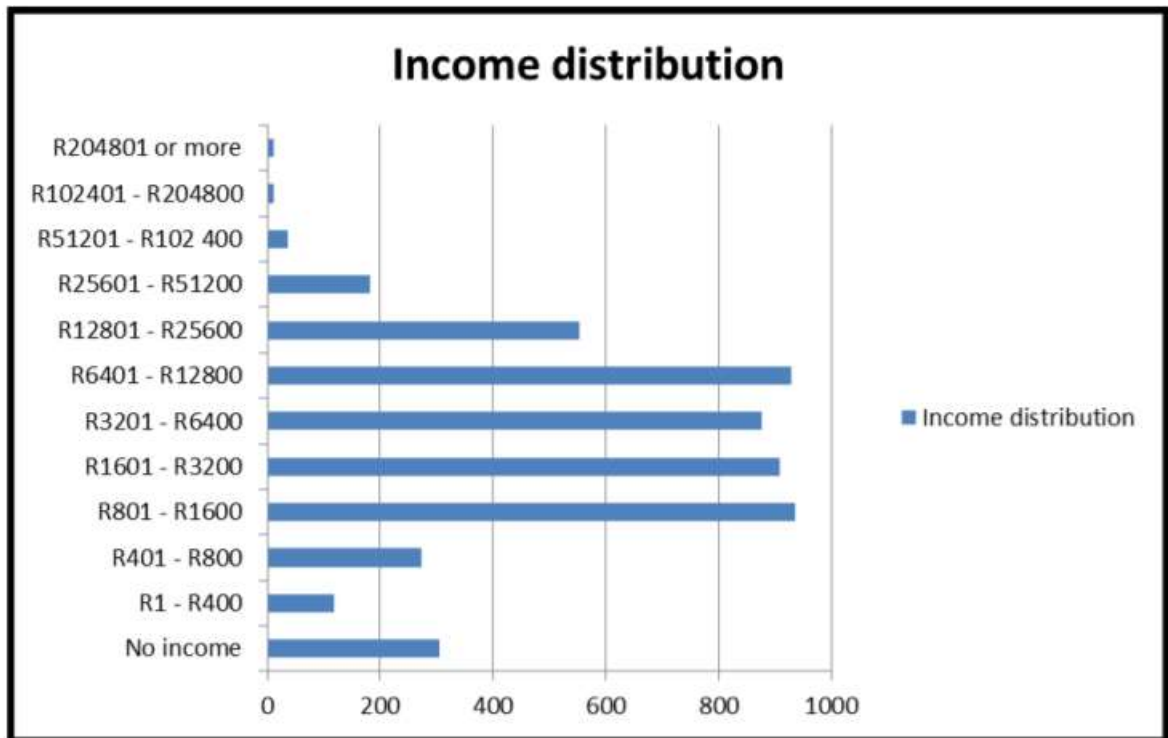


Figure 12: Income distribution

**Social infrastructure**

“Historically, the institutions which were most valued by society - such as institutions of learning, worship, exchange, markets and universities -served as the key structuring elements of settlements. The siting of these, in turn, formed the basis for the locational choices of other.” (Redbook, 2000:6).

The residents have access to the following facilities:

Ward	Educational	Health service	Recreational/community facility	Safety
1	1 Primary school	Makes use of	Community Hall	Makes use of Police Station

		Clinic situated in ward 3		situated in ward 3
2	1 High school	Makes use of Clinic situated in ward 3	-	Makes use of Police Station situated in ward 3
3	1 High school and 1 Primary school	Clinic	Club, swimming pool	Police station
4	3 primary school	Clinic (owned by the mine)	Recreational club, swimming pool(owned by the mines)	1 Police station in Lime Acres

Access to schools, government facilities/services is at the heart of settlements that perform well. These facilities give residents options and do not restrict how they live. The facilities or services offered contribute to the human development of the residents. It is clear that there are limited options for the residents, as there is not a diverse range of social services/facilities that are available to them to use.

### Heritage and Tourist Attractions

Danielskuil boasts many different historical sites. For an informative historical day trip, make your way to Wonderwerk Cave just 40km outside Danielskuil where proof of human existence dating back 800 000 years can be discovered and explored. Archaeological research at this massive cave site has revealed and proved an immensely long record of human and environmental history, spanning hundreds of thousands of years.

This mystical cave, as well as its surroundings, forms a conservation area with several distinctive features of the gorgeous Kuruman Hills. The site is open to the public and includes an interpretative centre nearby the cave. Other historical sites include the Vermeulen grave, Dutch Reformed Church, Old Town Hall and many more. Danielskuil boasts rather warm summers, beautiful landscapes and superb amenities. It's a rather tranquil town where the people have formed a united community, and boasts an abundance of beauty as well as a rich cultural heritage (Stats SA Municipal Profile, 2016).

### Environmental threats

Major existing environmental problems	Location	Magnitude of problem	Causes	Possible sustainable solutions
Poor appearance of Public Open Spaces and Road Reserves	All wards	Some sidewalks are unusable.	Shortage of staff and equipment to clean the public open spaces.	Quality public open spaces
Lack of an Environmental Awareness Policy	All wards	Serious, since the by-laws should be informed by the policy	No guidelines on how the by-law will be implemented	Development of environmental awareness policy. Request for assistance from the district and province environmental sections on the development of a policy and training of officials and local people on environmental awareness.

Waste Landfill site not licensed	Danielskuil	Illegal dumping since landfill not licensed and not operated according to legislation	Waste removal outsourced. Lack of management of the service provider and landfill	Insourcing waste removal collection. Conduct basic assessment for the licensing of landfill sites with the Department of Environment and Nature Conservation
Littering	All wards	Negative impact on the aesthetic appearance of the municipal area.	Lack of public awareness and ownership of public properties	Conduct awareness. Have Imbizos with the community and youth on the importance of a clean and safe environment.
Need for a new Dumping Site. Closure of existing dumping site	Danielskuil	With the projected growth, due to the mining developments	Population and economic growth	The Municipality has conducted site determination process for new land fill site, we

		the current sites will not be able to carry the capacity		also conducted EIA for closure and rehabilitation of old landfill site and EIA for new landfill site.
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Environmental challenges for Kgatelopele Local Municipality, are also associated with the fact that the region has a rich mineral deposit, which is a main economic driver for the municipal area. The large areas of un-rehabilitated or poorly rehabilitated mining activities have a significant negative effect on the scenic environment in the region.

The Northern Cape Environmental Implementation Plan identifies various key environmental issues and the ones of concern for the municipal area is the over-exploitation of natural resources, dust pollution, development in the high conservation vegetation areas and illegal hunting.

### Climate change

Climate change represents a change in climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability over comparable time periods. In many parts of South Africa, especially in the Northern Cape, variability in climatic conditions is already resulting in wide ranging impacts, specifically on water resources and agriculture. Water is a limiting resource for development in the Northern Cape and a change in water supply could have major implications in most sectors of the economy, especially in the agricultural sector (ZFM DM EMF).

“As the rate of climate change accelerates it is expected that the ZFM District Municipality will experience a change in temperature (increase in summer and autumn) and rainfall regimes (reduction and more severe in winter). It is expected that extreme dry years will be more frequent in this area. This will lead to:

- increased droughts and flooding and water availability;
- change in biodiversity pattern; and
- impacts on health, tourism, agriculture and food security” (ZFM DM SDF).

### Landfill Site

The current landfill site is being utilized for Danielskuil and Lime Acres communities and is nearing its capacity. Tenders were invited in 2011, to develop a new landfill site and the process of an EIA study has been completed and this new landfill site will be 20km away from the old landfill site. The process of construction has not resumed yet as authorisation from Department of Environmental and Nature Conservation (DENC) was only obtained in March 2018. The project is of rehabilitating the Old Landfill Site and Establishing the New Landfill

Site will commence in the 2019/19 financial year.

### Tenure status

The rental market seems to be doing well in the municipal area, as the majority of people are renting, followed by those who have fully paid for their homes and are now the rightful owner. There are also those who are residing rent free; those are most probably residing in the mining houses' accommodation.

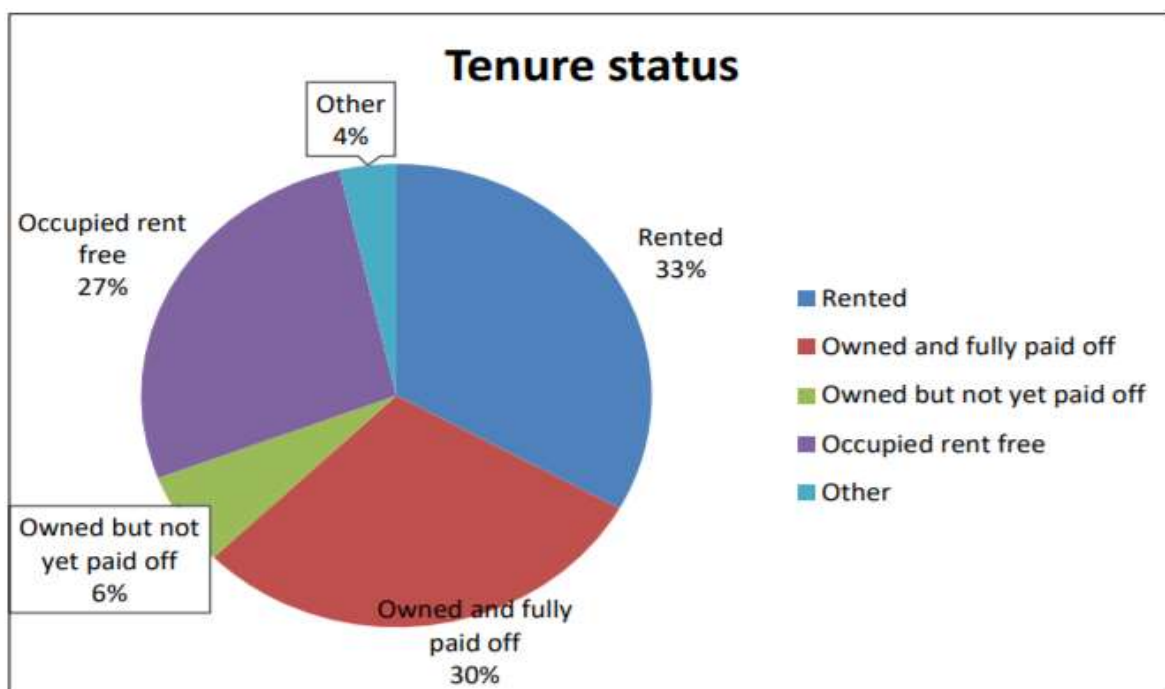


Figure 13: Tenure status

### Local economic development (LED)

The Kgatelopele LED Strategy defines LED as “an approach to sustainable economic development that encourages residents of local communities to work together to stimulate local economic activity that will result in, inter alia, an improvement in the quality of life for all in the local community”. The municipality has a Local Economic Development Strategy, which was developed and this strategy needs to be reviewed in order to be more credible and relevant to the needs of the community as it is outdated. The intention is to source funding and have the LED Strategy reviewed by the end of the 2018/19 financial year.

However, with the assistance from the district coordinator under Department of Tourism and Development, the municipality has identified some of the Red Tapes and made recommendations in trying to eradicate some of these red tapes for the development of its municipal land.

### SERVICE DELIVERY AND INFRASTRUCTURE DEVELOPMENT

#### Water

“Section 27(1)(b) of the Bill of Rights provides that ‘everyone has the right to have access to sufficient water’, and section 27(2) obliges the state to take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation” of everyone’s



right of access to sufficient water” (Basic Sanitation Guideline in South Africa, 2011: 20). A Water Services Authority (WSA) refers to a municipality’s responsibility to ensure access to water services. WSAs derive their authority from the Municipal Structures Act. The water service authority is Kgatelopele Local Municipality.

