



mineral resources

Department:

Mineral Resources

REPUBLIC OF SOUTH AFRICA

SCOPING REPORT

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

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: BOKAMOSO EXPLORATION (PTY) LTD

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FILE REFERENCE NUMBER SAMRAD: (NC) 30/5/1/1/2/12563 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
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E-mail address:	roosthuizen950@gmail.com
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ii) Appointed by:

BOKAMOSO EXPLORATION (PTY) LTD

iii) Expertise of the EAP

(b) The qualifications of the EAP

Registered Environmental Assessment Practitioner Number 2019/1467 at the Environmental Assessment Practitioners Association of South Africa (EAPASA).
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

Farm Name:	PORTION 6 (EMIL – A PORTION OF PORTION 3 (ONVERWAG)) OF THE FARM ELANDS DRIFT 159, BARKLY-WES REMAINING EXTENT OF PORTION 1 OF THE FARM SLANGHEUVEL 160, BARKLY-WES NORTHERN CAPE PROVINCE, REPUBLIC OF SOUTH AFRICA.
Application area (Ha)	1079.1889ha (One thousand and seventy-nine comma one eight eight nine) hectares in extent
Magisterial district:	Barkly West, Northern Cape Province
Distance and direction from nearest town	The property is located approximately 60km North of Kimberley between the towns of Barkly-Wes and Windsorton on the R374, Northern Cape Province
21 digit Surveyor General Code for each farm portion	C00700000000015900006 C00700000000016000001

c) Locality map

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

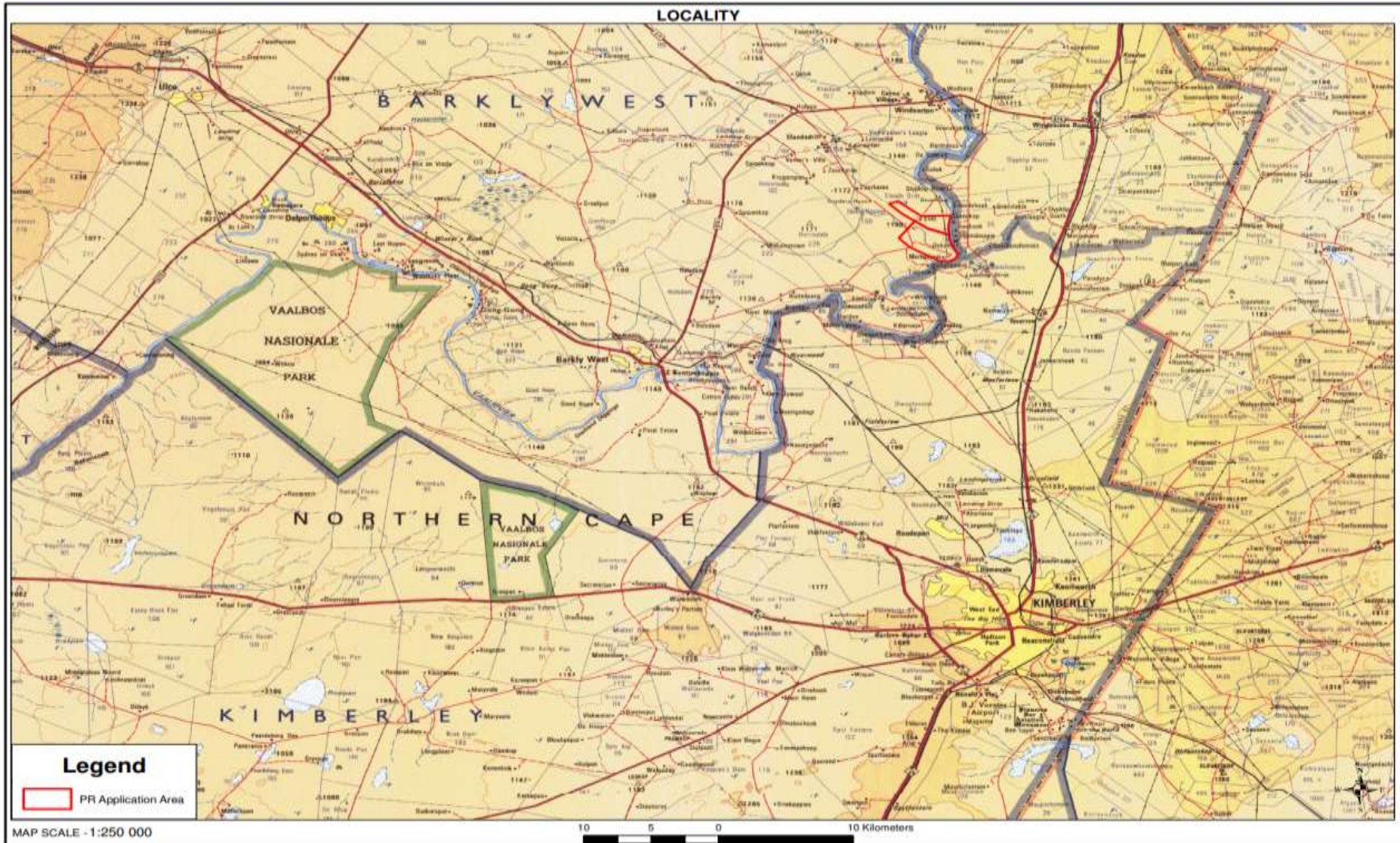


Figure 1. 1:250 000 topocadastral map indicating the application area in RED.

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)

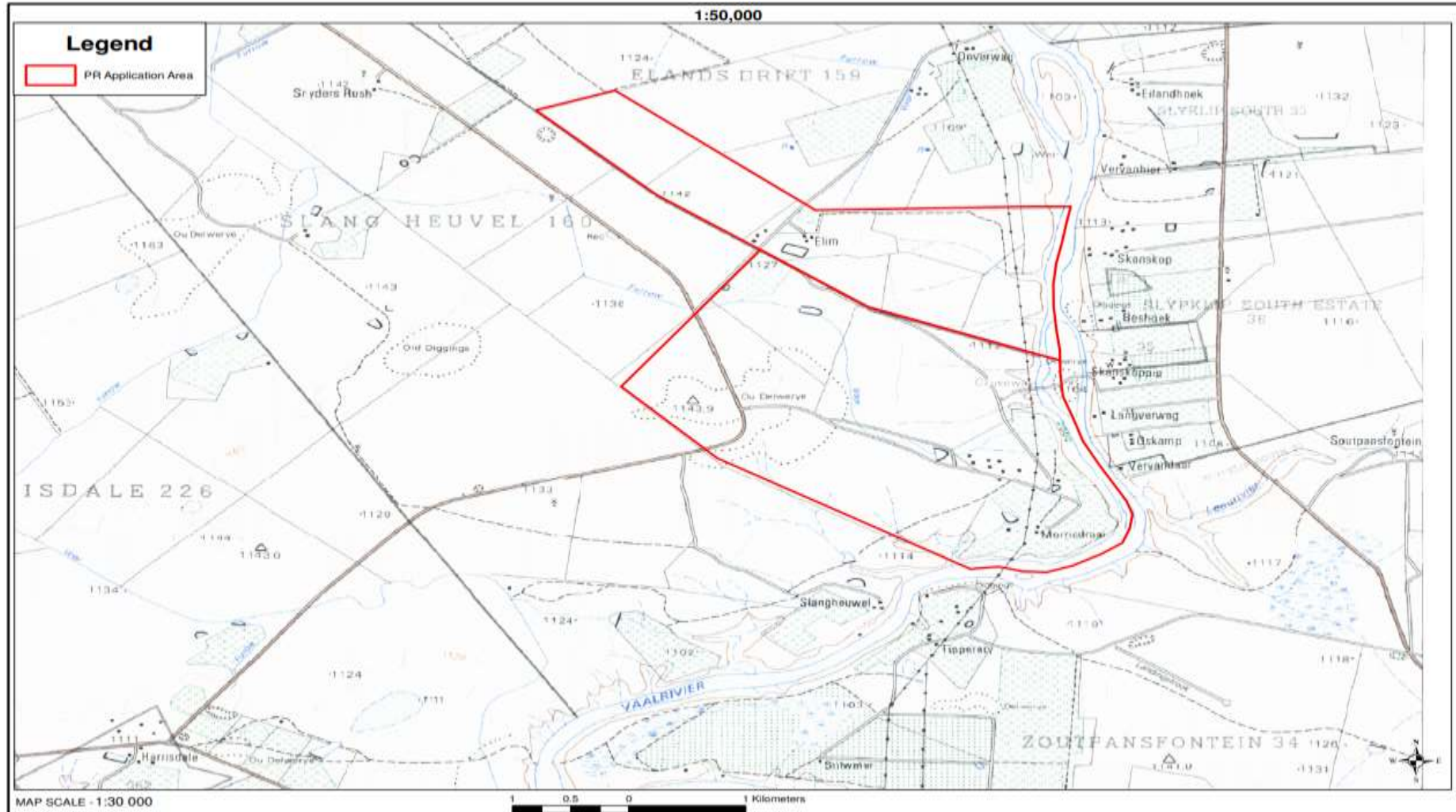


Figure 2. Location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site).

Table 1. Listed and Specified Activities

Name of activity (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.)	Aerial extent of the activity (Ha or m ²)	Listed Activity (mark with an X where applicable or affected)	Applicable Listing Notice (GNR544, GNR545 or GNR546 / Not listed GNR983, GNR984, GNR985/ Not listed)
Activity 9: "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)
Activity 12: "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 (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse" Regulation GN R704, published on 4 June 1999 in terms of the National Water Act (Use of water for mining and related activities)	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)
Activity 13: "The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014"	Clean water dam or return water dam	X	NEMA: LN1 (GNR327)
Activity 14: "The development and related operation of facilities or infrastructure, for the storage and handling, of dangerous good, where	2 X 23 000l diesel tanks = 46 000l with capacity for storing of old oils and new oils to be calculated	X	NEMA: LN1(GNR327)

such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.			
<p>Activity 20: Any activity including the operation 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; or</p> <p>(b) the primary processing of a mineral resource including winning, extraction, classifying, crushing, screening or washing;</p> <p>But excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing notice 2 applies.</p> <p>The Bokamoso operation directly relates to prospecting of a mineral resource (diamonds) and requires a prospecting right.</p>	<p>1079.1889ha Although the total area will never be prospected and the footprint with the drilling and bulk sampling is calculated to be ±60ha.</p> <p>Invasive Prospecting Pits</p> <p>20 Trenches will be excavated with the following dimensions 100m X 200m = 40 ha pits that prove to contain gravels (tested positive). It is estimated that on average 3m of overburden (calcrete and soil) will be removed before accessing the gravel layer (average width 2m) which is host to the diamonds. The 5X bulk samples will be 200m X 200m (20 ha) X 0.5 – 5m deep.</p>	X	NEMA: LN1 (GNR327)
<p>Activity 24: The development of a road-</p> <p>(ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 meters;</p>	Access and haul roads	X	NEMA: LN1 (GNR 327)
<p>Activity 15: The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for-</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p>	±60 ha	X	NEMA: LN2 (GNR325)

<p>Activity 19: The removal and disposal of minerals contemplated in terms of section 20 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; or</p> <p>The primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing.</p> <p>The Bokamoso 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.</p>	1079.1889ha. Although the total area will never be prospected and the footprint with the bulk sampling is calculated to be ± 60 ha.	X	NEMA: LN2 (GNR325)
<p>Activity 15: The establishment of residue deposits resulting from activities which require a prospecting right.</p>	0.3ha		NEMWA: Category A (GNR 633)
<p>Office complexes</p> <p>Temporary workshop facilities</p> <p>Storage facilities</p> <p>Concrete bund walls and diesel depots</p> <p>Ablution facilities</p> <p>Topsoil stockpiles</p> <p>Overburden stockpiles</p> <p>Water tanks</p>	<p>± 200 m²</p> <p>± 300 m²</p> <p>± 2 000 m²</p> <p>± 250 m²</p> <p>± 30 m²</p> <p>± 500 m²</p> <p>5 000 m²</p> <p>3m x 3m = 9m² each</p>		Not Listed
<p>Waste disposal site (domestic and industrial waste):</p> <p>It is anticipated that 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:</p> <ul style="list-style-type: none"> • Small amounts of low level hazardous waste in suitable receptacles. • Domestic waste. • Industrial waste. 	15m x 30m = 450m ²		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)

PHASE 1**Invasive Boreholes**

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 6 -10 metres deep depending on local depth to bedrock. This will specifically be done on the existing terrace features on the application area. The applicant is not interested in the river bed or any lower terraces and drilling will specifically be targeted to the higher terraces.

A proposed drilling programme of 150 reverse circulation boreholes will be used to further define the gravel body. The drilling programme will determine the exact outline, shape and size of the gravel body. The reverse circulation is generally done dry but water is used when large clay bodies are encountered. The samples are passed through a cyclone and collected within one metre plastic bags. These sample bags are placed in groups of 10 to represent ten metres. The holes drilled can vary from 6m to 10 m depth; this entirely dependent on bedrock morphology.