The importance of access to clean water cannot be over emphasized, as the absence of that can result to a lot of health related challenges. Kgatelopele Municipality has done very well in this area, as the municipal blue drop status for 2017 was 99%.

The majority of households (4225) have access to piped water in their house, followed by those who have access to piped water in their yard (1262). 35 Households are still without piped water in their yards and those households in the informal settlements, however mechanisms have been put in place by providing communal taps.

“Walking distance should always be used as the measure for accessibility” (Redbook).

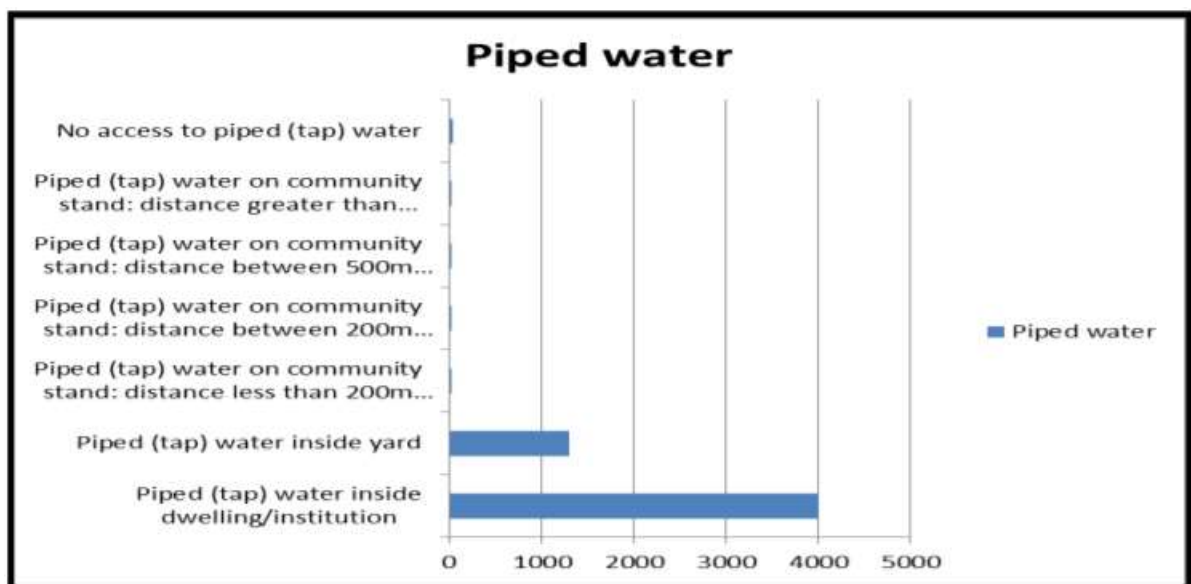


Figure 14: Piped water

Electricity (As per Census 2016) 5960 households are connected to electricity and a total number of 100 households have been registered for prepaid meters and conventional meters for use of electricity as a source of energy for lighting this initiative was introduced in order to test its feasibility. The statistical information from Stats SA (2016), indicates that only 53 households are using other source for lighting purposes thus leaving 193 households without any lighting source, which leave the question of how they actually light their households. These are the cases that the municipality is currently looking at.

Furthermore, due to the growth of the town, the municipality has identified that the current Electricity sub-station will be unable to accommodate all the households. Through the identification of this problem, the municipality has initiated a project to Upgrade the Electrical network in the 2018/19 Financial year.

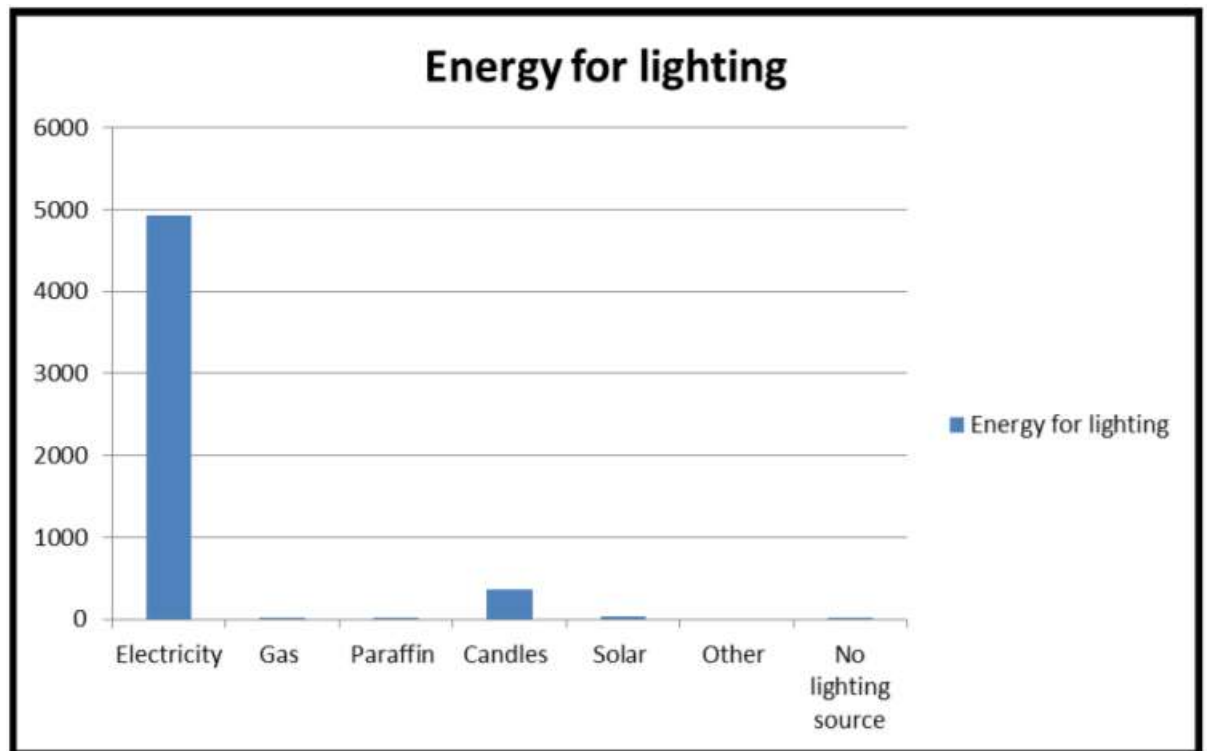


Figure 15: Energy for lighting

### Sanitation

There is a Free Basic Sanitation (FBSan) policy in South Africa, and municipalities are mandated to implement this policy and ensure that every household has access to basic sanitation, as per the Constitution, Water Services Act and Municipal Systems Act. Local government is mandated to provide water and sanitation services.

Access to adequate sanitation is fundamental to personal dignity and security, social and psychological well-being, public health, poverty reduction, gender equality, economic development and environmental sustainability. Poor sanitation promotes the spread of preventable diseases like diarrhea and cholera, places stress on the weakened immune system of HIV positive people and has a major impact on the quality of life of people living with AIDS. According to the World Health Organization (WHO), improved sanitation reduces diarrhea death rates by a third, encourages children, particularly girls, to stay in school, and has persuasive economic benefits (Basic Sanitation in South Africa 2011: 13)

There are about 300 households that are still not connected to the sewer connections due the Waste Water treatment works having reached its capacity.

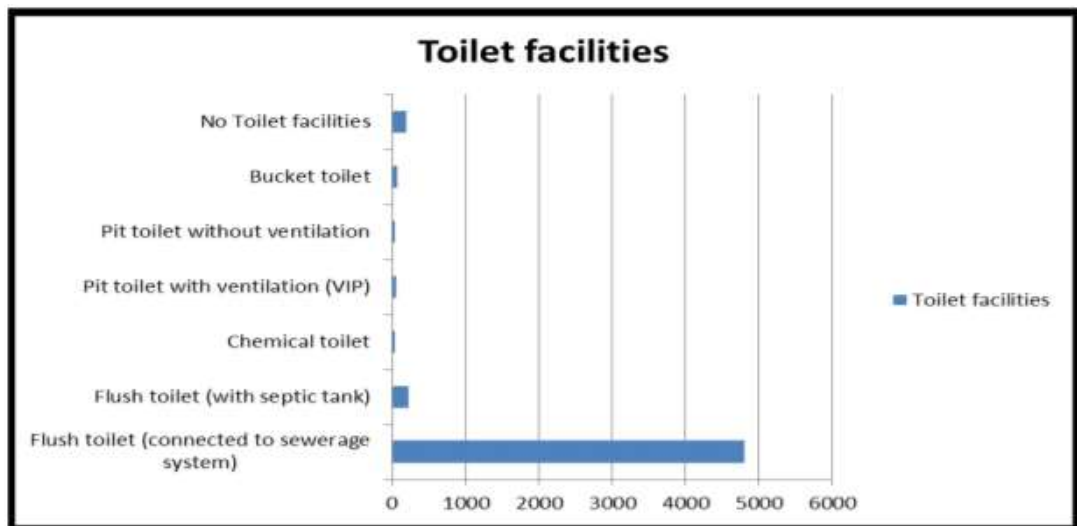


Figure 16: Toilet facilities

Stats SA 2016 indicates that 5971 households have access to flush toilets (connected to sewerage system), whilst 71 households use flush toilets with septic tank. The concern is for those 500+ households which are situated in the informal settlements which do not have any access to sanitations. The municipality is in the process of providing temporary sanitation to the households in these informal settlements.

### Storm water

Storm water remains a challenge for the municipal area however the municipality is dedicated to addressing these challenges through implementing projects that address storm water related matters. Roads have been identified to address storm water issues.

### Waste management

Disposing waste in an environmental friendly manner is very important for the municipality, as conservation of the environment is one of its strategic objectives. The municipality is responsible for the removal/collection of waste and its disposal. The municipality uses a landfill site for this purpose. This function is very important as it's not just about making the municipal area aesthetically pleasing but maintaining the dignity of the natural environment.

This places a responsibility on the municipality to conduct awareness campaigns and educational workshops to those who use their own dumping site. This is essential so that they are educated that some materials should not be dumped such as medical waste and batteries as they can be toxic for the environment.

The municipality is also doing well in this area, as weekly refuse removal is at 91.7%. The municipality needs to pay attention to those using their own refuse dump and those that have no rubbish disposal, as they might be disposing waste in a manner that is not in line with sustainable development. The current landfill site which is being utilized for Danielskuil and Lime Acres communities is near its full capacity. The Municipality has undertaken a number of activities such as installing waste bins alongside the main streets of all wards and

by implementing cleaning campaign in trying to ensure that there is a collection of waste and the eradication of heaps that are laying around the area of Tlhakalatlou, Kuilsville, Maranteng as well as in the Landbou Erwe.

Furthermore, the municipality has insourced the waste collection service through the purchase of 2 waste removal trucks and employment of officials who will be responsible for waste remove. In the 2018/19 Financial Year, the municipality will also have a project of rehabilitating the Old Land Fill and establishing a New Landfill Site as the old Landfill Site has reached it's capacity.

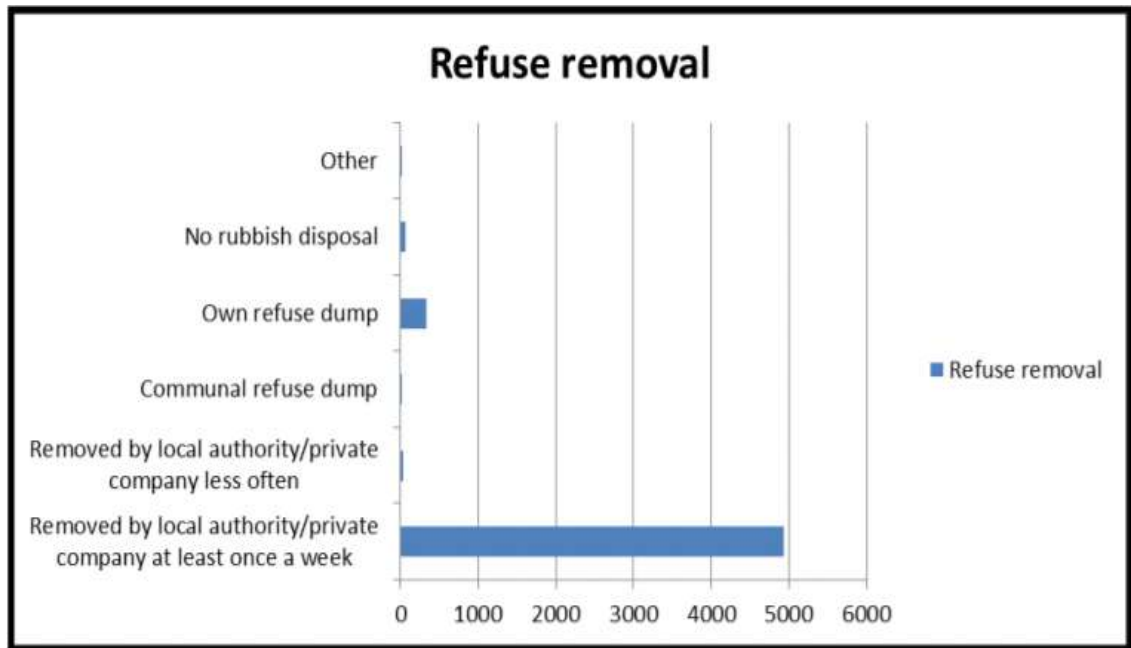


Figure 17: Refuse removal

(15) SENSITIVE LANDSCAPES:

“Sensitive Environments” that have statutory protection are the following:-

1. Limited development areas (Section 23 of the Environmental Conservation Act, 1989 (Act 73 of 1989).
2. Protected natural environments and national heritage sites.
3. National, provincial, municipal and private nature reserves.
4. Conservation areas and sites of conservation significance.
5. National monuments and gardens of remembrance.
6. Archaeological and palaeontological sites.
7. Graves and burial sites.
8. Lake areas, offshore islands and the admiralty reserve.
9. Estuaries, lagoons, wetlands and lakes.
- 10. Streams and river channels and their banks.**
11. Dunes and beaches.
12. Caves and sites of geological significance.

13. Battle and burial sites.
14. Habitat and/or breeding sites of Red Data Book species.
15. Areas or sites of outstanding natural beauty.
16. Areas or sites of special scientific interest.
17. Areas or sites of special social, cultural or historical interest.
18. Declared national heritage sites.
19. Mountain catchment areas.
20. Areas with eco-tourism potential.

The relevant specialists will be appointed to assess whether there are any sensitive landscapes within the application area.

## **(b) Description of the Current Land Use**

### **(1) Land Use before Prospecting:**

This municipal area has a Savanna type of biome. The Savanna Biome is the Centre of wildlife tourism and meat production (game, cattle and goats) in South Africa.

No other land use is known at this stage.

### **(2) Evidence of Disturbance:-**

Environmental challenges for Kgatelopele Local Municipality, are also associated with the fact that the region has a rich mineral deposit, which is a main economic driver for the municipal area. The large areas of un-rehabilitated or poorly rehabilitated mining activities have a significant negative effect on the scenic environment in the region.

Also overgrazing can pose a significant risk for the area.

### **(3) Existing Structures:-**

Information taken off the 2019 General Valuation Kgatelopele (Hay) RD Farms.

Stockfarm with dwelling

Farm No: 508

Farm Name: Plaas 508

Portion: 0

Magisterial District: Hay

Stockfarm without dwelling  
Farm No: 509  
Farm Name: Plaas 509  
Portion: 0 (Remaining Extent)  
Magisterial District: Hay

Stockfarm without dwelling  
Farm No: 509  
Farm Name: Plaas 509  
Portion: 1  
Magisterial District: Hay

Stockfarm without dwelling  
Farm No: 509  
Farm Name: Plaas 509  
Portion: 3  
Magisterial District: Hay

Stockfarm without dwelling  
Farm No: 510  
Farm Name: Plaas 510  
Portion: 0 (Remaining Extent)  
Magisterial District: Hay

Stockfarm with dwelling  
Farm No: 510  
Farm Name: Plaas 510  
Portion: 2  
Magisterial District: Hay

Farm No: 10  
Farm Name: Farm 10  
Portion: 1  
Magisterial District: Hay

Farm No: 11  
Farm Name: Plaas 11  
Portion: 0 (Remaining Extent)  
Magisterial District: Hay

Farm No: 12

Farm Name: Plaas 12  
Portion: 0 (Remaining Extent)  
Magisterial District: Hay

Farm No: 12  
Farm Name: Plaas 12  
Portion: 1  
Magisterial District: Hay

Farm No: 13  
Farm Name: Plaas 13  
Portion: 0  
Magisterial District: Hay

Farm No: 14  
Farm Name: Plaas 14  
Portion: 1  
Magisterial District: Hay

Farm No: 15  
Farm Name: Plaas 15  
Portion: 1  
Magisterial District: Hay

**(c) Description of Specific Environmental Features and Infrastructure on Site**

The infrastructure on site comprehensively discussed in section d(ii) as part of the prospecting methodology discussion, as well as in section g as part of the mine footprint description. Furthermore, a comprehensive description of the environment was presented in section (i) as part of the baseline report.

(d) Environmental and current land use map (Show all environmental, and current land use features)

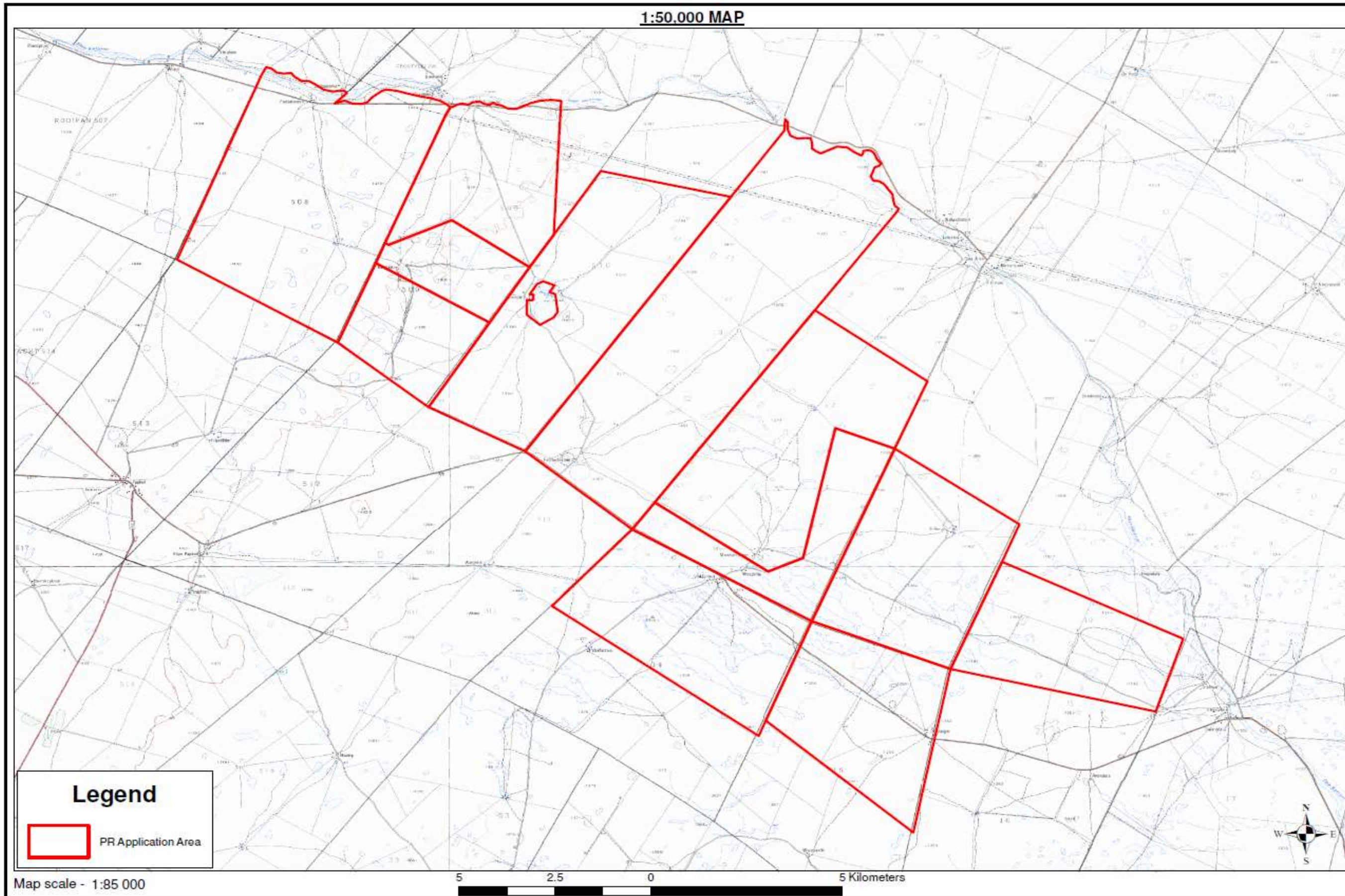


Figure 18: Environmental and current land use map



**v) Impacts identified**

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability and duration of the impacts.)

<b>Nature of Impact</b>	<b>Significance</b>	<b>Probability</b>	<b>Duration</b>
Sterilisation of mineral resources.	Very low	Highly unlikely	Decommissioning
Changes to surface topography due to topsoil removal, alluvial diamond prospecting, placement of infrastructure and development of residue deposits.	Low to medium	Certain	Long Term Life of operation
Soil erosion by water and wind on disturbed and exposed soils; potential for dust production and soil microbial degradation; potential contamination of soils due to spillages.	Low	Possible	Long Term Life of operation
Loss of land capability through topsoil removal, disturbances and loss of soil fertility.	Very low	Possible	Short term
Loss of land use due to poor placement of surface infrastructure and ineffective rehabilitation.	Very low	Possible	Short term
Pollution of underground water sources.	Low	Possible	Long Term Residual
Deterioration of water resources through alluvial bulk sampling.	Medium to High	Possible	Long Term Residual
Deterioration in water quality through spillages and runoff from sites.	Medium	Possible	Long Term Life of operation
The clearance of vegetation; potential loss of floral species with conservation value; potential loss of ecosystem function.	Low to medium	Certain	Long Term Life of operation
Proliferation of alien invasive plants species.	Low to medium	Possible	Long Term Residual
Displacement of faunal species.	Low	Possible	Long Term Life of operation
The loss, damage and fragmentation of floral and faunal habitats; potential loss of ecosystem function.	Low to Medium	Certain	Long Term Residual
Sources of atmospheric emission associated with the prospecting operation are likely to include fugitive dust from materials handling operations, wind erosion of stockpiles and vehicle entrainment of road dust.	Minimal	Certain	Life of Operation Decommissioning

Increase in continuous noise levels; the disruption of current ambient noise levels; and the disruption of sensitive receptors by means of increased noise and vibration.	Low to medium	Certain	Long Term Life of Operation
Visual impact of the mine infrastructure, slimes dams and visibility of dust.	Medium to Low	Certain	Life of Operation Decommissioning
Potential negative impacts on traffic safety and deterioration of the existing road networks.	Medium	Possible	Life of Operation Decommissioning
The deterioration of sites of cultural and heritage importance.	Low to Medium	Possible	Life of Operation
Loss of agricultural/grazing potential; influx of workers to the area increases health risks and loitering (resulting in lack of security and safety); negative impact of employment loss during site closure.	Low to medium	Certain	Short-term and Closure
Loss of trust and a good standing relationship with the IAPs.	Low to medium	Possible	Life of Operation Decommissioning
Positive socio-economic impacts during operation, upliftment of previously disadvantaged communities.	Medium to high	Certain	Life of Operation Decommissioning to residual

vi) **Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks**

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which the initial site layout needs revision)

The limits were defined in relation to the Prospecting Characteristics. Those for probability, significance and duration are subjective, based on rule of thumb and experience. The significance of the impacts is defined as follows:

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.