PHASE 2**Invasive Prospecting Pits/Trenches**

Invasive Prospecting Pits will be positioned in the region of the indicated brown blocks but positioning will also depend on the non-invasive phases. The farms have one terrace that will be trenched to test for gravels as indicated on the images listed below on 2824 1:50 000 topographical maps.

PHASE 3**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.

Bulk Sampling

Bulk Sampling Activities

ACTIVITY		DETAILS		
Number of pits/trenches planned		20 trenches and 5 bulk samples		
	Number of pits/trenches	Length	Breadth	Depth
	20	150m	100m	0.5-7m
	5	One bulk sample will entail 52500 excavated of which 31500 will be screened out and will never reach the processing plant. For a reserve determination we need at least 1000 000 m ³		
Locality		Locality of bulk samples is dependant on previous phases.		
Volume Overburden (Waste)		600 000 TRENCHING AND 262500 BULK SAMPLES		
Volume Ore		300 000 TRENCHING AND 157 500 BULK SAMPLES		
Density Overburden		1.6		
Density Ore		1.78		
Phase(s) when bulk sampling will be required		Phase 1		
Timeframe(s)		From time-to-time during Months 19 to 50		

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"> - Section 5: Implementation of control measures for alien and invasive plant species; - Section 6: Control measures. - Regulation GN R1048, published on 25 May 1984, in terms of CARA 	<ul style="list-style-type: none"> - 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"> - Section 24: Environmental right - Section 25: Rights in Property - Section 27: Water and sanitation right 	<ul style="list-style-type: none"> - 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"> - Sections 21, 22, 25, 26 and 28: EIA Regulations, including listed activities that still relate to the existing section of ECA. - Section 28A: Exemptions. 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.
Fencing Act (Act 31 of 1963)	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.

	conjunction with the environmental legal provisions relevant to protection of flora.	
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/ 12563 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)	- Control measures are to be implemented upon the approval of the EMPR.

	<ul style="list-style-type: none"> - 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) - Regulations GN R1147, published on 20 November 2015 in terms of NEMA (Financial Provision) 	
National Environmental Management: Air Quality Act (Act 39 of 2004)	<ul style="list-style-type: none"> - Section 32: Control of dust - Section 34: Control of noise - Section 35: Control of offensive odours - 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) - Regulation GN R283, published on 2 April 2015 in terms of NEM:AQA (National Atmospheric Emissions Reporting Regulations) (Group C-Mines) 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR. - This is also legislated by Mine Health and Safety from DMR and is to be adhered to.
National Environmental Management: Biodiversity Act (Act 10 of 2004)	<ul style="list-style-type: none"> - 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. - Section 53 states that the Minister may identify any process or activity in such a listed ecosystem as a threatening process. - 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. <p>Commencement of Threatened or Protected Species Regulations 2007 : 1 June 2007</p>	<ul style="list-style-type: none"> - 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.

	<p>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> <p>Threatened or Protected Species Regulations GNR 152/GG 296547/23-02-2007 *</p> <ul style="list-style-type: none"> - 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. - Sections 71 and 73: These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species. - Regulation GN R151, published on 23 February 2007 (List fo Critically Endangered, Vulnerable and Protected Species, 2007) in terms of NEM: BA - Regulation GN R152, published on 23 February 2007 (TOPS) in terms of NEM:BA - Regulations GN R507 to 509 of 2013 and GN 599 of 2014 in terms of NEM:BA (Alien Species) 	
<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"> - Chapter 2 lists all protected areas. 	<ul style="list-style-type: none"> - This will be established with a specialist study. It is not anticipated that the prospecting operation fall within any protected area which is known.
<p>National Environmental Management: Waste Management Act (Act 59 of 2008)</p>	<ul style="list-style-type: none"> - Chapter 4: Waste management activities - Regulations GN R634 published on 23 August 2013 in terms of NEM:WA (Waste Classification and Management Regulations) 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.

	<ul style="list-style-type: none"> - Regulations GN R921 published on 29 November 2013 in terms of NEM:WA (Categories A to C – Listed activities) - 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) - Regulations GN R634 published on 23 August 2013 in terms of NEM: WA (Waste Classification and Management Regulations) - Regulations GN R632 published on 24 July 2015 in terms of NEM: WA (Planning and Management of Mineral Residue Deposits and Mineral Residue Stockpiles) - Regulations GN R633 published on 24 July 2015 in terms of NEM: WA (Amendments to the waste management activities list published under GN921) 	
National Forest Act (Act 84 of 1998) and Regulations	<ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> - A permit application regarding protected tree species need to be lodged with DAFF if necessary. - Control measures are to be implemented upon the approval of the EMPR.
National Heritage Resources Act (Act 25 of 1999) and Regulations	<ul style="list-style-type: none"> - 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. - 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. - Section 36: No person may, without a permit issued by SAHRA or a provincial heritage resources 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR. Fossil finds procedure will be attached to the PIA.

	<p>authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any 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"> - 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. - Regulation GN R548 published on 2 June 2000 in terms of NHRA 	
<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"> - Section 4: Use of water and licensing. - Section 19: Prevention and remedying the effects of pollution. - Section 20: Control of emergency incidents. - Section 21: Water uses In terms of Section 21 a licence is required for: <ul style="list-style-type: none"> (a) taking water from a water resource; (b) storing water; (c) impeding or diverting the flow of water in a watercourse; (f) Waste discharge related water use; (g) disposing of waste in a manner which may detrimentally impact on a water resource; (i) altering the bed, banks, course or characteristics of a watercourse; (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; 	<ul style="list-style-type: none"> - A water use application must be submitted and will be submitted as soon as the EIA EMP had been finalized. - Control measures are to be implemented upon the approval of the EMPR.

	<ul style="list-style-type: none"> - Regulation GN R704, published on 4 June 1999 in terms of the National Water Act (Use of water for mining and related activities) - Regulation GN R1352, published on 12 November 1999 in terms of the National Water Act (Water use to be registered) - Regulation GN R139, published on 24 February 2012 in terms of the National Water Act (Safety of Dams) - Regulation GN R398, published on 26 March 2004 in terms of the National Water Act (Section 21 (j)) - Regulation GN R399, published on 26 March 2004 in terms of the National Water Act (Section 21 (a) and (b)) - Regulation GN R1198, published on 18 December 2009 in terms of the National Water Act (Section 21 (c) and (i) – rehabilitation of wetlands) - Regulations GN R1199, published on 18 December 2009 in terms of the National Water Act (Section 21 (c) and (i)) - 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)) 	
Nature Conservation Ordinance (Ord 19 of 1974)	<ul style="list-style-type: none"> - Chapters 2, 3, 4 and 6: Nature reserves, miscellaneous conservation measures, protection of wild animals other than fish, protection of Flora. 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.
Occupational Health and Safety Act (Act 85 of 1993) and Regulations	<ul style="list-style-type: none"> - Section 8: General duties of employers to their employees. - Section 9: General duties of employers and self-employed persons to persons other than their employees. 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.
Road Traffic Act (Act 93 of 1997) and Regulations	<ul style="list-style-type: none"> - Entire Act. 	<ul style="list-style-type: none"> - 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.
Spatial Planning and Land Use Management (Act 16 of 2013 (SPLUMA) and regulations	- To provide a framework for spatial planning and land use management in the Republic; - To specify the relationship between the spatial planning and the land use management, amongst others - Regulations GN R239 published on 23 March 2015 in terms of SPLUMA	- 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 (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

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).

The Bokamoso Exploration Project is in line with the ‘Beneficiation Strategy for the Minerals Industry of South Africa’ (DMR, 2011) in terms of aiming to beneficiate diamonds for sale/export. The benefits of this will fall directly to the Northern Cape Province and, specifically, the Dikgatlong District.

In addition, the South African National Development Plan aims to eliminate poverty and reduce inequality by 2030. South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society. The Bokamoso Exploration Project will contribute to achieving this plan in terms of direct and indirect employment of people from the local and district municipalities as well as investment in the region and on a national scale.

Need

Analysis of the Diamond Industry – ALROSA(website)

The Information on the analysis of the diamond industry was obtained from the ALROSA website which is one of the biggest diamond producers in the world.

The world diamond market is represented by diamond mining and trade in rough diamonds. The bulk of the world diamond mining is concentrated in nine countries, with their share in the global production in physical terms as high as 99%.

The world’s largest producers of natural diamonds are Russia, the Democratic Republic of Congo (DRC) and Botswana, all together accounting over 60% of the global diamond production.

Top Countries in the Global Diamond Production 2016: 134.1 mln. Carats

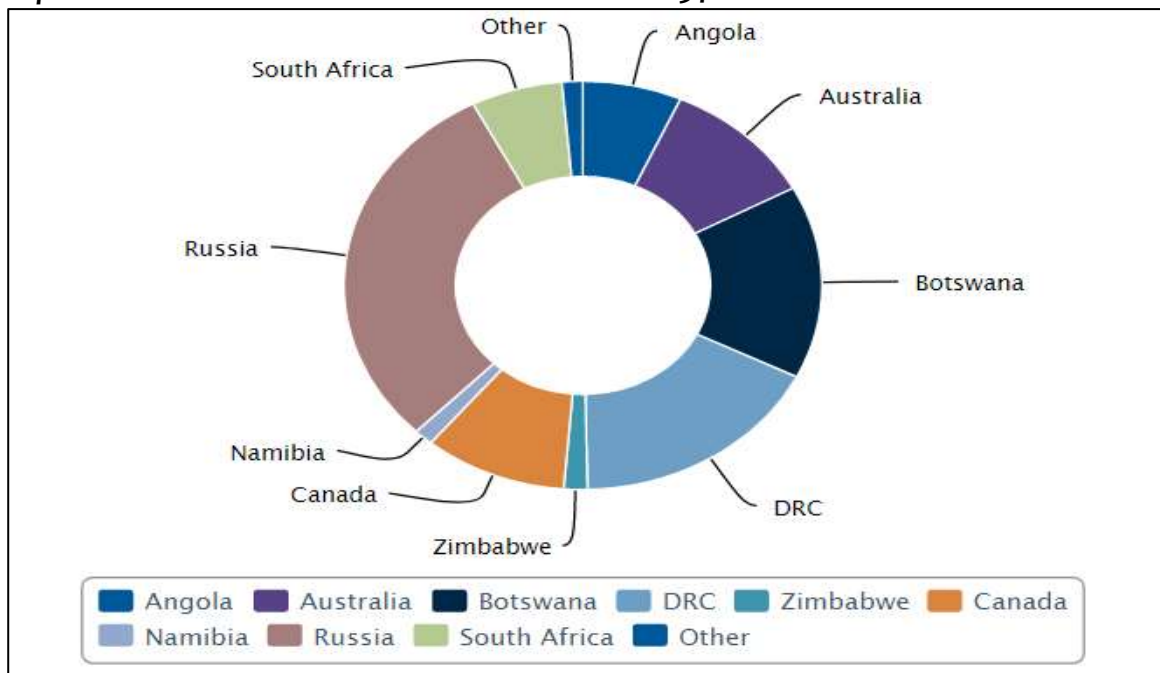


Figure 3. Kimberley Process companies' data Global Diamond Production 2011-16 (thousands carats)

World diamond production based on the costs of produced rough diamonds are dominated by Russia, Botswana and Canada with a combined production of more than 60% of the total worldwide production

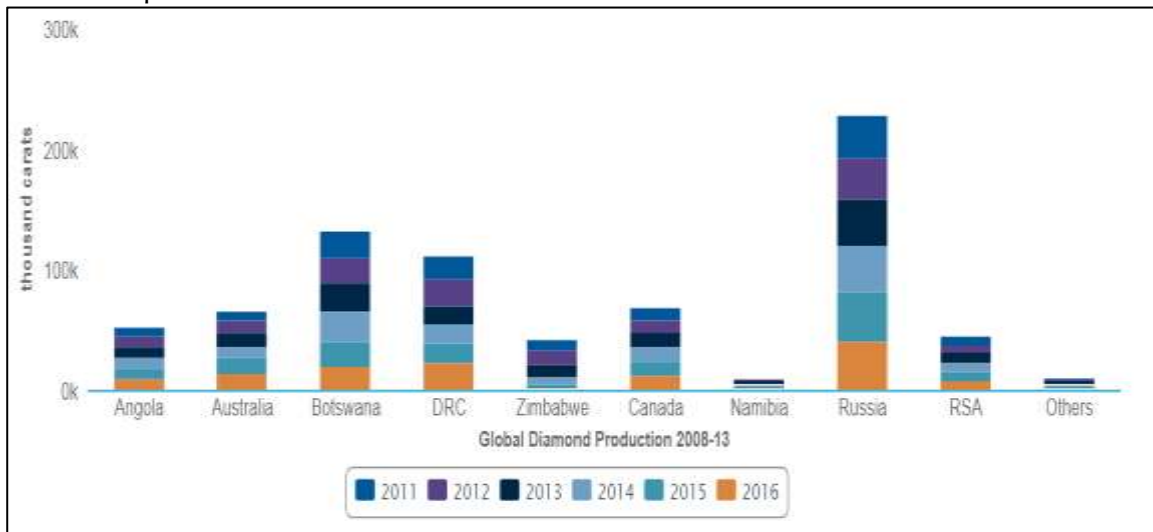


Figure 4. Global Diamond Production 2011-16 (thousands carats) Kimberley Process companies' data

Russia ranks first in the world’s diamond production. ALROSA Group accounts for 93% of the total diamond production in the Russian Federation in physical terms, and it is the leader of the global diamond mining industry. Major mining companies are engaged in mining in the main diamond-producing countries, the exception being Zimbabwe and the DRC, where diamond deposits are developed by small companies and prospectors. The graph below represents the geography of the companies’ activities including exploration.