**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 (Residual)**  
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.

**vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected**

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

During construction and operation of the mine, there is a possibility of sterilisation of the mineral reserves and resources due to improper placement of infrastructure. The infrastructure and slimes dam will alter the topography by adding features to the landscape. Topsoil removal and alluvial bulk sampling will unearth the natural topography. The construction of infrastructure and various facilities in the prospecting area can also result in loss of soil due to erosion. Vegetation where present will be stripped in preparation for placement of infrastructure and loading, and therefore the areas will be bare and susceptible to erosion. The topsoil that is stripped and piled on surrounding areas can be eroded by wind and rain. The soil will be carried away during runoff. The declared areas will be rehabilitated, but full restoration of soil might only occur over a number of years, subsequent to the re-establishment of vegetation. Furthermore, improper stockpiling and soil compaction can result in soil sterilisation. Leaching can also occur, resulting in the loss of nutrients.

During the construction and operation of the mine, there is a possibility that equipment might leak oil, thus causing surface spillages. The hydrocarbon soil contamination will render the soil unusual unless they are decontaminated. The storage of fuels on site might have an impact on soil if the tanks that are available on site are not properly monitored and maintained to avoid leakages. Then there is the potential that contaminated soil can be carried through runoff to contaminate water resources and soil stockpiled for rehabilitation. Soil pollution is therefore possible, but through mitigation it can be minimised.

The loss of land capability and land use can occur in two ways. Firstly, through topsoil removal, disturbances and loss of soil fertility; and secondly through the improper placement of infrastructure. The site has a land capability for limited grazing, but grazing activities can still be performed in areas not earmarked for prospecting, and with proper rehabilitation the land capabilities and land use potential can be restored.

If oil and fuel spillages occur, then it will seep into the underlying aquifers and contaminate ground water. Improper handling of hazardous material will cause contamination of nearby surface water resources during runoff episodes. Lack of storm control structures will lead to erosion of stockpiles during heavy rains and runoff will carry suspended solids into the downstream environment. This might cause high silt load and affect stream flow.

Construction and prospecting activities on site will reduce the natural habitat for ecological systems to continue their operation. It is not expected that the areas of high ecological function will rehabilitate following disturbance events. Vehicle traffic

generates lots of dust which can reduce the growth success and seed dispersal of many small plant species. It is expected that protected species if present will be destroyed during the prospecting operation, the necessary permits will be obtained after the specialist studies have been completed to confirm the presence of the protected species.

While general clearing of the area and prospecting activities destroy natural vegetation, invasive plants can increase due to their opportunistic nature in disturbed areas. If invasive plant establish in disturbed areas, it may cause an impact beyond the boundaries of the prospecting site. These alien invasive species are thus a threat to surrounding natural vegetation and can result in the decrease of biodiversity and ecological value of the area. Therefore, if alien invasive species are not controlled and managed, their propagation into new areas could have a high impact on the surrounding natural vegetation in the long term. With proper mitigation, the impacts can be substantially reduced.

The transformation of natural habitats to prospecting and associated infrastructure will result in the loss of habitat affected individual species, and ecological processes. In turn this will result in the displacement of faunal species dependent upon such habitat. Increased noise and vibration due to prospecting activities will disturb and possibly displace birds and other wildlife. Fast moving vehicles take a heavy toll in the form of road kills of small mammals, birds, reptiles, amphibians and a large number of invertebrates. The construction of the mine and associated infrastructure will result in the loss of connectivity and fragmentation of natural habitat. Fragmentation of habitat will lead to the loss of migration corridors, in turn resulting in degeneration of the affected population's genetic make-up. This results in a subsequent loss of genetic variability between meta-populations occurring within the site. Pockets of fragmental natural habitats hinder the growth and development of populations.

During the prospecting operation the abovementioned activities have potential for dust generation. It is anticipated that the extent of dust emissions would vary substantially from day to day depending on the level of activity and the specific operations. The mine will add a certain amount of noise to the existing noise in the area. However, levels of noise generated by prospecting activities are low.

The impact of site generated trips on the traffic of the existing roads is experienced to be low. Nevertheless, if road safety is not administered it can have a high impact on the safety of fellow road users.

The prospecting operation, especially during construction, will create a number of new employment opportunities. The magnitude of this impact will depend on the number of people that will be employed and the number of contractors sourced. An influx of people into the area will possibly impact on safety and security of local residents. During the decommissioning and at closure of the mine, staff will most likely be retrenched. This can potentially flood the job market, resulting in people being unable to find new

employment for a long period of time. It is normally more difficult for people with highly specialised skills to find employment immediately. Those with fewer skills have more flexibility in the job market.

Economic slump of the local towns after mine closure is an associated potential impact, although small due to the small scale of the operation. Income streams from wage bills as well as goods and services contracts (at all geographical levels) will come to an end, reducing the monetary income of individuals and mine-related businesses. People who have derived income directly or indirectly from the project may be inclined to leave the region in search of employment or business opportunities. This could result in further decline of the economy of the region as well as the abandonment of infrastructure. The loss of the mine workforce income will also impact upon non-mine related industries within the local and regional areas, particularly the rental property market and retail and service industries who would have received income during the life of mine from the salaried workforce.

It is likely, however that there will be residual positive economic impacts that are not fully reversed with the closure of the mine, and that the economy will not decline to its original level prior to the development of this project. This is because the mine will generate substantial income for the regional and local economy, both directly and indirectly, during its life.

It is difficult to predict the actual impact of the mine closure in advance, but it is acceptable to assume that the mine closure will have a negative impact on the local and regional economy with a high probability of occurrence, a Low severity and a Low significance.

Positive impacts include employment and training opportunities for people in the local community and local contractors; social upliftment and community development programmes; economic benefits.

**viii) The possible mitigation measures that could be applied and the level of risk**

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered)

**Geology and Mineral Resource**

**Level of risk:** Very low

**Mitigation measures**

- ❖ Ensure that optimal use is made of the available mineral resource through proper planning.

- ❖ The alluvial deposit should be delineated first and all infrastructure positions should be selected with the main aim of avoiding sterilization of future resources.
- ❖ No dumping of materials prior to approval by the mine manager.

### Topography

**Level of risk:** Low

#### **Mitigation measures**

- ❖ Mine all alluvial diamond gravels and rehabilitate material back up to natural ground level.
- ❖ Do controlled dumping.
- ❖ Employ effective rehabilitation strategies to restore surface topography of the area and plant site.
- ❖ Stabilise the excavations and mine residue deposits.
- ❖ All temporary infrastructures will be demolished during closure.

### Soil Erosion

**Level of risk:** Very low

#### **Mitigation measures**

- ❖ At no point may plant cover be removed within the no-development zones.
- ❖ All attempts must be made to avoid exposure of dispersive soils.
- ❖ Re-establishment of plant cover on disturbed areas must take place as soon as possible, once activities in the area have ceased.
- ❖ Ground exposure should be minimised in terms of the surface area and duration, wherever possible.
- ❖ The run-off from the exposed ground should be controlled with the careful placement of flow retarding barriers.
- ❖ The soil that is excavated during construction should be stock-piled in layers and protected by berms to prevent erosion.
- ❖ All stockpiles must be kept as small as possible, with gentle slopes (18 degrees) in order to avoid excessive erosional induced losses.
- ❖ Excavated and stockpiled soil material are to be stored and bermed on the higher laying areas of the footprint area and not in any storm water run-off channels or any other areas where it is likely to cause erosion, or where water would naturally accumulate.
- ❖ Stockpiles susceptible to wind erosion are to be covered during windy periods.
- ❖ Audits must be carried out at regular intervals to identify areas where erosion is occurring.
- ❖ Appropriate remedial action, including the rehabilitation of the eroded areas, must occur.
- ❖ Rehabilitation of the erosion channels and gullies.



- ❖ Dust suppression must take place, without compromising the water balance of the area.
- ❖ Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion.

### **Soil Pollution**

**Level of risk:** Very low

#### **Mitigation measures**

- ❖ Refuelling must take place in well demarcated areas and over suitable drip trays to prevent soil pollution.
- ❖ Spill kits to clean up accidental spills from earthmoving machinery must be well-marked and available on site.
- ❖ Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures.
- ❖ All facilities where dangerous materials are stored must be contained in a bund wall.
- ❖ Vehicles and machinery should be regularly serviced and maintained.

### **Land Capability and Land Use**

**Level of risk:** Very low

#### **Mitigation measures**

- ❖ Ensure that optimal use is made of the available land through consultation with land owners and proper planning of prospecting activities.
- ❖ Surface agreement to be signed with land owners.
- ❖ Employ effective rehabilitation strategies to restore land capability and land use potential of the farm.
- ❖ All activities to be restricted within the demarcated areas.
- ❖ Ensure that land which is not used during construction is made available for grazing.

### **Groundwater**

**Level of risk:** Medium – High if bulk sampling is reached

#### **Mitigation measures**

- ❖ Refuelling must take place in well demarcated areas and over suitable drip trays to prevent soil pollution.
- ❖ Spill kits to clean up accidental spills from earthmoving machinery must be well-marked and available on site.
- ❖ Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures.
- ❖ All facilities where dangerous materials are stored must be contained in a bund wall.

- ❖ Vehicles and machinery should be regularly serviced and maintained.

### Surface Water

**Level of risk: Low**

#### **Mitigation measures**

- ❖ Sufficient care must be taken when handling hazardous materials to prevent pollution.
- ❖ Under no circumstances may ablutions occur outside the provided facilities.
- ❖ If servicing and washing of the vehicles occur on site, there must be specific areas constructed for these activities, which must have concrete foundations, bunding as well as oil traps to contain any spillages.
- ❖ A walled concrete platform, dedicated store with adequate flooring or bermed area and ventilation must be used to accommodate chemicals such as fuels, oils, paints, herbicide and insecticides.
- ❖ Oil residue shall be treated with oil absorbent and this material removed to an approved waste site.
- ❖ Spill kits must be easily accessible and workers must undergo induction regarding the use thereof.
- ❖ At all times care should be taken not to contaminate surface water resources.
- ❖ Store all litter carefully to prevent it from washing away or blown into any of the drainage channels or Kamfersdam within the area.
- ❖ Provide bins for staff at appropriate locations, particularly where food is consumed.
- ❖ The prospecting site should be cleared daily and litter removed.
- ❖ Conduct ongoing staff awareness programmes in order to reinforce the need to avoid littering, which contributes to surface water pollution.

### Indigenous Flora

**Level of risk: Low to medium**

#### **Mitigation measures**

- ❖ Minimise the footprint of transformation.
- ❖ Encourage proper rehabilitation of mined areas.
- ❖ Encourage the growth of natural plant species.
- ❖ Ensure measures for the adherence to the speed limit.
- ❖ Footprint areas of the prospecting activities must be scanned for Red Listed and protected plant species prior to prospecting.
- ❖ It is recommended that these plants are identified and marked prior to prospecting.
- ❖ These plants should, where possible, be incorporated into the design layout and left in situ.
- ❖ However, if threatened of destruction by prospecting, these plants should be removed (with the relevant permits from DAFF and DENC) and relocated if possible.

- ❖ A management plan should be implemented to ensure proper establishment of ex situ individuals, and should include a monitoring programme for at least two years after re-establishment in order to ensure successful translocation.
- ❖ All those working on site must be educated about the conservation importance of the fauna and flora occurring on site.

### **All Invasive Plants**

**Level of risk:** Very low

#### **Mitigation measures**

- ❖ Minimise the footprint of transformation.
- ❖ Encourage proper rehabilitation of mined areas.
- ❖ Encourage the growth of natural plant species.
- ❖ Mechanical methods (hand-pulling) of control to be implemented extensively.
- ❖ Annual follow-up operations to be implemented.

### **Fauna**

**Level of risk:** Very low

#### **Mitigation measures**

- ❖ Careful consideration is required when planning the placement for stockpiling topsoil and the creation of access routes in order to avoid the destruction of habitats and minimise the overall prospecting footprint.
- ❖ The appointment of a full-time ECO must render guidance to the staff and contractors with respect to suitable areas for all related disturbance.
- ❖ The extent of the mine should be demarcated on site layout plans, and no construction personnel or vehicles may leave the demarcated area except those authorised to do so. Those areas surrounding the mine site that are not part of the demarcated development area should be considered as a no go zone for employees, machinery or even visitors.
- ❖ All those working on site must be educated about the conservation importance of the fauna and flora occurring on site.
- ❖ The ECO must ensure that all contractors and workers undergo Environmental induction prior to commencing with work on site.
- ❖ The environmental induction should occur in the appropriate languages for the workers who may require translation.
- ❖ Reptiles and amphibians that are exposed during the clearing operations should be captured for later release or translocation by a qualified expert.
- ❖ Employ measures that ensure adherence to the speed limit.

### **Habitat**

**Level of risk:** Low

**Mitigation measures**

- ❖ Prospecting activities must be planned, where possible in order to encourage faunal dispersal and should minimise dissection or fragmentation of any important faunal habitat type.
- ❖ The extent of the prospecting area should be demarcated on site layout plans (preferably on disturbed areas or those identified with low conservation importance). No construction personnel or vehicles may leave the demarcated area except those authorised to do so.

**Air Quality**

**Level of risk:** Very low

**Mitigation measures**

- ❖ Vegetation must be removed when soil stripping is required only. These areas should be limited to include those areas required for prospecting only, hereby reducing the surface area exposed to wind erosion. Adequate demarcation of these areas should be undertaken.
- ❖ Control options pertaining to topsoil removal, loading and dumping are generally limited to wet suppression.
- ❖ Where it is logistically possible, control methods for gravel roads should be utilised to reduce the re-suspension of particulates. Feasible methods include wet suppression, avoidance of unnecessary traffic, speed control and avoidance of track-on of material onto paved and treated roads.
- ❖ The length of time where alluvial dingo and prospecting areas are exposed should be restricted. Prospecting should not be delayed after vegetation has been cleared and topsoil removed where possible.
- ❖ Dust suppression methods should, where logistically possible, must be implemented at all areas that may/are exposed for long periods of time.
- ❖ For all Prospecting activities management should undertake to implement health measures in terms of personal dust exposure, for all its employees.

**Noise and Vibration**

**Level of risk:** Very low

**Mitigation measures**

- ❖ Restrict prospecting activities to daytime unless agreements obtained to do 24hr operations.
- ❖ Systematic maintenance of all forms of equipment, training of personnel to adhere to operational procedures that reduce the occurrence and magnitude of individual noisy events.
- ❖ Where possible material stockpiles should be placed so as to protect the boundaries from noise to individual operations.

- ❖ Standardised noise measurements should be carried out on individual equipment at the delivery to site to construct a reference data-base and regular checks carried out to ensure that equipment is not deteriorating and to detect increases which could lead to increase in the noise impact over time and increased complaints.
- ❖ Environmental noise monitoring should be carried out at regularly to detect deviations from predicted noise levels and enable corrective measures to be taken where warranted.

### **Visual Impacts**

**Level of risk:** Very low

#### **Mitigation measures**

- ❖ Infrastructure should be placed to optimise the natural screening capacity of the vegetation.
- ❖ Where practical, protect existing vegetation clumps during in order to facilitate screening during the prospecting operation.
- ❖ Remove rubble and other building rubbish off site as soon as possible or place it in a container in order to keep the prospecting site free from additional unsightly elements.
- ❖ Dust suppression procedures should be implemented especially on windy days during earth works.
- ❖ Rehabilitation should aim to establish a diverse and self-sustaining surface cover that is visually and ecologically representative of naturally occurring vegetation species.
- ❖ Implement a management plan for the post-prospecting site in order to control the invasion of alien vegetation and to manage erosion, until the site is fully rehabilitated.

### **Traffic and Road Safety**

**Level of risk:** Very low

#### **Mitigation measures**

- ❖ Implement measures that ensure the adherence to traffic rules.

### **Heritage Resources**

**Level of risk:** low- Medium depending on specialist study outcome

#### **Mitigation measures**

- ❖ The heritage if any is encountered and cultural resources (e.g. graveyards, ruins, historic structures, etc.) must be protected and preserved by the delineation of no go zones.

- ❖ Stone tools should be avoided where possible and fresh exposure should be recorded before destruction. All stone tool artefacts should be recorded, mapped and collected before destruction.
- ❖ Should development necessitate impact on any building structures, the developer should apply for a SAHRA Site Destruction Permit prior to commencement of construction.

### **Socio-Economic**

**Level of risk:** Very low

#### **Mitigation measures**

- ❖ The mine must ensure that false expectations are not created regarding job creation.
- ❖ Jobs must be allocated as advertised and in so far as is possible to local inhabitants.
- ❖ Contractors and employees should not be permitted to wander outside the prospecting area.
- ❖ Uncontrolled settlement of contractors and workers outside of the site will be prevented.
- ❖ The expectations of what benefits can accrue to the community must be managed from the initiation of the project.
- ❖ Commitments as set out in the SLP must be attained.

### **Interested and Affected Parties**

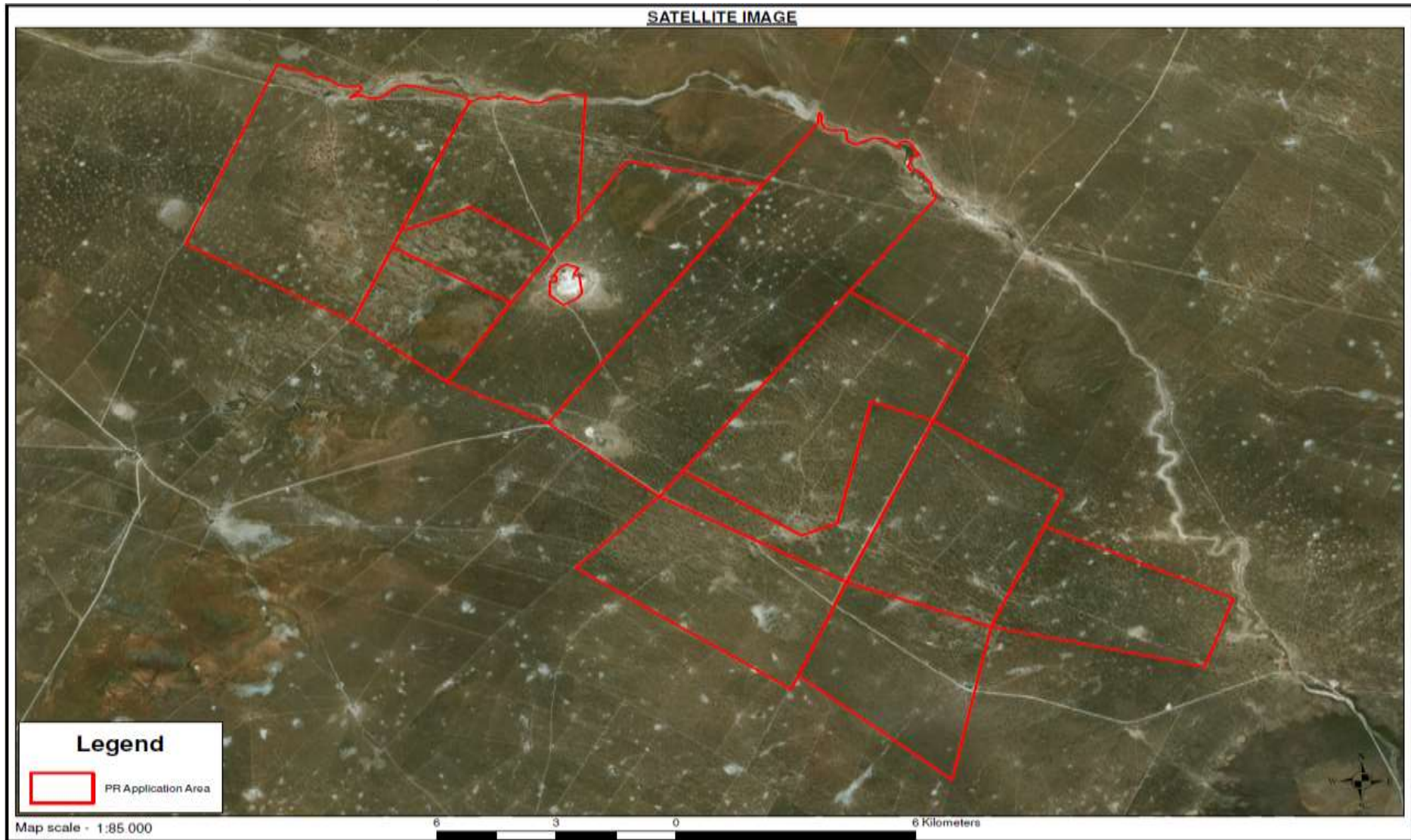
**Level of risk:** Very low

#### **Mitigation measures**

- ❖ Maintain active communications with IAPs.
- ❖ Ensure transparent communication with IAPs at all times.
- ❖ IAPs must be kept up to date on any changes in the prospecting operation.
- ❖ A complaints management system should be maintained by the mine to ensure that all issues raised by community members are followed up and addressed appropriately.

**ix) The outcome of the site selection Matrix. Final Site Layout Plan**

(Provide a final site layout plan as informed by the process of consultation with interested and affected parties)



**Figure 19:** Final site layout plan

**x) Motivation where no alternative sites were considered**

No alternative location for the proposed prospecting operation was considered, as the propable alluvial diamond resources has been deposited in this area. There is therefore no other alternative with regard to the overall operation footprint.

**xi) Statement motivating the preferred site.**

(Provide a statement motivating the final site layout that is proposed)

Not applicable. There is no alternative development location for the site as this is the area with the possible mineable resource.

**i) Plan of study for the Environmental Impact Assessment Process****i) Description of alternatives to be considered including the option of not going ahead with the activity****• Land use development alternatives:**

The site layout may vary, depending on the operational requirements and the phase of prospecting. However the final design and layout of the infrastructure have been planned and decided upon by the developer Moonstone Mining on the grounds of reserves, and placement of infrastructure based on hauling distance, environmental features such as wind direction, heritage findings, protected species, and stormwater management on the mine.

**• No-go option:**

The following positive impacts will be lost if the proposed prospecting project is not developed:

- o TAX and VAT obligations to SARS as well as Royalties;
- o CAPEX spent locally and regionally;
- o Employment opportunities;
- o Payroll income;
- o Operating expenditure and maintenance (OPEX);
- o Revenue.

Prospecting activities are believed to be one of the economically beneficial options for the area.

If the operation does not continue it would hold back any potential employment for the region and the families who are likely to benefit from the positive employment opportunities. Simultaneously, it may have a stagnant effect on the economy of South Africa and the diamond industry as a whole. Substantial tax benefits to the State and Local Government will also be inhibited.

Mining forms an integrated part of the social and economical growth of South Africa and more specifically the Northern Cape Province.



## ii) Description of the aspects to be assessed as part of the environmental impact assessment process

(The EAP must undertake to assess the aspects affected by each individual mining activity whether listed or not, including activities such as blasting, Loading, hauling and transport, and mining activities such as Excavations, stockpiles, discard dumps or dams, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control berms, roads, pipelines, powerlines, conveyers, etc..etc...)