Diamond Production by Leading Companies, 2016(* - including Ekati; Companies’ data)

The world’s diamond mining is concentrated in the major primary deposits accounting for about 60% of the global diamond production. The remaining production is concentrated in placer deposits, the principal of them located in the DRC (Mbiji-Mayii) and Zimbabwe (Marange).

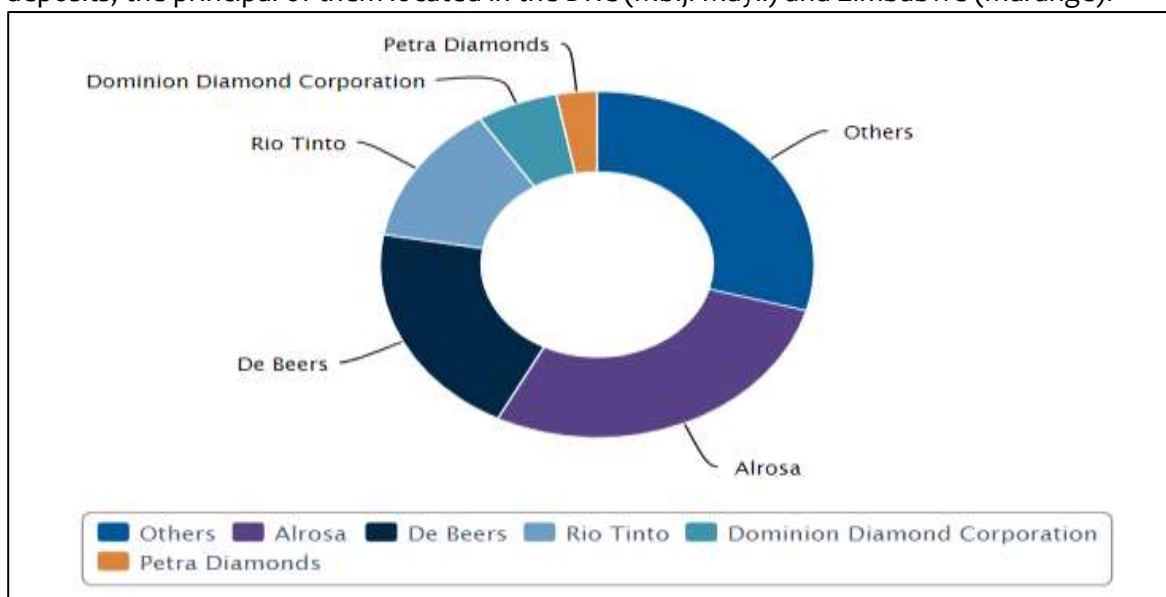


Figure 5. Diamond Production by Leading Companies, 2016(* - including Ekati; Companies’ data)

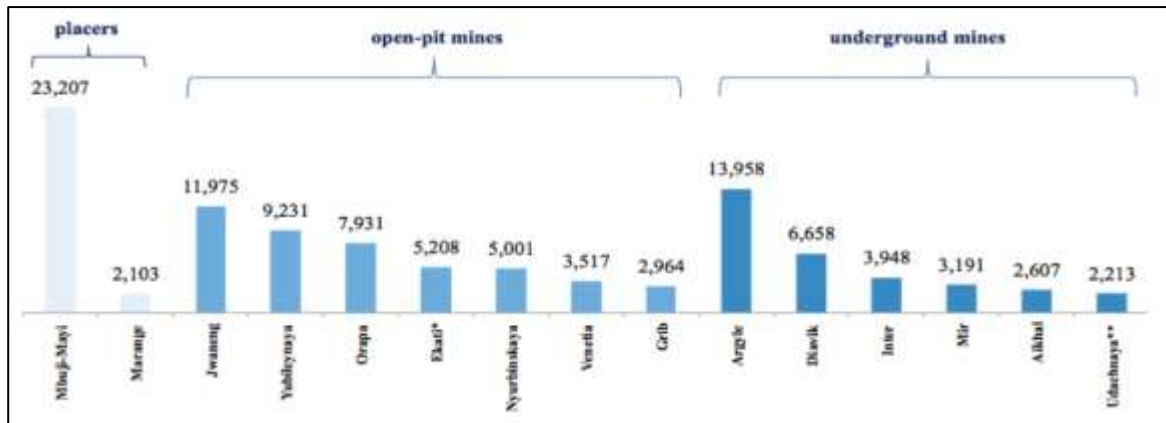


Figure 6. Production Output of the World's Major Diamond Deposits, 2016 (thousand carats) Kimberley Process and compnies' data; * - Ekati includes open-pit and underground mining; ** - output, including further development of the open-pit

By their attributes diamonds from deposits fall into two categories: gem quality and industrial grade diamonds. The former is used in diamond jewelry production, while the latter is used for industrial purposes (manufacture of drills, saws, and abrasive powders). Gem quality rough diamonds are sorted by size, color, quality and shape, and then are sold to buyers in conformity with the sales policy adopted in a rough diamond production company. Depending on the quality of the mined rough diamonds, the current state of the market, the adopted marketing policy, companies use different approaches to diamond sales: sights, tenders, auctions, spot transactions and long-term contracts.

The world’s largest trading centers, which concentrate the bulk of trade in natural rough diamonds, are India, Belgium, the UAE, the USA, Hong Kong and Israel. Being sold from mines, natural rough diamonds arrive at cutting and polishing plants to become polished diamonds that will be used in jewellery making.

(The information above was sourced from the ALROSA website. ALROSA is a world leader in the world diamond mining industry, a Russian partially state-owned diamond mining company)

The Diamond Pipeline

The Diamond Pipeline can be defined as the route the diamond takes from mine to end consumer. The diamond pipeline, typically, comprises (Fig. 4).



Figure 7. The Diamond Pipeline

Exploration/Prospecting; involves geologists finding diamond deposits in different areas. Prospecting is vital to the future survival of any diamond business as there is a predicted supply-demand gap.

Mining and Recovery; once diamonds have been discovered and surveys shown that it is financially viable to mine them; they are now recovered from the ground. The manner in which they are mined and recovered depends on their source, thus, where they are found.

Sorting and valuing; process of sorting and valuing of diamonds, categorizing them according to size, quality, model and colour.

Cutting and polishing; refers to manufacturing of diamonds; the process of turning rough diamonds into polished.

Polished Market; this is referred to as the ‘diamond exchange bourse’, a place where diamonds are traded. These are located in some of the world’s major diamond manufacturing centres, e.g. Belgium.

Retailing; polished diamonds find their way to Jewellers and Consumers through Wholesalers and Retailers.

International Diamond Market Trends

Although global financial stability has proven quite volatile over the past 4-5 years, the diamond industry appears to have stabilised somewhat, with moderate increases in diamond prices forecast for the immediate future.

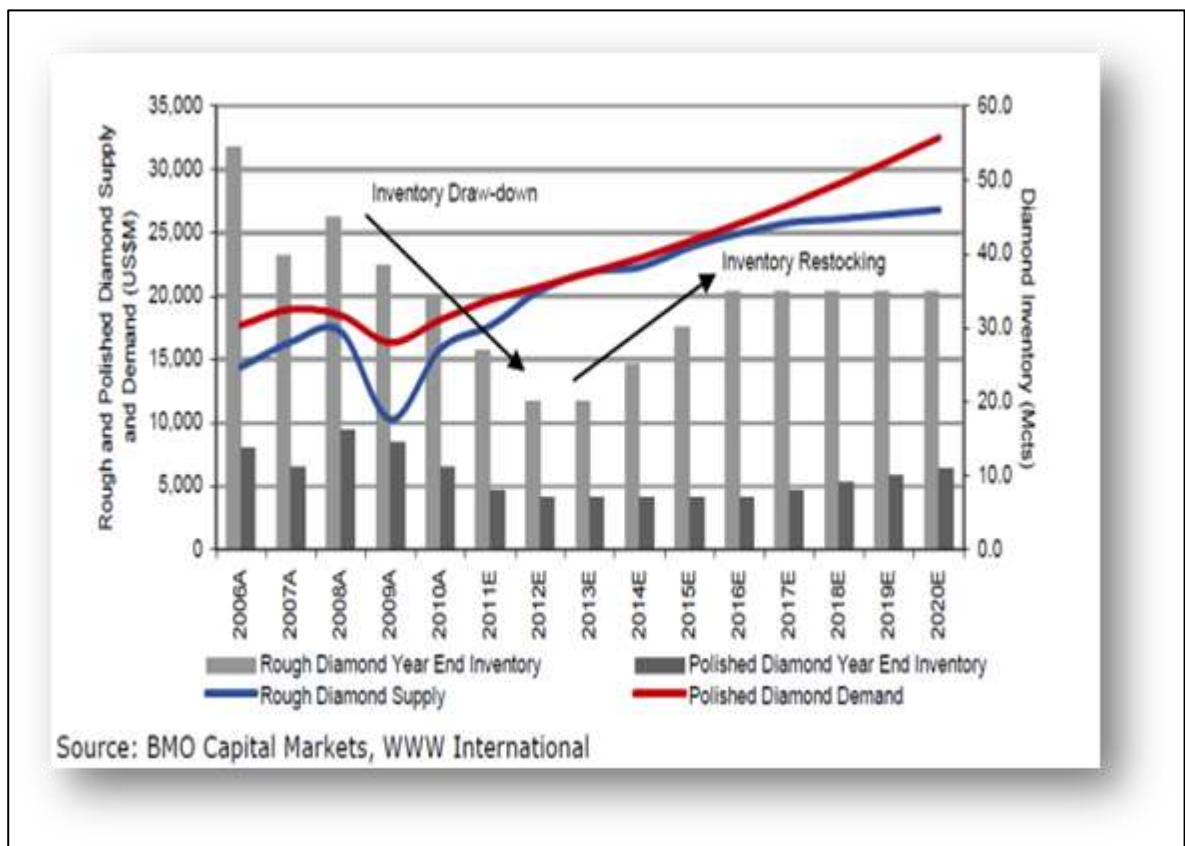


Figure 8. Inventory movements support diamond prices(USD, Mct)

BMO Capital Markets (Sterck, 2011) estimated at the time that Chinese demand for polished diamonds accounted for 5% or USD1 billion of the market in 2010. While this represents a relatively small proportion of the market currently, growth is extremely strong.

De Beers reported that Chinese demand for polished diamonds grew at 25% in 2010, significantly ahead of GDP growth of 13%. Looking ahead, momentum into 2011 suggests that growth of 15% may be possible. From 2012 onwards, growth in household disposable income is forecast to average 11% to 12% per annum. This translates into minimum growth in diamond demand of 13% per annum.

From 2012 onwards diamond demand is likely to grow in line with economic growth at around 10% per annum. Combining steady demand growth from the established diamond consuming nations and strong growth in demand from emerging consumer's results in a forecast of polished diamond demand almost doubling by 2020, resulting in a total market value of over USD30 billion in nominal terms.

Desirability:

No	Description	Yes/No
1	Does the proposed land use / development fit the surrounding area?	Yes
2	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	Yes
3	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	Yes
4	Will the proposed land use / development impact on the sense of place?	Yes
5	Will the proposed land use / development set a precedent?	No
6	Will any person's rights be affected by the proposed land use / development?	Yes
7	Will the proposed land use / development compromise the "urban edge"?	No

Benefits:

No	Description	Yes/No
1	Will the land use / development have any benefits for society in general?	Yes
2	Will the land use / development have any benefits for the local communities where it will be located?	Yes

g) Period for which the environmental authorisation is required

5 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.

In order to ensure that the proposed development enables sustainable development, a number of feasible options must be explored. Motivation for the footprint of the actual prospecting operation (i.e. excavations) will not be provided here, as the location of the prospecting is determined by the possible geological location of the mineral resource (as discussed in section f).

A Prospecting Right application was lodged to identify the preferred areas on the property. The prospecting will be done with pitting, trenches and bulk sampling which will indicated if there

are areas on the property that can be viably mined with grade and quality determined with the bulk samples taken off the property.

Prospecting Site Location

A Prospecting Right application was lodged to identify the preferred areas on the property. The prospecting will be done with pitting, trenches and bulk sampling which will indicate if there are areas on the property that can be viably mined with grade and quality determined with the bulk samples taken off the property.

Prospecting infrastructure will be placed strategically by incorporating prospecting project demands, environmental sensitivities and IAP concerns, as identified during EIA process. Thus, the prospecting site location is primarily based on proximity to the access roads, proximity to the areas earmarked for prospecting and limited additional impact on the environment and heritage resource. This renders the consideration of further alternative location in terms of the prospecting site location other than the prospecting residue deposits unnecessary.

The prospecting method of pitting and open trenches with continued backfilling is the only economic viable method currently being used by the alluvial diamond fraternity; it is also the only cost effective method. There is no alternative prospecting method.

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.

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

PORTION 6 (EMIL – A PORTION OF PORTION 3 (ONVERWAG)) OF THE FARM ELANDS DRIFT 159, BARKLY-WES

REMAINING EXTENT OF PORTION 1 OF THE FARM SLANGHEUVEL 160, BARKLY-WES

Alternatives considered:-

No planned alternative to proposed prospecting is envisaged. Should prospecting not proceed the current agricultural land use will continue. Proposed site layout and opencast mining with concurrent rehabilitation where possible will minimise footprint and impact. Any alternative methodology may have greater impact. Alternatives may be looked at in more detail within the Scoping, EIA EMP Report.

The only other alternative would be not to continue with the operation.

(a) The type of activity to be undertaken:

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 development enables sustainable development, a number of feasible options must be explored. The various alternatives were assessed in terms of logistical practicality, environmental acceptability and economic feasibility. Alternatives for the locality the prospecting operation do not form part of the discussion as the location of the prospecting operation is determined by the geological location of the mineral resource (as discussed in section f).

Land Use

No specialist comparative land use assessments were conducted, but the prospecting areas has agricultural potential and is used for grazing by the property owners.

IT would however be feasible to determine if there is any economically viable minerals to mine as prospecting can also generate income for the property owner that can be used for further development of the property.

The prospectors will have to promote rehabilitation strategies to ensure that open pits and trenches are backfilled. There will be infield screening to ensure that all oversize material is deposited back into the pits and trenches. This material should be covered with the overburden (where available), and topsoil that has been previously put aside for this purpose. The post-mining land use should be determined so that the developments strategies of the farm can still be continue beyond the prospecting and mining of the area should the area be viable for mining.

Project Infrastructure

Alternatives and considerations pertaining to the project infrastructure were discussed in section g.

Prospecting Method

The Prospecting method of drilling and open pits and trenches with continued backfilling is the only economic viable method currently being used by the diamond fraternity. There is no alternative prospecting method for the prospecting of diamonds.

Proceed without the Mine (no go)

Land Use

The current land use is agriculture and grazing. If the prospecting operation does not continue, the grazing capacity and agriculture will continue. Water will be sourced from the Vaal river. The propecting operation will not abstract any underground water.

Socio-Economy

The operation will make provision for 15 - 25 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

The implementation of the prospecting operation will have a potential impact on the biodiversity through removal of indigenous vegetation and destruction of habitats. If no prospecting activities were to continue, the status quo would apply and no damage would accrue to the environment.

Heritage and Cultural Resources

In the event that the prospecting operation does not proceed, the heritage resources will remain as is. The protection and preservation of these resources are therefore not guaranteed. However, if the prospecting operation is approved, the heritage resources will be protected through the demarcation of no-go zones and fencing off if any of these resources are encountered.

(b) The design or layout of the activity:

The site infrastructure 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 environment (non-perennial drainage lines and wind direction), heritage resources and discussions with the relevant Departments.

The following infrastructure will be established 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 prospecting site.
- Fuel Storage facility (Concrete Bund walls and Diesel tanks):
It is anticipated that the operation will utilize 2 x 23 000 litre diesel tank. This tank must be placed in bund walls, with a capacity of 1.5 times the volume of the diesel tank. A concrete floor must be established where the re-fuelling will take place.
- Prospecting Area: Area applied for to pit and trench for diamonds (bulk sampling).
- Processing plant:
- 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 1.5 km of roads, with a width of 8 meters where no reserve exists and where the reserve exists 15 meters. The current access road is deemed adequate for a service road into the prospecting site.
- 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 viable option for infield screening activities, but the best viable long terms 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 prospecting operations.

In terms of water use alternatives; the operation is located near to the Vaal River which are a perennial river as the best water source for the operation. Plastic pipelines are considered to be the best long term option for transferring water, due to their temporary nature which causes minimum environmental disturbances.

If prospecting proves positive a diamond rotary plant will be established which uses (2 X 16 feet rotary pan). Water use for a 16 feet rotary pan is in the order of 18000 litres per hour. The operation will only work in daytime hours which will constitute about 8 hours per day which will bring water consumption to 144000 litres per day and 720 000 litres per week 2880000 litres per month per pan. Total cubic metres tested will be 81206.25 m³ a 16 feet pan can on capacity work about 65 tons per hour which constitutes about 117m³ per hour.

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

The locality of the mine residue dam will be selected based on the following considerations, this dam will be very small due to the limited material being processed and the limited water needed:

- The locality is already disturbed or mined out.
- It is within reach of (1 000m) of the treatment plant.
- It is situated near the access road to the prospecting activities.
- No underlying ore bodies or geological discontinuities.
- No geomorphological impacts.
- No structures, dwellings or other points of risk on down-stream side.

- Convenient material nearby for construction of dam.
- Top soil from the treatment process will be available for final rehabilitation.

A standard slimes dam design will be established in order to maximise the capacity of the slimes dam and to minimise the risks in terms of general safety and the DWS regulation.

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 tailings will be fed onto a grizzly for the screening out oversize material. The gravel will be processed through a screening process and transported for delivery to a recovery plant and associated equipment.

- Technology

At the processing plant the run of mine tailings will be fed onto a grizzly for the screening out oversize material. The gravel will be processed through a screening process and transported for delivery to a recovery plant and associated equipment.

Alternatives considered:-

The planned prospecting activities include (bulk sampling) with an excavator up to bedrock. 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 bulk sampling of possible 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 bulk sample gravels will be fed onto a grizzly for screening out oversize material. The tailings will be processed through a screening section and transported for delivery to a recovery plant. Concentrate from the recovery plant will be processed through an X-Ray/Sortex plant to extract possible diamonds.

Prospecting activities will primarily make use of existing roads, but additional roads will most likely be created.

Alternatives considered:-

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

(e) The option of not implementing the activity:

Potential land use includes grazing and prospecting. The majority of the area is classified to have potential for grazing land and suitability for crop yield. Therefore, prospecting activities are believed to be the most economically beneficial option for the area to establish any potential for mineral resources. No agricultural lands will be disturbed.

Socio-Economy

The operation will make provision for 12 - 25 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

The area lies in veld type 32, Kalahari Plains Thorn Bushveld, as described by Low and Rebelo (1996). Three veld types can be defined, namely the *Acacia tortilis* (Umbrella Thorn) savannah, the camphor bush (“vaalbos”) shrub veld and the mixed Blackthorn/Camphor bush/Raisin bush shrub veld (DE Wet, 2002).

No endangered species or rare plants were recorded in the Prospecting area. The protected bontaalwyn (*Aloe grandidentata*) is common and fairly widespread. It is therefore not considered practical to replant the individuals present in the areas to be mined.

A number of species recorded on site are potential invaders, but these are all indigenous and occur wide-spread in the Northern Cape.

The Bitter apple, Scottish Thistle and “Jan Twak”, although exotics, occur generally as weeds in the Northern Cape and mechanical control before seeding is recommended to reduce their threat of spreading. These species will also be the first to invade disturbed areas such as the rehabilitated areas and their mechanical removal is recommended.

Heritage and Cultural Resources

No information is available on any heritage features on the area of application and the necessary 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.

The process as described by NEMA for Environmental Authorisation was followed. See table 3 for the identification of Interested and Affected Parties to be consulted with. The landowner, and or occupants and direct neighbours were consulted. The landowners and neighbours was consulted with a registered letter informing them that the application had been accepted and a Basic Information Document (BID) were attached in which all activities were explained.

An Advert (Notice) was placed in the DFA on 28 August 2020 to notify all other interested and affected parties.

Registered consultation letters were send on 09 September 2020 to all identified parties and government departments with a BID (Background Information Document) document attached.

The Scoping Report was put on disc and was distributed to all the registered parties per registered mail on 10 September 2020.

The document will also be made available at the public library in Barkly West if possible, otherwise the document will be put in the Kimberley library.

The document can also be viewed at the EAP address with prior arrangement to view the document.

iii) Summary of issues raised by I&APs

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

Table 3: Summary of issued raised by I&Aps

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		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
AFFECTED PARTIES					
Landowner/s	X				
TRADEQUICK 1090 CC PO Box 365 Barkly-Wes 8375 bondfarming@mweb.co.za	X				
Lawful occupier/s of the land					
Landowners or lawful occupiers on adjacent properties	X				
Wilhelm Groenewald By Hand	X				
Brad Potgieter P.O. Box 110045 Hadisonpark Kimberley 8306	X				
Derek Corns KIMBERLEY DIAMOND EXCHANGE 76 - 78 QUINN STREET KIMBERLEY 8301	X				

	X				
Municipal Councillor	X				
Municipality	X				
Dikgatlong Municipality The Mayor and the Municipal Manager Private Bag X 5 Barkly-Wes 8375	X				
Frances Baard District Municipality Private Bag X6088 Kimberley 8300	X				
Organs of State (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA					
ESKOM Environmental Division P O Box 356 Bloemfontein 9300 Ms A van Gensen	X				
ESKOM Holdings SOC Limited Northern Cape Operating Unit: Land Development PO Box 606 Kimberley 8300	X				
SANRAL PO Box 415 Pretoria 0001	X				

Transnet PO Box 72501 Parkview 2122	X				
NC Department of Roads and Public Works PO Box 3132 Squirehill Park Kimberley 8300	X				
Communities					
No Communities					
Dept. Land Affairs					
Department of Agriculture, Land Reform and Rural Development P O Box 5018 Kimberley 8300	X				
Department of Rural Development and Land Reform PO Box 5026 Kimberley 8300	X				
Department of Cooperative Governance, Human Settlements and Traditional Affairs Private Bag X5005 Kimberley 8300	X				
Traditional Leaders					
No Traditional Leaders					
Dept. Environmental Affairs					

Northern Cape Department of Environment and Nature Conservation Private Bag X6102 Kimberley 8300 Tel: 053 807 7430 Fax: 053 831 3530	X				
Other Competent Authorities affected					
Department of Water and Sanitation Private Bag X6101 Kimberley 8300	X				
SAHRA P.O. Box 4637 Cape Town 8000	X				
National Dept. of Public Works Private Bag X5002 Kimberley 8300	X				
Department of Agriculture, Forestry and Fisheries PO Box 2782 Upington 8800	X				
OTHER AFFECTED PARTIES					
None					
INTERESTED PARTIES					
None					

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:

The geology of South Africa (Fig. 9) is extremely varied and spans a period of about 4 billion years (SACS, 1980). The northeast portion of the country is dominated by the granitic rocks and belts of volcanic and sedimentary rocks forming the Archaean Kaapvaal Craton. Much of the rest of the country is covered by Phanerozoic sediments.

The earliest clusters of diamondiferous kimberlites, namely Kuruman and Cullinan, intruded into South Africa during the Proterozoic. The main kimberlitic (both diamondiferous and barren) event took place in the late Mesozoic, however. All the economically viable kimberlites occur on the Kalahari Archon (Kaapvaal and Zimbabwe Cratons), while those occurring in the surrounding Proterozoic basement are non-diamondiferous (Gurney, et al., 1991). Over 2,000 kimberlite pipes, blows and fissures have been recorded across South Africa, Lesotho, Swaziland, Botswana and Zimbabwe, spanning emplacement age range of approximately 1700 – 40 Ma. Kimberlite emplacement was followed by the liberation and entrainment of diamonds and the subsequent deposition of terraces on the ancient Vaal and Orange Rivers.