1. The clearing of vegetation for:
  - Access roads and haul roads
  - Surface infrastructure
  - Product Stockpile area
  - Waste disposal site (domestic and industrial waste)
2. The stripping and stockpiling of topsoil.
3. Load and Haul Operation for the bulk sampling of alluvial gravels.
4. Altering the characteristics of surface water features.
5. The development of temporary stockpiles:
  - Topsoil storage area;
  - Mine Residue Stockpile for “porrel”.
6. The rehabilitation of footprint areas where the open pits have been excavated.
7. The construction of Processing plant.
8. Loading, hauling and transporting of ROM, product and material
9. Water holding facilities, pipeline and stormwater control:
  - Clean & Dirty water system: Stormwaterdam / Water storage facility;
  - Water distribution Pipeline;
  - Water tank.
10. Fuel storage and refuelling bays;
  - Fuel Storage facility (Diesel tanks);
  - Concrete bund walls and diesel depots.
11. Supporting infrastructure:
  - Temporary Offices;
  - Office Parking Bay;
  - Temporary Workshop and Wash bay;
  - Salvage yard (Storage and laydown area);
  - Ablution facilities/ Sewage facilities;
  - Generators;
  - Pipelines transporting water;

**(ii) Description of aspects to be assessed by specialists:**

The application are is within the Hay and Herbert districts. The necessary ecological and wetland delineation assessment studies (that will include soil, fauna, flora, surface water) and heritage and palaeontological studies will be done and possibly a geohydrological study to determine the availability for water for the bulk sampling operation should the first phases of the prospecting operation be positive.

**(iii) Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives:**

The receiving environment will be determined using a combination of on-site observations, spatial information, project description, site layout and previous studies currently available to the EAP. Based on the EAPs knowledge and experience, the receiving environment will include geological features, topography, land use, archaeological and historical sites, surface water, groundwater, terrestrial ecology, air quality, noise, etc.

The identification of potential impacts of the prospecting activity will be based on the legal requirements; the nature of the proposed activity; the nature of the receiving environment; and issues raised during the public participation process. Considering the factors listed above and based on the EAPs knowledge and experience, environmental impacts that could potentially result from the prospecting activities include impacts on air quality, noise, fauna, flora, ground water, terrestrial ecology, heritage resources, socio-economy, aquatic environments, visuals, storm water and erosion.

The consideration of alternatives is a critical component of the EIA process, where an appropriate range of alternatives require consideration whilst achieving the desired objective of the proposed project. In order to ensure that the proposed project enables sustainable prospecting, a number of feasible options will be explored. The various alternatives in terms of land use, project infrastructure, prospecting method and proceeding without the prospecting operation will be assessed in terms of logistical practicality, environmental acceptability and economic feasibility. Alternatives for the locality of the prospecting operation will however not form part of this consideration, as the location of the prospecting site is determined by the geological location of the mineral resource.

**(iv) The proposed method of assessing duration significance:**

The lifetime of the impact will be measured in the context of the lifetime of the proposed phase or activity.

Weight	Duration of Impact	Explanation of Duration
1	Very Short	Less than 1 year
2	Short	1 to 5 years
3	Medium	6 to 15 years
4	Long term (Life of project)	16 to 50 years
5	Very Long term	Longer than 50 years
6	Permanent	Permanent

- **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.

**(v) The stages at which the Competent Authority will be consulted:**

Consultation with the Competent Authority will take place throughout the application process, however more specifically; consultation will take place before submission of the Scoping Report and again before submission of the EIA/EMPR Report.

**(vi) Particulars of the public participation process with regard to the Impact Assessment process that will be conducted:**

**1. Steps to be taken to notify interested and affected parties:**

(These steps must include the steps that will be taken to ensure consultation with the affected parties identified in (h)(ii) herein.)

The consultation process as described by NEMA for Environmental Authorisation was followed and is still in process. The following steps were already taken:

Description of the consultation process:-

- Notification letters were sent to all interested and/or affected parties. Attached to each of these letters was a Basic Information document and a draft Scoping Report, containing information relating to proposed project.
- A newspaper advert was placed in the DFA (Diamond Fields Advertiser) local newspaper.
- Notices were also placed at the Spar and shopping centre in Lime Acres and at the gates of various farms.
- Comments or replies received will be handled individually.

Proof of notification and consultation is attached as Appendix 3. The consultation process is still in process.

The draft Scoping and Environmental Impact Assessment will be circulated to all registered interested and affected parties.

**2. Details of the engagement process to be followed:**

(Describe the process to be undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings and record of such consultation will be required in the EIA at a later stage.)

The following procedures will be followed:

- Public meetings will be held with registered IAPs at suitable venues and on appropriate dates, depending on the feedback received during the consultation process.
- An IAP register will be compiled and regular and ongoing follow-up sessions will be held with the IAPs to monitor those issues raised during the IAP process and that are deemed to be affected by the prospecting operation.
- All documents will be sent to all registered IAPs and other documentation (Scoping, EMP and EMPR) will be made available in public libraries.
- Records will be kept of the complaints and the mitigation measures implemented.

**3. Description of the information to be provided to Interested and Affected Parties:**

(Information to be provided must include the initial site plan and sufficient detail of the intended operation and the typical impacts of each activity, to enable them to assess what impact the activities will have on them or on the use of their land.)

The following information will be provided to IAPs:

- The site plan;
- List of activities to be authorised;
- Scale and extent of activities to be authorised;
- Typical impacts of activities to be authorised;
- The duration of the activity.

The following information will be requested from the IAPs:

- To provide information on how they consider that the proposed activities will impact on them or their socio-economic conditions;
- To provide written responses stating their suggestions to mitigate the anticipated impacts of each activity;
- To provide information on current land uses and their location within the area under consideration;
- To provide information on the location of environmental features on site to make proposals as to how and to what standard the impacts on site can be remedied. They will be requested to make written proposals;
- To mitigate the potential impacts on their socio economic conditions to make proposals as to how the potential impacts on their infrastructure can be managed, avoided or remedied).

**(vii) Description of the tasks that will be undertaken during the environmental impact assessment process:****Determining environmental attributes**

The receiving environment will be determined using a combination of on-site observations, spatial information, project description, site layout and previous studies currently available to the EAP. Based on the EAPs knowledge and experience, the receiving environment will include geological features, topography, land use, archaeological and historical sites, surface water, groundwater, terrestrial ecology, air quality, noise, etc.

### Identification of impacts and risks

The identification of potential impacts of the prospecting activity will be based on the legal requirements; the nature of the proposed activity; the nature of the receiving environment; and issues raised during the public participation process.

Considering the factors listed above and based on the EAPs knowledge and experience, environmental impacts that could potentially result from the prospecting activities include impacts on air quality, noise, fauna, flora, ground water, surface water, terrestrial ecology, heritage resources, socio-economy, visuals, stormwater and erosion.

### Consideration of alternatives

The consideration of alternatives is a critical component of the EIA process, where an appropriate range of alternatives require consideration whilst achieving the desired objective of the prospecting project. In order to ensure that the proposed project enables sustainable prospecting, a number of feasible options will be explored. The various alternatives in terms of land use, project infrastructure, prospecting method and proceeding without the prospecting operation will be assessed in terms of logistical practicality, environmental acceptability and economic feasibility.

Alternatives for the locality of the prospecting operation will however not form part of this consideration, as the location of the prospecting site is determined by the possible geological location of the mineral resource.

### Process to assess and rank impacts

Before any assessment can be made the following evaluation criteria need to be described

**Table 4: Explanation of PROBABILITY of impact occurrence**

Weight	Probability of Impact Occurrence	Explanation of Probability
1	Very Low	<20% sure of particular fact or likelihood of impact occurring
2	Low	20 – 39% sure of particular fact or likelihood of impact occurring
3	Moderate	40 – 59% sure of particular fact or likelihood of impact occurring
4	High	60 – 79% sure of particular fact or likelihood of impact occurring
5	Very High	80 – 99% sure of particular fact or likelihood of impact occurring
6	Definite	100% sure of particular fact or likelihood of impact occurring

**Table 5: Explanation of EXTENT of impact**

Weight	Extent of Impact	Explanation of Extent
1	Site Specific	Direct and Indirect impacts limited to site of impact only
2	Surrounding Area	Direct and Indirect impacts affecting environmental elements within 2 km of site
3	Local Municipality	Direct and Indirect impacts affecting environmental elements within the Kgatelopele Local Municipality area

4	Regional/District	Direct and Indirect impacts affecting environmental elements within District (ZF Mgcawu District Municipality)
5	Provincial	Direct and Indirect impacts affecting environmental elements in the Northern Cape Province

**Table 6: Explanation of DURATION of impact**

Weight	Duration of Impact	Explanation of Duration
1	Very Short	Less than 1 year
2	Short	1 to 5 years
3	Medium	6 to 15 years
4	Long term (Life of project)	16 to 50 years
5	Very Long term	Longer than 50 years
6	Permanent	Permanent

**Table 7: Explanation of SEVERITY of the impact**

Weight	Impact Severity	Explanation of Severity
1	No Impact	There will be no impact at all – not even a very low impact on the system or any of its parts.
2	Very Low	Impact would be negligible. In the cast of negative impacts, almost no mitigation and/or remedial activity would be needed, and any minor steps which might be needed would be easy, cheap and simple. In the case of positive impacts alternative means would almost all likely to be better, if one or a number of ways, then this means of achieving the benefit.
3	Low	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and/or remedial activity would be either easily achieved or little would be required or both. In the case of positive impacts alternative means for achieving this benefit would be easier, cheaper, more effective, less time-consuming, or some combination of these.
4	Moderately Severe	Impact would be real but not substantial within the bounds of those which could occur. In the case of negative impacts, mitigation and/or remedial activity would be both feasible and fairly easily possible. In the case of positive impacts other means other means of covering these benefits would be about equal in cost and effort.
5	High Severance	Impacts of substantial order. In the case of negative impacts, mitigation and/or remedial activity would be feasible but difficult, expensive, time consuming or some combination of these. In the case of positive impacts other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
6	Very High Severity	Of the highest order possible within the bounds of impacts which could occur, in the case of negative impacts, there would be no possible mitigation and/or remedial activity to offset the impact at the spatial or time scale for which was predicted. In the case of positive impacts there is no real alternative to achieving the benefit.

### **Methodology used in determining and ranking the nature, severity, consequences, extent, duration and probability of potential environmental impacts and risks**

The criteria used to assess the significance of the impacts are shown in the table below. The limits were defined in relation to prospecting characteristics. Those for probability, intensity/severity and significance are subjective, based on rule-of-thumb and experience. Natural and existing mitigation measures were considered. These natural mitigation measures were defined as natural

conditions, conditions inherent in the project design and existing management measures, which alleviate impacts. The significance of the impacts was calculated by using the following formula:

$(\text{Severity} + \text{Extent} + \text{Duration}) \times \text{Probability weighting}$

For the impact assessment, the different project activities and associated infrastructure were identified and considered in order to identify and analyse the various possible impacts.

**Table 8**

SIGNIFICANCE				
Colour Code	Significance rating	Rating	Negative Impact	Positive Impact
	Very low	3 -16	Acceptable/Not serious	Marginally Positive
	Low	17 - 22	Acceptable/Not serious	Marginally Positive
	Medium-Low	23 -33	Acceptable/Not desirable	Moderately Positive
	Medium	34 - 48	Generally undesirable	Beneficial
	Medium-High	49 - 56	Generally unacceptable	Important
	High	57 - 70	Not Acceptable	Important
	Very High	90 - 102	Totally unacceptable	Critically Important

**Significance of impacts is defined as follows:**

**Very Low** - Impact would be negligible. Almost no mitigation and/or remedial activity would be needed, and any minor steps which might be needed would be easy, cheap and simple.

**Low** - Impact would have little real effect. Mitigation and/or remedial activity would be either easily achieved or little would be required or both.

**Medium Low-** Impact would be real but not substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be both feasible and fairly easily possible.