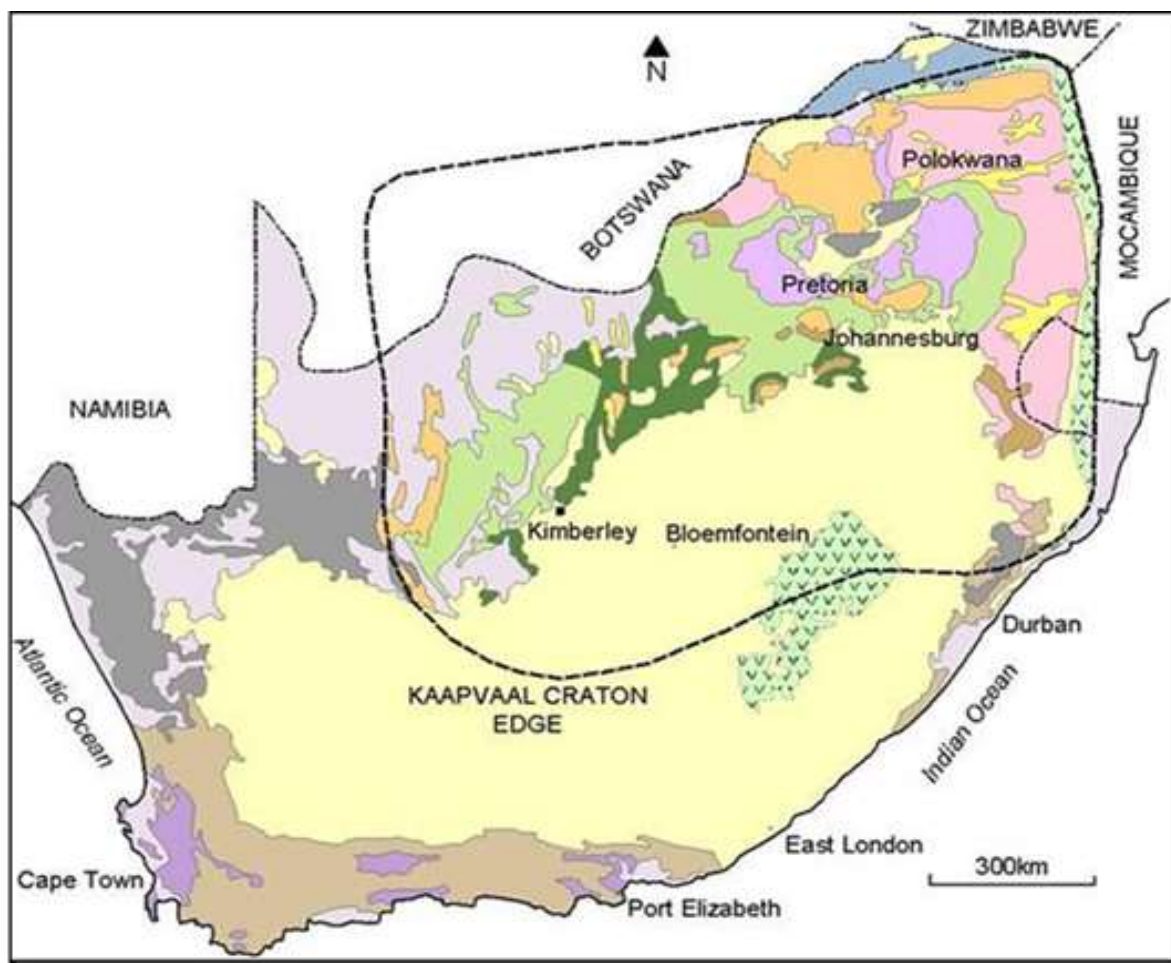


Figure 9. General Geology of South Africa (Gurney, et al., 1991).

The Alluvial Diamond Fields of the Middle Vaal River

The stratigraphy of the middle-lower Vaal River is relatively simple. The bedrock consists of +2,700 million year old Ventersdorp lavas, Transvaal shales and dolomites at +2,300 million years on the Ghaap plateau, further west, as well as younger Dwyka tillites. Overlying these rocks is a series of mostly Cainozoic gravel deposits that have long been mined for their diamond content. Prior to the (Palaeozoic/Mesozoic) Karoo period, the (pre-Karoo) Vaal River cut a network of channels closely approximating the present floodplain (Partridge & Maud, 1987). These channels were later utilised by the Dwyka (continental-type) glaciers and were filled with tillites and shales (at \pm 280-250 million years). The post-Karoo Vaal River, subsequently, incised into these formations and deposited gravels and large quantities of fine-grained sediments in numerous cycles ranging from the late Cretaceous to the Holocene.

The terrace exposures in the Windsorton - Delportshoop area are best known for the wealth of diamonds they have produced. Partridge and Brink (1967) and Helgren (1979) recognized several levels of terrace development above the present Vaal River and subdivided the alluvial deposits of the Lower Vaal basin into Older (Nooitgedacht, Holpan, Proksch Koppie and Wedburg) terraces deposits and Younger (Rietputs and Riverton Formations) gravels on the basis of lithological and topographical observations (**Fig. 10**).

Older gravels

The highest and oldest gravels occur between some 80-120m above present river level and include the Nooitgedacht (Ao) deposits. These deposits appear to have been deposited in the late Cretaceous. Generally these Older Gravel deposits can be divided into two horizons; the overlying “*Rooikoppie Gravels*” (also known as “Red Older Gravels” or “Potato Gravels”) and the basal alluvial gravels.

The uncemented *Rooikoppie* Gravels are a weathered and (colluvially) reworked residual of the calcreted basal older gravels (remnants of a pre-existing diamondiferous fluvial alluvial deposit) and, being a concentrate, contained a greater proportion of diamonds and have been almost entirely mined out where they were either outcropping or covered by thin overburden. These *Rooikoppie* deposits are typically 10-20cm thick and consists of uncemented, granular to pebbly, sub-rounded to sub-angular, resistant clasts, composed mainly of quartz, quartzite and agate set in a matrix of dark red, fine to medium sand.

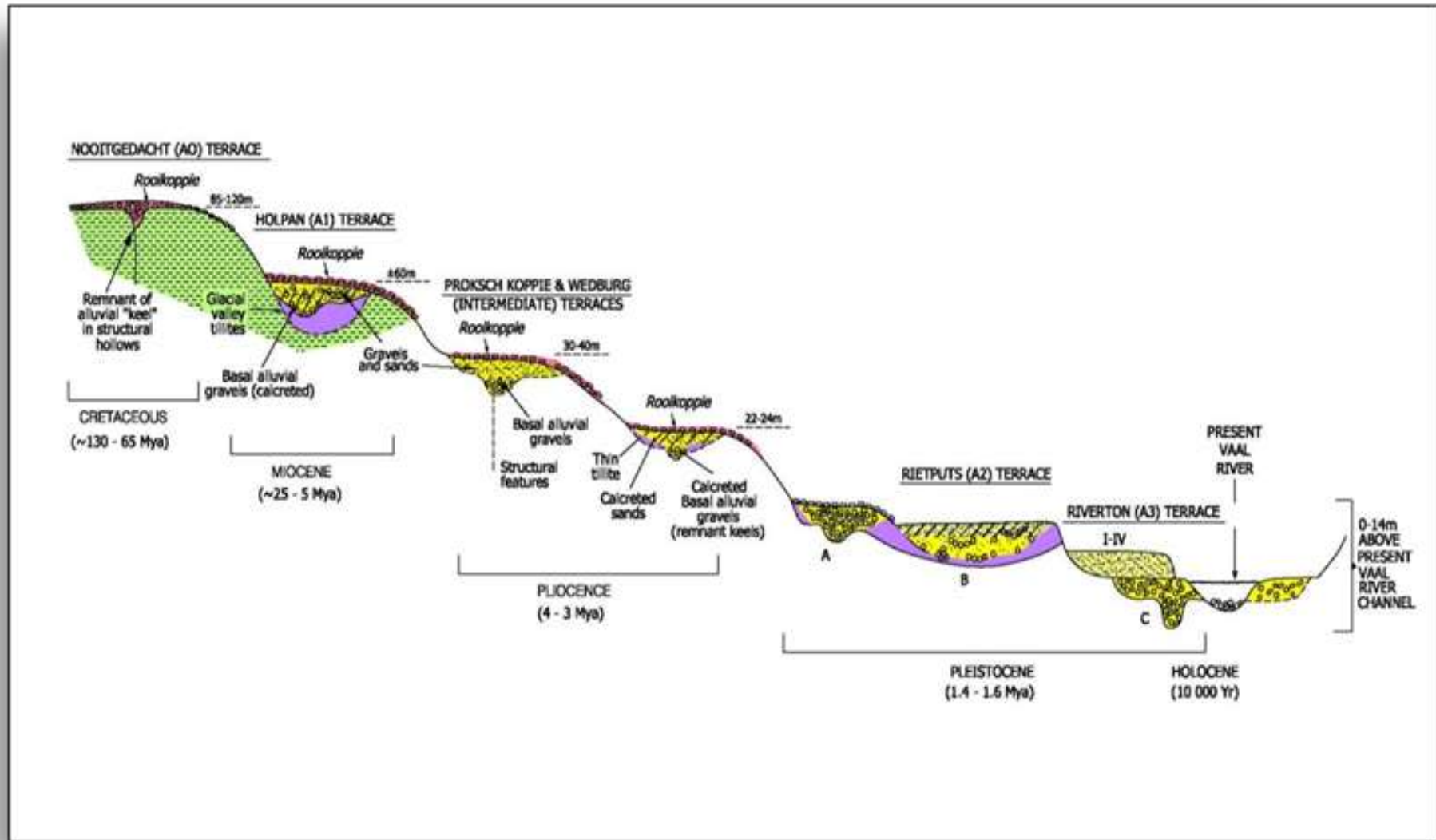


Figure 10. Schematic diagram of the terraces that are present along the middle-lower Vaal River system (Marshall, 2004)

All the larger boulders are of locally derived Ventersdorp lava, which contains large corestones at the base of its weathering profile.

The deposits are laterally very extensive and drape bedrock irregularities with uneven thickness. The gravels are, in turn, overlain by Kalahari Sands. The underlying basal (alluvial) gravels are often preserved in hollows (“sluits”) in the Ventersdorp lavas (Spaggiari, 1993).

The next suite of older gravels (Holpan Gravels (A1) consists of well-preserved, variably calcreted, primary fluvial sediments at approximately 60m above present Vaal River level. A large remnant channel meander has been preserved at Windsorton on the farms Klipdam and Holpan. This palaeochannel is between 75m and 400m wide and is covered by 4-12m of calcreted fine-grained fluvial sediments (de Wit *et al.*, 1997) and is characterised by elongate bodies of gravel surrounded by finer grained material, typical of a low energy braided river system. Gravel thickness varies from less than 1m to 8m (with an average of 3.7m). The gravels consist predominantly of well rounded, densely packed, cobble to boulder gravel. The average gravel clast size varies from 50-100mm but lava boulders up to 1m in diameter are present. The matrix contains well rounded pebbles of lava, epidote, banded ironstone, quartzite, agate, quartz and dolerite. In places, the gravels are cemented by calcium carbonate (calcrete). The bedrock consists of Ventersdorp lava with isolated thin remnants of Karoo sediments preserved in depressions. The degree of calcretisation associated with the Holpan gravels is typical of Miocene age gravel deposits throughout much of southern Africa, reflecting the extremely dry prevailing climates.

A veneer of loosely packed, derived (Rooikoppie) gravels flanks the channel. These gravels lie on an irregular but generally planar surface of Ventersdorp lava and Dwyka shale. Overburden, where present, usually consists of a thin layer of soil, windblown Kalahari sand and calcrete, in places. The gravel thicknesses vary from a single layer of pebbles up to deposits of metre scales. Most of the pebbles are chert, agate, quartz, quartzite and banded ironstone and range in size from 5-60mm. The matrix consists of variable proportions of sand and clay.

Older gravels (Intermediate gravels) occur also on the Proksch Koppie terrace (30-45m) and the Wedburg terrace (21-30m), whose remnants are preserved from Windsorton to

Delportshoop (Helgren, 1979). These gravel deposits are very similar to those developed on the higher (Nooitgedacht) terrace in that both derived Rooikoppie gravels and underlying remnants of calcreted alluvial gravels are known to exist.

These gravel terraces, however, are less calcified than the 60m (Holpan) terraces, reflecting less arid prevailing climates. The Wedburg deposits have yielded a sparse, poorly provenanced vertebrate fauna representing ages of about 4.5 to 3.5 Ma (Pliocene).

Younger gravels

As the Vaal River continued incising it deposited the Younger Gavel. These alluvial deposits have been subdivided into the Rietputs and Riverton Formations (Cooke, 1949; Butzer et al., 1973). Partridge and Brink (1967) suggested that the Rietputs Formation (A2), which form the +12-14m floodplain terrace, are all part of one formation with three distinct erosional and depositional (or aggradational) units, designated Rietputs A, B and C.

Around Barkly West, Helgren (1979) described four distinct fills in a deposit of similar age which stretches from Gong Gong to Delportshoop and includes the main gravels on Waldeck's Plant, Longlands and Winter's Rush (Matheys, 1990). Fossil evidence and the presence of Acheulian artefacts indicate that these Rietputs sediments are of Middle Pleistocene age (Partridge and Brink, 1967).

Regional Bedrock Geology

The bedrock of the middle-lower Vaal River valley is dominated by Ventersdorp lavas and sediments of the Transvaal Supergroup. These basal rocks are widely overlain by flat-lying Dwyka tillite and siltstone of the Karoo Supergroup.

The Dwyka, typically, comprises matrix-supported diamictite with both local and transported pebbles and boulders as drop-stones in a rock-flour matrix. The bedrock is cut by faults and dolerite dykes, which are rarely exposed.

Owing to the irregularity of the pre-Dwyka surface, several reaches of the river are superimposed on pre-Dwyka topographic highs, which, due to their relative resistance to erosion, give rise to more rugged topography. Here the Vaal River is confined to gorges with increased river gradients. In contrast, the more easily eroded Dwyka has been dissected by

minor tributaries of the Vaal River, giving rise to a trellis-type drainage pattern. Most of the soils in the area are of the Hutton type and of aeolian origin. In most places these soils are relatively shallow, especially where underlain by calcrete. Two land types occur on the property:

The Ag land type refers to yellow and red soils without water tables and amongst other also Hutton soils. In the Ag- land type the soils are red with a high base status and shallower than 300 mm (MacVicar, 1986). These are soils consist of red to yellow, high-base status apedal, freely drained soils deeper than 300 mm.

The Fc-land type comprises young landscapes that are neither rocky, alluvial nor aeolian. The predominant soil forming processes have been rock weathering, formation of orthic topsoil horizons and, commonly, clay illuviation, giving rise typically to lithocutanic horizons (Land Type Survey Staff, 1986). The Fc-land type is classified as MB5 which means that 90% of the land surface is covered by stones or bedrock (Land Type Survey Staff, 1986).

These Hutton soils are prone to mostly wind erosion, but this is a function of vegetation cover. Surface runoff following an event such as a cloudburst could cause erosion, but these soils are generally of low erodability.

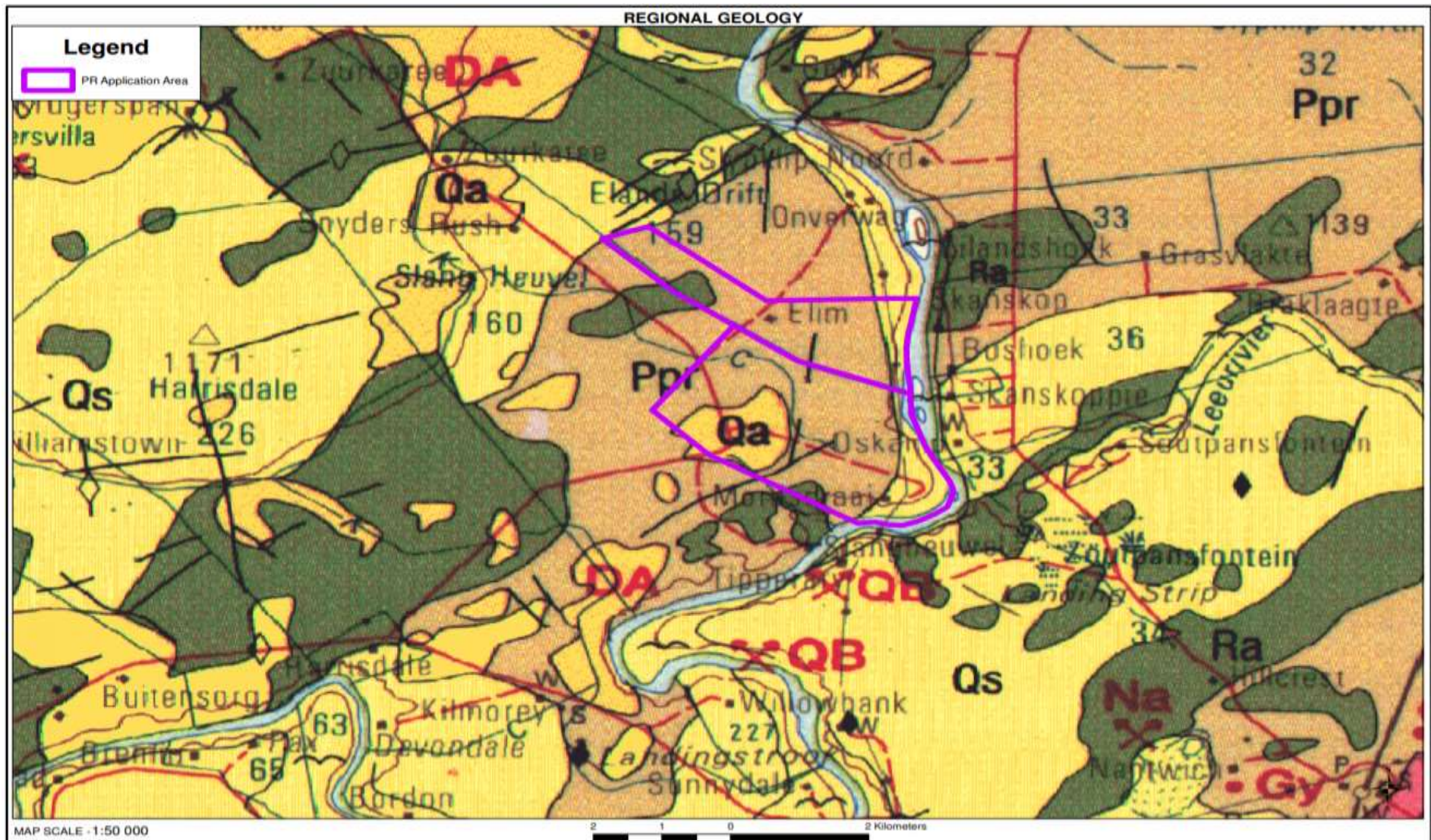


Figure 11. - Extract from 1:250 000 geological map (Council for Geoscience, Pretoria) showing location of the farms
 Blue (Vgd) = Campbellrand Subgroup comprises of coarse to fine grained dolomite and limestone, Grey (C-Pd) = Dwyka Group, Yellow (T-Qc) = Neogene calcrete, Pale yellow (Qs) = Quaternary to Recent sands and sandy soil of the Gordonia Formation (Kalahari Group). DK marks Diamond in Kimberlite.

(2) CLIMATE:

Regional Climate

The mine is located in a semi-arid region, receiving on average about 250 mm of rain in the west to 500 mm on its eastern boundary. The rainfall is largely due to showers and thunderstorms falling in the summer months October to March. The peak of the rainy season is normally March or February. The summers are very hot with cool winters. The nearest weather station to the mine is at Douglas but due to the limited range of information available from this station and the number of periods with broken records, the data from the weather stations at Kimberley will also be used.

Rainfall

Average monthly and annual rainfall for the site and number of days per month with measureable precipitation is presented in the table below:

MONTH	60 MINUTES	24 HOURS	24 HOURS IN 50 YEARS	24 HOURS IN 100 YEARS
January	35.8	57	65.1	73.8
February	70.1	82	58.9	66.5
March	63.7	67.8	72.1	81.4
April	25.7	51.6	65.9	75.2
May	14.6	54.6	36.8	42.4
June	19.1	67.5	26	30.4
July	12	26.7	26.6	31
August	17	58.2	23.4	27.3
September	16.3	26.7	24.1	28
October	37.6	59.2	53.8	61.8
November	25.2	60.1	41.2	46.7
December	59.9	64.5	70.7	80.9

Source: Directorate: Climatology South African Weather Bureau – Station 0290468:- Kimberley 1970 – 2003

Temperature

The average monthly maximum and minimum temperatures are presented in the table below:

MONTH	DAILY MAXIMUM °C	DAILY MINIMUM °C
January	32.8	17.9
February	31	17.3
March	28.8	15.2
April	24.8	10.9
May	21.4	6.5
June	18.2	3.2
July	18.8	2.8
August	21.3	4.9
September	25.5	8.9
October	27.8	11.9
November	30.2	14.6
December	32.1	16.6
YEAR	26.1	10.9

Source: Directorate: Climatology South African Weather Bureau © 2000 – Station 0290468:- Kimberley 1960 – 2000

Wind

The prevailing wind direction for the area is north to north-north-west for the months of January to September and changing from north to sometimes westerly winds during October to December averaging 3.5 m/s (Kimberley 01/01/1990 – 31/08/2000, Station 0290468).

Humidity and evaporation

The average monthly humidity is presented in the table below:

MONTH	AVERAGE (%)	MAXIMUM (%)	MINIMUM (%)
January	47	91	8
February	54	94	12
March	57	96	15
April	60	96	16
May	56	96	16
June	54	97	15
July	49	97	13
August	42	94	10
September	36	91	8
October	39	89	8
November	42	92	8
December	43	90	7
YEAR	48	94	11

Source: Directorate: Climatology South African Weather Bureau © – Station 0290468:- Kimberley 1960 – 2000

The average monthly evaporation is presented in the table below:

MONTH	EVAPORATION IN mm
SYMONSPAN	
January	365.6
February	279.1
March	235.8
April	169.1
May	135.1
June	108.6
July	130.1
August	181.2
September	252.6
October	314.8
November	345.5
December	378.6
YEAR	2896

Source: South African Weather Bureau – Station 0290468:- Kimberley 1957 – 1987

Incidents of Extreme Weather Conditions

- **Hail**

Hail is sometimes associated with thunderstorms and mainly occurs in early to late summer (November to February). It occurs on average three times a year and although these storms may sometimes be severe and cause much damage, they usually 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 but when they do occur can uproot trees and take off roofs.

(3) TOPOGRAPHY:

The site is situated on the Highveld of the inland plateau at an altitude of 1000m – 1160m above sea level. The Vaal River forms the eastern most boundary of the site, flowing in a southern direction.

The local topography of the site is represented by a plateau in the north western most corner, which gives way to gentle mid-slopes, before ultimately culminating in the Vaal River. The landscape slopes generally to the east and south east and gradients are mostly shallow with an average slope of 1:133 (approx. 0,75%).

Topographical disturbance as a result of mining and prospecting during the past 140 years is evident over much of the farm and may be described as either historic or recent. The historic disturbances consist mainly of superficial pick and shovel type excavations and heaps of less than a metre in height, few of which have been actively rehabilitated in any way. The age of these excavations (i.e. ranging from 40 to 140 years) has resulted in most of the areas beginning to re-vegetate naturally.



Figure 12. Google image of farm 160, Barkly-Wes



Figure 13. Portion 6 of farm 159, Barkly-Wes

(4) SOILS:

The prospecting area in general exhibits almost no soil horizons that have developed by pedogenetic processes. The dominant soil types are the result of alluvial deposits and are even found on the high laying areas.

Almost all the soils on the farm are of the Hutton type. They are Aeolian origin. In most places these soils are relatively shallow, especially where they overlie the calcretes.

In the “Rooikoppies” the gravels also prevent tillage of any sort because of the gravel’s presence. Two land types occur on the property, namely Ag and Fc. The Ag land type refers to yellow and red soils without water tables and amongst other also Hutton soils. In the Ag- land type the soils are red with a high base status and shallower than 300mm (Land Type Survey Staff, 1986). These are soils that consist of red to yellow, high-base status apedal, freely drained soils deeper than 300mm. The FC- land types are pedologically young landscapes that are not predominantly rock and not predominantly alluvial or Aeolian and in which the predominant soil forming processes have been rock weathering. The formation of orthic topsoil horizons and, commonly clay illuviation, giving rise typically to lithocutanic horizons (Land Type Survey Staff, 1986).

The “Rooikoppies” can be classified in terms of the classification of the Land Type Survey Staff (1986) in terms of mechanical limitations as MB3 which means that use of all but very light machinery and hand tools is impracticable. Forestry and grazing is possible. The FC- land type is classified as MB5 which means that 90% of the land surface is covered by stones or bedrock (Land Type Survey Staff, 1986).

These Hutton soils are prone to mostly wind erosion, but this is a function of vegetation cover. Water during an event such as a cloudburst could cause erosion, but these soils are generally of low erodability.

(5) LAND CAPABILITY AND LAND USE:

It may be assumed that the entire farm was historically suited to grazing or cultivation prior to mining activities.

Future prospecting areas as well as areas earmarked for prospecting on the application are defined by current grazing paddocks. No mining or prospecting will take place in presently cultivated areas or wetlands.

Land Use before Prospecting

Prior to any prospecting activity the land capability correlated directly with the different soil forms. Before any historical mining activity the area would have been suitable for stock grazing and in some places would have had an arable capability.

Evidence of Disturbance

Old timers mining activities have caused a degree of disturbance in the area.

Existing Structures

The prospecting area has a series of access roads, farm houses, stores.

(6) NATURAL FAUNA:

Common species

The fauna listed below are common species that have previously been found, or have the potential to occur in the prospecting area.

Birds

An extensive bird life can be found on the mine and specifically on the hills and small valleys with dense vegetation growth. A list of birds that have been spotted or are known to occur in the prospecting area, are listed in the table below.