**Medium** - Impact would be real but not substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be feasible and possible.

**Medium High-** Impact would be real but could be substantial within the bounds of those which could occur. Mitigation and/or remedial activity would be both feasible and possible but may be difficult and or costly.

**High** - Impacts of substantial order. Mitigation and/or remedial activity would be feasible but difficult, expensive, time consuming or some combination of these.

**Very High** - Of the highest order possible within the bounds of impacts which could occur. There would be no possible mitigation and/or remedial activity to offset the impact at the spatial or time scale for which was predicted.

**(viii) Measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored:**

<b>ACTIVITY</b> Whether listed or not listed (e.g. excavations, blasting, stockpiles, discard dumps or dams, loading, hauling and transport, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc...)	<b>POTENTIAL IMPACT</b> (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc...)	<b>MITIGATION TYPE</b> modify, remedy, control or stop (e.g. noise control measures, stormwater control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc...) (e.g. modify through alternative method. Control through management and monitoring through rehabilitation.)	<b>POTENTIAL FOR RESIDUAL RISK</b>
Ablution facilities Chemical toilets	<ul style="list-style-type: none"> <li>• Soil contamination</li> <li>• Groundwater contamination</li> <li>• Odours</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance of chemical toilets on regular basis.</li> <li>• Removal of containers upon closure.</li> </ul>	Very low
Clean & Dirty water system	<ul style="list-style-type: none"> <li>• Surface disturbance</li> <li>• Groundwater contamination</li> <li>• Soil contamination</li> <li>• Surface water contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance of berms and trenches.</li> <li>• Oil traps used in relevant areas.</li> <li>• Drip trays used.</li> <li>• Immediately clean hydrocarbon spill.</li> </ul>	Low
Diesel tanks	<ul style="list-style-type: none"> <li>• Groundwater contamination</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Soil contamination</li> <li>• Surface disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance of diesel tanks and bund walls.</li> <li>• Oil traps.</li> <li>• Groundwater quality monitoring.</li> <li>• Drip tray at re-fuelling point.</li> <li>• Immediately clean hydrocarbon spill.</li> </ul>	Medium
Opencast Alluvial Diamond bulk sampling and Prospecting	<ul style="list-style-type: none"> <li>• Dust</li> <li>• Possible Groundwater contamination</li> <li>• Noise</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Soil contamination</li> <li>• Surface disturbance</li> <li>• Surface water contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Access control</li> <li>• Dust control and monitoring</li> <li>• Groundwater quality monitoring</li> <li>• Noise control and monitoring</li> <li>• Continuous rehabilitation</li> <li>• Stormwater run-off control</li> <li>• Immediately clean hydrocarbon spill</li> <li>• Drip trays</li> </ul>	Medium-High



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		<ul style="list-style-type: none"> <li>• Erosion control</li> </ul>	
Generators	<ul style="list-style-type: none"> <li>• Groundwater contamination</li> <li>• Noise</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Soil contamination</li> <li>• Surface disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Access control</li> <li>• Maintenance of generator and bund walls</li> <li>• Noise control and monitoring</li> <li>• Oil traps</li> <li>• Groundwater quality monitoring</li> <li>• Immediately clean hydrocarbon spill</li> </ul>	Medium
Office – Pre-fabricated office blocks on concrete	<ul style="list-style-type: none"> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Soil contamination</li> <li>• Surface disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Immediately clean hydrocarbon spill</li> <li>• Rip disturbed areas to allow re-growth of vegetation cover</li> </ul>	Very low
Parking bay	<ul style="list-style-type: none"> <li>• Dust</li> <li>• Groundwater contamination</li> <li>• Noise</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Surface disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Dust control and monitoring</li> <li>• Noise control and monitoring</li> <li>• Drip trays</li> <li>• Stormwater run-off control.</li> <li>• Immediately clean hydrocarbon spills</li> <li>• Rip disturbed areas to allow re-growth of vegetation cover</li> </ul>	Low
Processing plant	<ul style="list-style-type: none"> <li>• Dust</li> <li>• Noise</li> <li>• Groundwater contamination</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Soil contamination</li> <li>• Surface disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Access control</li> <li>• Maintenance of processing plant</li> <li>• Dust control and monitoring</li> <li>• Groundwater quality and level monitoring</li> <li>• Noise control and monitoring</li> <li>• Drip trays</li> <li>• Stormwater run-off control.</li> <li>• Immediately clean hydrocarbon spills</li> <li>• Rip disturbed areas to allow re-growth of vegetation cover</li> </ul>	Medium
Water distribution Pipeline	<ul style="list-style-type: none"> <li>• Surface disturbance</li> <li>• Possible Groundwater contamination</li> <li>• Soil contamination</li> <li>• Surface water contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance of pipes.</li> </ul>	Low

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Roads	<ul style="list-style-type: none"> <li>• Dust</li> <li>• Possible Groundwater contamination</li> <li>• Noise</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Surface disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance of roads</li> <li>• Dust control and monitoring</li> <li>• Noise control and monitoring</li> <li>• Speed limits</li> <li>• Stormwater run-off control.</li> <li>• Erosion control</li> <li>• Immediately clean hydrocarbon spills</li> <li>• Rip disturbed areas to allow re-growth of vegetation cover</li> </ul>	Low
Salvage yard	<ul style="list-style-type: none"> <li>• Possible Groundwater contamination</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Soil contamination</li> <li>• Surface disturbance</li> <li>• Surface water contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Access control</li> <li>• Maintenance of fence.</li> <li>• Stormwater run-off control</li> <li>• Immediately clean hydrocarbon spill</li> </ul>	Low
Stockpile area	<ul style="list-style-type: none"> <li>• Dust</li> <li>• Possible Groundwater contamination</li> <li>• Noise</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Surface disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Dust control and monitoring</li> <li>• Noise control and monitoring</li> <li>• Drip trays</li> <li>• Stormwater run-off control.</li> <li>• Immediately clean hydrocarbon spills</li> <li>• Rip disturbed areas to allow re-growth of vegetation cover</li> </ul>	Low
Topsoil storage area	<ul style="list-style-type: none"> <li>• Dust</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Soil disturbance</li> <li>• Surface disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Dust control and monitoring</li> <li>• Stormwater run-off control.</li> <li>• Continuous rehabilitation</li> <li>• Rip disturbed areas to allow re-growth of vegetation cover</li> <li>• Backfilling of topsoil during rehabilitation</li> </ul>	Low
Waste disposal site	<ul style="list-style-type: none"> <li>• Groundwater contamination</li> <li>• Surface water contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Storage of waste within receptacles</li> <li>• Storage of hazardous waste on concrete floor with bund wall</li> <li>• Removal of waste on regular intervals.</li> </ul>	Low

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Mine Residue Deposit – Slimes	<ul style="list-style-type: none"> <li>• Dust</li> <li>• Possible Groundwater contamination</li> <li>• Noise</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Surface disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Dust control and monitoring</li> <li>• Groundwater quality monitoring</li> <li>• Noise control and monitoring</li> <li>• Stormwater run-off control.</li> <li>• Rip disturbed areas to allow re-growth of vegetation cover</li> </ul>	Low
Washbay	<ul style="list-style-type: none"> <li>• Possible Groundwater contamination</li> <li>• Removal and disturbance of vegetation cover and natural habitat of fauna</li> <li>• Soil contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Groundwater quality and level monitoring</li> <li>• Concrete floor with oil/water separator</li> <li>• Stormwater run-off control</li> <li>• Immediately clean hydrocarbon spills</li> </ul>	Low
Water tank: It is anticipated that the operation will establish 1 x 10 000 litre water tanks with purifiers for potable water.	<ul style="list-style-type: none"> <li>• Water and usage</li> <li>• Surface disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor water quality and quantity</li> <li>• Maintenance of tanks (check for leaks).</li> </ul>	Low

**(ix) Other information required by the Competent Authority:****1. Compliance with the provisions of Sections 24(4)(a) and (b) read with Section 24(3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998), the EIA report must include the:-****a. Impact on the socio-economic conditions of any directly affected person:**

(Provide the results of investigation, assessment and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as Appendix '7' and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein.)

The socio-economic conditions of the local community could be affected in two ways:

- Negative impacts to the welfare of the residents and workers through general nuisance, dust generation, damages to properties and any associated potential safety risks.
- Positive impacts through job creation and local business opportunities.
- The consultation with interested and affected parties is on-going and any issues, concerns or comments will be considered and included in the EIA report and control measures will be presented in the EMP report.

**b. Impact on any national estate referred to in Section 3(2) of the National Heritage Resources Act:**

(Provide the results of investigation, assessment and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in Section 3(2) of the National Heritage Resources Act, 1999 (Act 25 of 1999) with the exception of the national estate contemplated in Section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as Appendix '8' and confirm that the applicable mitigation is reflected in 2.5.3, 2.11.6 and 2.12 herein.)

No evidence could as yet be found of any such sites and/or objects on the site itself. The necessary specialist studies will be done and included into the EIA EMP documents.

Should any heritage features and/or objects be located or observed, a heritage specialist will be contacted immediately. Observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that a heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This is true for graves and cemeteries as well.

**(x) Other matters required in terms of Sections 24(4)(a) and (b) of the Act:**

(The EAP managing the application must provide the Competent Authority with details, written proof of an investigation as required by Section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as Appendix '9'.)

As mentioned before, the specific possible occurrence of diamonds in the area dictates the selection of the specific prospecting site and there are no alternatives in terms of project location.

The prospecting operation will provide ±10 jobs and will also add to the increased economic activity and the area surrounding the farm.

Negative impacts on the area are expected to be temporary and can be mitigated to a large extent if the recommendations of the EMPR area adhered to e.g. rehabilitation.

**(xi) Undertaking regarding correctness of information:**

I, RH Oosthuizen, ID number 7004180037082, herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected Parties has been correctly recorded in the report.



Signature of EAP

Date: 20 February 2020

**(xii) Undertaking regarding level of agreement:**

I, RH Oosthuizen, ID number 7004180037082, herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with Interested and Affected Parties and stakeholders has been correctly recorded and reported herein.



Signature of EAP

Date: 20 February 2020

- END -

**APPENDIX 1**

DIE UNIVERSITEIT  
VAN DIE ORANJE-  
VRYSTAAT



THE UNIVERSITY  
OF THE ORANGE  
FREE STATE

HIERMEE WORD VERKLAAR DAT DIE GRAAD THIS IS TO CERTIFY THAT THE DEGREE

**Magister in Omgewingsbestuur  
Master in Environmental Management**

TOEGEKEN IS AAN  
HAS BEEN CONFERRED UPON

**ROELINA HENRIËTTE OOSTHUIZEN**

NADAT AAN DIE STATUTE EN REGULASIES VAN IN ACCORDANCE WITH THE STATUTES AND  
DIE UNIVERSITEIT VOLDOEN IS. AS BEWYS REGULATIONS OF THE UNIVERSITY. AS  
DAARVAN PLAAS ONS ONS ONDERSKEIE WITNESS OUR RESPECTIVE SIGNA-  
HANDTEKENINGE EN DIE SEËL VAN DIE TURES AND THE SEAL OF THE  
UNIVERSITEIT HIERONDER. UNIVERSITY BELOW.