BIRD LIST	
English Name	Scientific Name
Feral Pigeon	<i>Columba livia</i>
Rock Pigeon	<i>Columba guinea</i>
Redeyed Dove	<i>Streptopelia semitorquata</i>
Cape Turtledove	<i>Streptopelia capicola</i>
Laughing Dove	<i>Streptopelia senegalenses</i>
Namaqua Dove	<i>Oena capensis</i>
Diederik Cuckoo	<i>Chrysococcyx caprius</i>
Redchested Cuckoo	<i>Cuculus solitaries</i>
Barn Owl	<i>Tyto alba</i>
Pearlspotted Owl	<i>Glaucidiumperiatum</i>
Spotted Eagle Owl	<i>Bubo africanus</i>
Whiterumped Swift	<i>Apus caffer</i>
Little Swift	<i>Apus affinis</i>
Whitebacked Mousebird	<i>Colius colius</i>
Redfaced Mousebird	<i>Urocolius indicus</i>
Brownhooded Kingfisher	<i>Halcyon albiventris</i>
Lilacbreasted Roller	<i>Coracias coudata</i>
Purple Roller	<i>Coracias naevia</i>
Hoopoo	<i>Upupa epops</i>
Scimitar billed Woodhoopoo	<i>Rhino omastus cyanomelas</i>
Grey Hornbill	<i>Tockus nasutus</i>

Pied Barbet	<i>Tricholaema leucomelas</i>
Crested Barbet	<i>Trachyphouns vaillantii</i>
Rufousnaped Lark	<i>Mirafta Africana</i>
Clapper Lark	<i>Mirafta apiata</i>
Fawncoloured Lark	<i>Mirafta africanoides</i>
Chestnutbacked Finchlark	<i>Eremopterix verticallis</i>
European Swallow	<i>Hirundo rustica</i>
Greater Striped Swallow	<i>Hirundo cucullata</i>
Forktailed Drongo	<i>Dicrurus adsimilis</i>
Black Crow	<i>Corvus capensis</i>
Pied Crow	<i>Corvus albus</i>
Ashy Tit	<i>Parus cinerascens</i>
Pied Babbler	<i>Turdoides bicolor</i>
Redeyed Bulbul	<i>Pycnonotus nigricans</i>
Groundscraper Thrush	<i>Turdus litsitsirupa</i>
Familiar Chat	<i>Cercomelafamiliaris</i>
Anteating Chat	<i>Myrmecocichlaformicivora</i>
Stonechat	<i>Saxicolaporquata</i>
Cape Robin	<i>Cossypha caffra</i>
Kalahari Robin	<i>Erythropygia paeon</i>
Titbabbler	<i>Parisoma subcaeruleum</i>
Fantailed Cisticola	<i>Cisticolajuncididis</i>
Desert Cisticola	<i>Cisticola aridula</i>
Spotted Flycatcher	<i>Muscicapa striata</i>
Chat Flycatcher	<i>Melaenornis infuscatus</i>
Fiscal Flycatcher	<i>Sigelus silens</i>
Cape Wagtail	<i>Motacilla capensis</i>
Orange Striated Langclaw	<i>Macronyx capensis</i>
Lesser Grey Shrike	<i>Lanius minor</i>
Grassveld Pip	<i>Anthus cinnamomeus</i>
Fiscal Shrike	<i>Lanius collaris</i>
Glossy Starling	<i>Lamprotornis nitens</i>
Cape White Eye	<i>Zosterospallidus</i>
Whitebrowed Sparrowweaver	<i>Plocepasser mahali</i>
House Sparrow	<i>Passer</i>
Great Sparrow	<i>Passer motitensis</i>
Masked Weaver	<i>Ploceus velatus</i>
Redbilled Quelea	<i>Quelea quelea</i>
Red Bishop	<i>Euplectes orix</i>
Longtailed Widow	<i>Euplectesprogne</i>
Melba Finch	<i>Amdina erythrocephala</i>
Quail Finch	<i>Ortygospiza atricollis</i>
Pintailed Whydah	<i>Vidua macroura</i>
Shafttailed Whydah	<i>Vidua regia</i>
Blackthroated Canary	<i>Serinus atrogularis</i>
Swallowtailed Bee-Eater	<i>Merops hirundineus</i>
Yellow Canary	<i>Serinusflaviventris</i>
Kalahari Robins	<i>Erythropygia paeon</i>
Dusky Sunbird	<i>Nectarinia fusca</i>
Common Quail	<i>Coturnix coturnix</i>
Cardinal Woodpecker	<i>Dendropicos fuscescens</i>
White-breasted Cormorant	<i>Phalacrocorax carbo</i>
Grey Heron	<i>Ardea cinerea</i>
Black Headed Heron	<i>Ardea melanocephala</i>

Cattle Egret	<i>Bululcus ibis</i>
Hammerkop	<i>Scopus umretta</i>
Hadedda ibis	<i>Bostrychia hagedash</i>
Whitefaced Duck	<i>Dendrocygna viduata</i>
Egyptian Goose	<i>Alopochen aegyptiacus</i>
Yellowbilled Duck	<i>Anas undulate</i>
Redbilled Teal	<i>Anas erythrorhyncha</i>
Spurwinged Goose	<i>Plectropterus gambensis</i>
Secretary Bird	<i>Sagittarius serpentarius</i>
Black-breasted Snake Eagle	<i>Circaetus pectoralis</i>
Steppe Buzzard	<i>Buteo buteo</i>
Lanner falcon	<i>Falco biarmicus</i>
Greater Kestrel	<i>Falco rupicoloides</i>
Lesser Kestrel	<i>Falco naumanni</i>
Orange River Francolin	<i>Francolinus levaillantoides</i>
Helmeted Guineafowl	<i>Numida meleagris</i>
Redknobbed Coot	<i>Fulica cristata</i>
Whitewinged Black Korhaan	<i>Eupodotis aftaoides</i>
Crowned Plover	<i>Vanellus armatus</i>
Blacksmith Plover	<i>Vanellus coronatus</i>
Common Sandpiper	<i>Actitis hypoleucos</i>
Blackswinged Stilt	<i>Himantopus himantopus</i>
Spotted Dikkop	<i>Birhinus capensis</i>
Doublebanded Courser	<i>Smutsornus africanus</i>
Temminck's Courser	<i>Cursorius temminckii</i>
Whitewinged Tem	<i>Childonias leucopterus</i>
Burhell's Sandgro	<i>Ptercoles burchilli</i>

Mammals

A list of all the fauna likely to be found at the Wahero Mine is presented in the table below:

MAMMAL LIST	
Scientific Name	Common Name
<i>Suncus infinitesimus</i>	Least Dwarf Shrew
<i>Crocidura cyanea</i>	Reddish-grey Musk Shrew
<i>Chlorotohpha sclater</i>	Golden Mole
<i>Tadarida aegyptiaca</i>	Egyptian Free-tailed Bat
<i>Eptesicus capensis</i>	Cape Serotine Bat
<i>Nucleris thebaica</i>	Common Slit-faced Bat
<i>Rhinolophus clivosus</i>	Geoffroy's Horseshoe Bat
<i>Papio ursinus</i>	Chacma Baboon
<i>Tatera lencogaster</i>	Bushveld Gerbil
<i>Tatera brantsii</i>	Highveld Gerbil
<i>Gerbillurus paeba</i>	Hairy-footed Gerbil
<i>Desmodillus aricularis</i>	Short-tailed Gerbil
<i>Mus musculus</i>	Domestic Mouse
<i>Rhabilomys pumilio</i>	Striped Field-Mouse
<i>Saccostomus capestris</i>	Pouched Mouse
<i>Malacothrix typical</i>	Large-eared Mouse (on calcrete)
<i>Graphiuurs ocularis</i>	Spectacled Dormouse
<i>Mus minutoides</i>	Pygmy Mouse
<i>Aethomys namaquaensis</i>	Namaqua Rock Mouse

<i>Parotomys brontsii</i>	Bronts' Whistling Rat
<i>Otomys unisulcatus</i>	Karoo Bushrat
<i>Thallomys nigricauda</i>	Black-tailed Tree Rat (camel-thorn)
<i>Cryptomys hottentotus</i>	Common Mole Rat
<i>Rattus rattus</i>	Domestic Rat
<i>Lepus capensis</i>	Cape Hare
<i>Lepus saxatilis</i>	Shrub Hare
<i>Pedetes capensis</i>	Springhare
<i>Pronologus ruperstris</i>	Smith's Red Rock Rabbit
<i>Helogale parvula</i>	Dwarf Mongoose
<i>Cynictis penicillata</i>	Yellow Mongoose
<i>Atilax paludinosus</i>	Water Mongoose
<i>Galerella sanguinea</i>	Slender Mongoose
<i>Ictonyx striatus</i>	Striped Polecat
<i>Genetta genetta</i>	Small Spotted Genet
<i>Xerus inauris</i>	Ground Squirrel
<i>Funisciurus congicus</i>	Striped Ground Squirrel
<i>Atelerix frontalis</i>	Cape Hedgehog
<i>Felis caracal</i>	Caracal
<i>Felis lybica</i>	African Wild Cat
<i>Felis nigripes</i>	Small Spotted Cat
<i>Otocyan megalotis</i>	Bat-eared Fox
<i>Vulpes charma</i>	Cape Fox
<i>Canis mesomelas</i>	Black-backed jackal
<i>Hystrix africaeaustralis</i>	Porcupine
<i>Orycteropus afer</i>	Aardvark
<i>Phacochoerus aethiopicus</i>	Warthog
<i>Manis temniinckii</i>	Cape Pangolin
<i>Suricata suricatta</i>	Meerkat
<i>Sylvicapra grimmia</i>	Common Duiker
<i>Raphicerus campestris</i>	Steenbok
<i>Tragelaphus strepsiceros</i>	Kudu

Endangered Species

The fauna listed below are endangered species that are most likely to occur in the area according to the Red Data Book – Birds (Barnes, Keith N, 2000) and the Red Data Book – Mammals (Smithers 1989 & Branch 1988). The following definitions apply:

Vulnerable

Taxa of which all or most populations are decreasing because of: over exploitation, extensive destruction or degradation of their habitat, or other environmental disturbances. This means that the species is considered to facing a high risk of extinction in the wild.

Rare

Taxa with small population sizes, which are not permanently endangered or vulnerable; but are potentially at risk.

- Endangered mammals

Scientific Name	Common Name	Status
<i>Aonyx capensis</i>	Cape Clawless Otter	Unknown
<i>Felis lybica cafra</i>	African Wild Cat	Vulnerable
<i>Manis temminckii</i>	Cape Pangolin	Vulnerable
<i>Orycteropus afer</i>	Antbear	Vulnerable
<i>Atelerix frontalis</i>	Cape Hedgehog	Rare
<i>Naja nigricollis woodi</i>	Black Spitting Cobra	Rare
<i>Proteles cristatus cristatus</i>	Aardwolf	Rare
<i>Felis nigripes nigripes</i>	Small Spotted Cat	Rare

- Endangered birds

Scientific Name	Common Name	State
<i>Gyps coprotheres</i>	Cape Vulture	Vulnerable
<i>Gyps africanus</i>	African Whitebacked Vulture	Vulnerable
<i>Torgos tracheliotos</i>	Lappetfaced Vultures	Vulnerable
<i>Aquila rapax</i>	Tawny Eagle	Vulnerable
<i>Polemactus bellicosus</i>	Martial Eagle	Vulnerable
<i>Anthropoides paradiseus</i>	Blue Crane	Vulnerable
<i>Ardeotis kori</i>	Kori Bustard	Vulnerable
<i>Neotis ludwigii</i>	Ludwig's Bustard	Vulnerable

No species is limited to this site only, with most of them being generalist and having a wide distribution range. However, reasonable measure must be put in place to protect endangered and protected species if they are encountered on this site.

The mobility and in many case the adaptability of many bird species has meant that they more than any other vertebrate group have taken advantage of many of the changes we have brought about in the environment.

7) Flora:

The area lies in veld type 32, Kalahari Plains Thorn Bushveld, as described by Low and Rebelo (1996). Three veld types can be defined, namely the *Acacia tortilis* (Umbrella Thorn) savannah, the camphor bush (“vaalbos”) shrub veld and the mixed Blackthorn/Camphor bush/Raisin bush shrub veld (DE Wet, 2002).

No endangered species or rare plants were recorded in the prospecting area. The protected bontaalwyn (*Aloe grandidentata*) is common and fairly widespread. It is therefore not considered practical to replant the individuals present in the areas to be mined.

A number of large specimens of *Acacia tortillis* (Umbrella Thorn) were noted especially on the eastern side of the farm. Specimens of this size are rare in the region, and may be considered plants worthy of protection.

A number of species recorded on site are potential invaders, but these are all indigenous and occur wide-spread in the Northern Cape.

The Bitter apple, Scottish Thistle and “Jan Twak”, although exotics, occur generally as weeds in the Northern Cape and mechanical control before seeding is recommended to reduce their threat of spreading. These species will also be the first to invade disturbed areas such as the rehabilitated areas and their mechanical removal is recommended.