*A-J Boetse*

.....  
VISEKANSELIËR/VICE-CHANCELLOR

*G. N. van Wyk*

.....  
DEKAAN/DEAN

*[Signature]*

.....  
REGISTRATEUR/REGISTRAR

BLOEMFONTEIN  
2000-09-16

## APPENDIX 2

### CURRICULUM VITAE

**Roelina Henriette Oosthuizen**

**Cell: 084 208 9088**

**E-Mail: roosthuizen950@gmail.com**

#### 1. PERSONAL INFORMATION

Name: Roelina Henriette Oosthuizen

Surname: Oosthuizen (Maiden: Alberts)

Identity number: 7004180037082

Date of birth: 18 April 1970

Gender: Female

Marital status: Married (26 years) with 3 children

Driving license: Yes, Code EB

Languages: Fluent in Afrikaans and English

Nationality: South African

Criminal offences: None

Health: Excellent, fit

## 2. SYNOPSIS OF PROFESSIONAL CAREER

Roelina Henriette Oosthuizen has 22 years of experience in the environmental management field. She started her career in the area of Environmental Management and Environmental Impact Assessment (EIA) evaluation in 1997 at the Department of Minerals and Energy. After moving to industry in 2005, Roelien became involved in the practical aspects of environmental management. A major project during her early years outside of government was that of the EIA for a Game Reserve and Lodge development near Barkly-Wes, she did this project together with a consultancy firm from Kimberley AWS water solutions (Mr. Adriaan du Toit). In 2007 the Company she worked for was bought by a Canadian Group of Companies and she became more involved in practical aspects of the operations and worked closely with operations personnel in dealing with ongoing management of environmental impacts at the Mine (e.g. monitoring, auditing, operating procedures). She was also centrally involved in liaison with the authorities and with stakeholders in neighbouring areas.

During her time at the Canadian Group of Companies, Roelien was the environmental manager overseeing operations in the Barkly-West, Prieska and Douglas areas. She was responsible for preparing the environmental compliance documents for each operation which included Performance Assessments (Audit reports) and Financial Quantum submissions as well as new applications for Prospecting Rights and Mining Rights with the relevant Scoping, EIA / EMP documents. Her activities included liaison with stakeholders and also with the relevant Departments. During this time, Roelien became increasingly involved in environmental policy and strategy work, as well as the environmental aspects of corporate governance.

She has assisted a range of clients with Environmental Due Diligence audits and compliance audits. Roelien has also undertaken numerous environmental audits, particularly compliance and due diligence audits for clients in the mining industry. Thus, she is familiar with best practice standards in environmental auditing.

Roelien have also represented the South African Diamond Producers Organisation (SADPO) on the Environmental Policy Committee (EPC) at the Chamber of Mines between 2005 and 2011.

In a nutshell, Roelien has wide ranging experience and is thus well-positioned to assist clients in any matter related to sustainability and environmental management. This is achieved through her own skills base and on drawing on specialists.

## 3. QUALIFICATIONS

MEM (Master in Environmental Management) University of the Orange Free State (2000)  
B – Comm NWU (1991)



#### 4. TRAINING COURSES

Roelien have attended various mining and environmental conferences and seminars to stay abreast with the latest changes in legislation, legal compliance and policy positions in the sector.

<b>October 1997</b>	Mineral Laws Administration & Environmental Management (University of Pretoria)
<b>July 2002</b>	Project Management for Environmental Systems (University of the Orange Free State)
<b>August 2004</b>	Environmental and Sustainability in Mining Minerals and Energy Education and Training Institute (MEETI)
<b>September 2005</b>	Converting Old Order Rights to New Order Rights in Mining International Quality & Productivity Centre Johannesburg)
<b>November 2006</b>	Mine waste disposal and Achievement of Mine Closure
<b>February 2007</b>	Introduction to ArcGis 1
<b>April 2010</b>	Mining Law Update Conference (IIR BV South Africa)
<b>November 2010</b>	Social Labour Plans for Mining Workshop (Melrose Training)
<b>August 2011</b>	Mineral Resources Compliance and Reporting (ITC)
<b>May 2012</b>	Enviro Mining Conference 2012 (Sustainability and Rehabilitation) (Spectacular Training Conferences)
<b>August 2012</b>	Mineral Resources Compliance and Reporting 4th Annual (ITC)
<b>March 2013</b>	1st EnviroMining-Ensuring Environmental Compliance and reporting
<b>March 2014</b>	4th Annual EnviroMining Conference
<b>March 2015</b>	5th Annual EnviroMining Conference
<b>February 2018</b>	Seminar by the Department of Environmental Affairs on knowledge sharing workshops on the Screening Tool

#### 5. PROFESSIONAL REGISTRATION

Registered as a professional at IAIAAsa (International Association for Impact Assessment South Africa). IAIAAsa is a voluntary organisation and is not a statutory body regulating the profession. Its members are however expected to abide by the organisations code of ethics.

## 6. PROFESSIONAL EXPERIENCE

Projects are listed below by area of expertise.

### Environmental Management Systems (EMS) and Environmental Auditing

Development of EMS and Compilation of INCIDENT REPORT AND INVESTIGATION FORMS for the EMS of the Canadian group of Companies on various sites.

Undertaking of a range of due diligence and performance audits for operations, including those listed below:

Performance Assessment reports for a mining company with various infrastructure and mining operations near Barkly-West and Windsorton.

Performance Assessment reports for a mining company near Douglas.

Preparation of an environmental auditing checklist / protocol for a Community project with restitution ground in assisting the community to determine environmental legal compliance at their operations.

Environmental audit as part of a closure with Dr. Betsie Milne another specialist. This Annual Rehabilitation Plan has been developed to match the various requirements set out in the National Environmental Management Act (No 107 of 1998) (NEMA) Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations (as amended in 2015). This project had the objective of ensuring that this company are accounting for environmental liabilities and risks adequately. The plan distinguishes between (a) those environmental rehabilitation liabilities pertaining to drilling, for which the Company was legally responsible and (b) those environmental rehabilitation liabilities pertaining to historic mining activities, for which the Company is not legally responsible, but consider performing as part of their best practice environmental principals. Three costing scenarios were explored in order to evaluate the most feasible rehabilitation plan, i.e. (1) Total cost (worst-case scenario) including risks, (2) legally required cost and (3) features currently available that do not involve any risks.

### Sustainability projects: policies, guidelines, strategies and performance reporting

Involved in the compilation of 43-101 technical documents for listed companies which included information on sustainability and performance in rehabilitation and sustainable mining.

Alien species eradication project guideline and strategy near Barkly-Wes in terms of Regulations that have been promulgated in terms of the Conservation of Agricultural Resources Act, No. 43 of 1983 further make it unlawful to allow various species of weeds and invader plants to grow. The target species was Wild tobacco (declared weed), Pink Tamarisk (declared weed) and Mexican poppy, it also involved the community for job creation and training (2008).

Investigations for a Company near Prieska on Development of a biodiversity offsets policy for the applications for forestry tree licences for protected tree species.

Strategic Environmental Studies and Environmental Impact Assessment (EIA)

Undertaking of a Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2006 for a Private Individual which involved the proposed extension of a roof over an existing deck with two wood pillars by means of the excavating of 0.5m X 0.5m X 1m X 2 (½m<sup>2</sup>) OF SOIL WITHIN 100M OF THE HIGH WATER MARK OF THE SEA. A Positive Record of Decision (ROD) Granted (2010).

Undertaking of an ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) near Boshof for a kimberlite Diamond Mining Company (2015)

Undertaking of a strategic environmental review and amendment for a Chinese group of Companies near Postmasburg. The study provided baseline environmental information and a high-level review of the potential impacts of various components of the development (2014 – 2016). Roelien worked as a member (EAP) of a large team consisting of a project Coordinator, attorneys, water specialists, other specialist and an engineer.

Environmental Impact Assessments for various developments including the proposed mining project for the former retrenchees of De Beers in Kimberley. This project involved coordination of the process, liaison with the authorities and compilation as well as appointment of specialist with contributions of specialist reports to compile the EIA EMP report (2017). Roelien worked as a member (EAP) of a team consisting of De Beers (attorneys and environmentalists), the retrenchees, the appointed contractor, EKAPA, and specialist appointed for the studies.

Environmental Impact Assessments for a Salt operation near Upington. This project involved coordination of the process, liaison with the authorities and compilation as well as appointment of specialists with contributions of specialist reports to compile the EIA EMP report (2019). Roelien also worked as part of a team with the Company and another consultant that started with the Water Use Licence application. The public participation was done to include the water use activities.

Environmental Impact Assessment for a change in scope of a prospecting right application consisting of the sole and exclusive right to prospect for iron, silver, zinc, copper and sulphur ore. This project involved coordination of the process, liaison with the authorities and compilation as well as appointment of specialists with contributions of specialist reports to compile the EIA EMP report (2019). Roelien also worked as a member (EAP) of a team consisting of the directors of the company and specialists appointed for the studies

## 7. CAREER PATH

01 April 1997 to 28 February 2005

### **DEPT OF MINERALS & ENERGY**

Senior Environmentalist - Assistant Director Environment

#### MAIN JOB FUNCTIONS

- Collect analyse and interpret information regarding the measurement of impacts of mining operations on the environment, the

- rehabilitation of land surfaces.
- The prevention, control and combating of pollution.
- Co-ordinate and prioritise the rehabilitation of derelict and ownerless mines.
- Co-ordinate, investigate, audit and resolve environmental problems in conjunction with the Department of Water Affairs and Forestry, Department of Agriculture and the provincial Department of Tourism, Environment and Conservation.
- Address complaints and inquiries received from the public and mining industry.
- Consult with relevant authorities and interested and affected people regarding the approval of Environmental Management Programmes.
- Ensuring that rehabilitation standards are applied.
- Ensuring that the requirements stated in Environmental Management Programme Reports are adhered to.
- Conduct inspections and recommendations on mines that apply for closure.
- Evaluate mining licences and prospecting applications and recommend site-specific conditions according to legislative requirements.
- Constant liaison with the public, the mining industry and other government authorities on environmental matters, legislation and agreements.
- Influence new development processes through participation in the EMPR and EIA processes and give guidance through education and awareness programmes.
- Calculate and verify financial provision for outstanding rehabilitation.

#### **01 March 2005 – 30 September 2012**

Appointed as professional Mineral Law Administration and Environmental Manager for HC van Wyk Diamonds which was bought over in 2007 by a **Canadian group of Companies**.

#### **MAIN JOB FUNCTIONS**

Conducting of Environmental Impact Assessments (EIAs), including the implementation of public participation programmes, for a variety of projects.

Undertaking of environmental reviews, audits and management plans:

Formulation of an environmental policy and guidelines for the Group.

Participation in the development of the budget for environmental expenditure.

Co-ordination of technical studies (e.g. monitoring of groundwater quality).

Environmental compliance measurement and reporting with respect to environmental permit conditions (e.g. Forestry Licences and water sampling for Water Use Licences).

Development of environmental guidelines for contractors on sites.

Liaison with regulatory authorities on compliance with environmental legislation.

Documentation of environmental incidents.

Environmental awareness and training.

Development of a public participation strategy.

Formulation of a complaint's procedure.

#### **01 October 2012 to Present**

Appointed as professional Mineral Law Administration and Environmental Manager for **Mentor Trade and Investments Pty Ltd**

#### **MAIN JOB FUNCTIONS**

Conducting of Environmental Impact Assessments (EIAs), including the implementation of public participation programmes, for a variety of projects.  
Undertaking of environmental reviews, audits and management plans.  
Formulation of an environmental policy and guidelines for the Mine.  
Co-ordination of technical studies (e.g. monitoring of groundwater quality) as well as updating of the Mine's IWWMP.  
Environmental compliance measurement and reporting with respect to environmental permit conditions (e.g. as water sampling and effluent).  
Development of environmental guidelines for contractors.  
Liaison with regulatory authorities on compliance with environmental legislation.  
Documentation of environmental incidents.  
Environmental awareness and training.  
Development of a public participation strategy.  
Formulation of a complaint's procedure.

**01 October 2012 to Present part time**

*Appointed as EAP on some projects for **Wadala Mining and Consulting Pty Ltd***

*Conducting of Environmental Impact Assessments (EIAs), including the implementation of public participation programmes, for a variety of projects.  
Undertaking of environmental reviews, audits and management plans.  
Liaison with regulatory authorities on compliance with environmental legislation.  
Environmental awareness and training.*