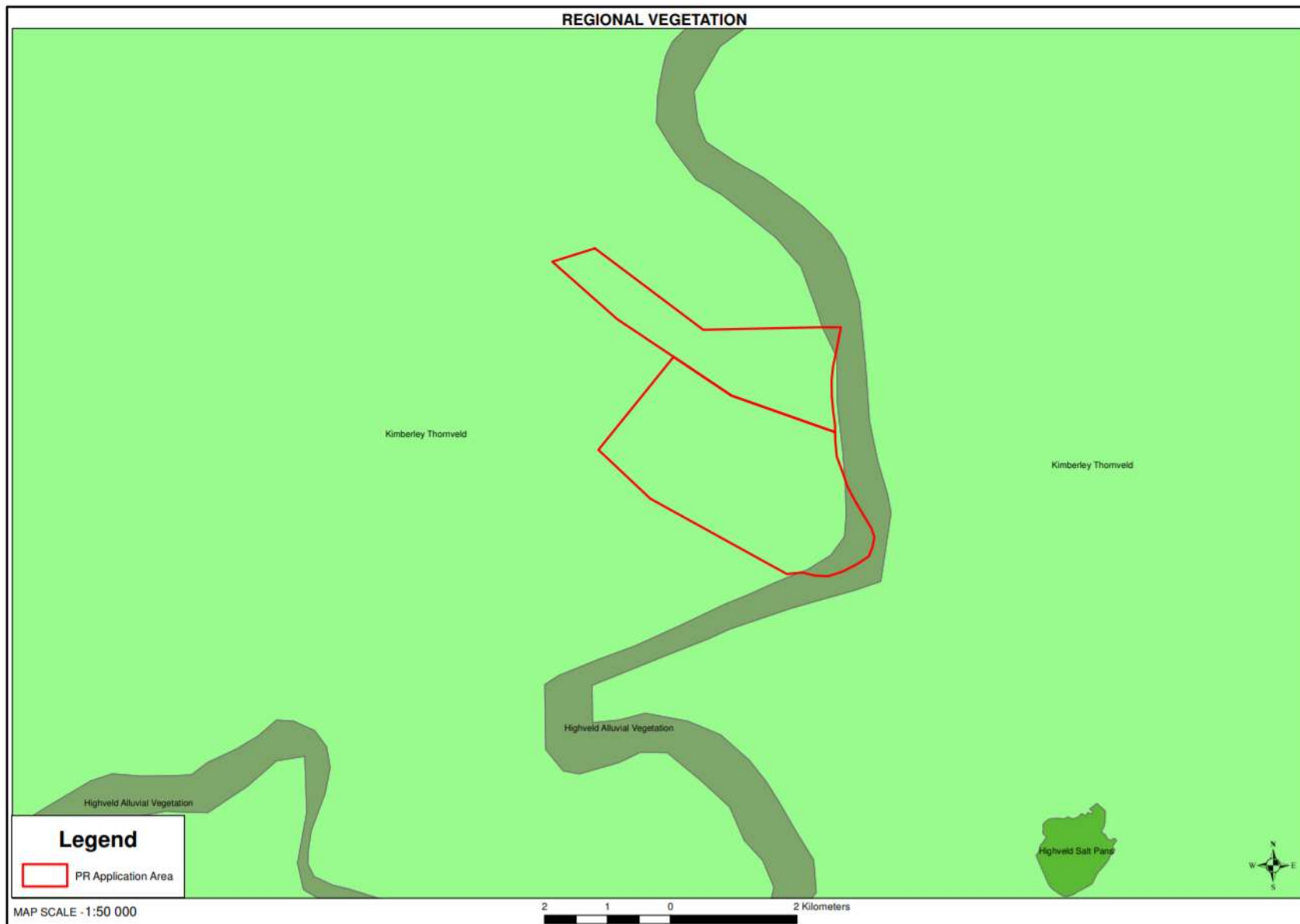


Figure 14. Regional Vegetation Map, the application area is indicated in red.

(8) SURFACE WATER

The site is situated within the Lower Vaal River Catchment and drains to the south west, towards the Vaal River.

The Vaal River is situated on the south west boundary of the prospecting activities but does not impact negatively on the river.

A number of drainage lines are present on the site, all of which are non-perennial.

The furrow which forms part of the Vaalharts government Water Scheme runs in a westward and then generally southward direction across portion 1 of the farm Slangheuvel 160. Five farm dams with varying capacities are located across the prospecting area. They are all unlined earth structures and are supplemented by water from the furrow.

The only other surface water is the artificially created slimes dams and raw water storage dams.

The area is relatively flat and water run-off is mainly through sheet run-off, rather than in drainage lines.

The small drainage lines in the area will only carry water during exceptional rainfall events such as a big cloudburst, experience a flash run-off and be dry again after the run-off except for possible hollows in the drainage lines. Evaporation is high and surface water is hardly encountered in this area.

There is no normal flow in dry weather conditions – it is devoid of any water.

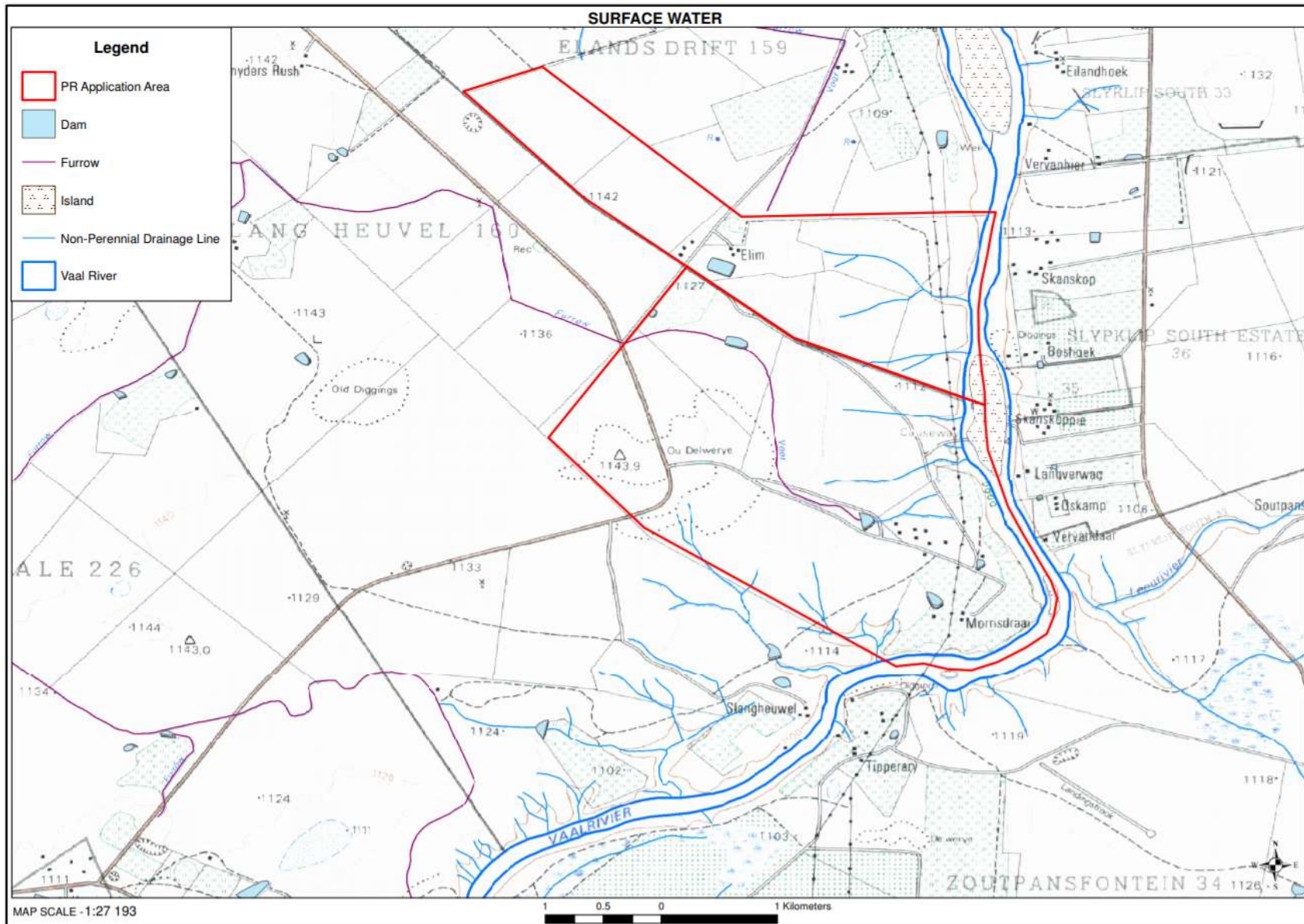


Figure 15. See dry Non- Perennial Drainage channels indicated in blue on the proposed Prospecting area.

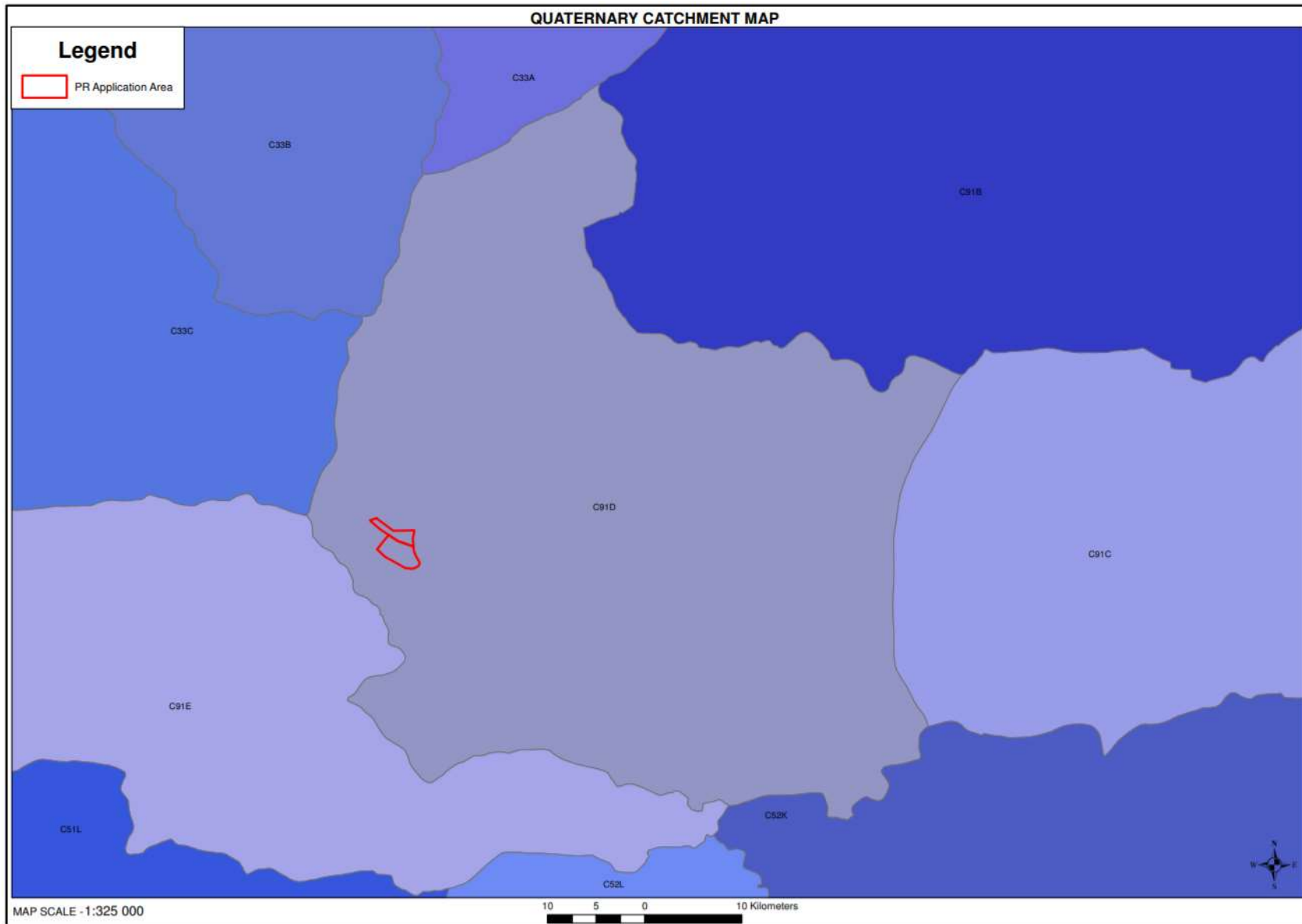


Figure 16. Catchment area

Classification of the Watercourse

The study area straddles quaternary drainage catchments C91D of the Lower Vaal Water Management Area. The topography is characterized by very flat terrain with ground elevation lying between 1000 and 1 050 metres above mean sea level. Surface drainage is predominantly to the west into the Vaal River through the natural drainage channels.

Wetlands

No wetlands other than the natural drainage lines described above are present on the prospecting property.

(9) GROUND WATER:**Depth of water-table(s):**

Based on a hydro-census conducted for the area within a 5 km radius of the neighbouring Leicester Diamond Mine the dominant ground water drainage direction is toward the Vaal River (i.e. to the south east). The water table lies between 1145 and 1150m above sea level.

According to baseline information on the water quality in the area surrounding the Leicester Diamond Mine, the quality of the water of one of the boreholes tested at the homestead was found to be poor. Magnesium and calcium levels were recorded to be just below the allowable limit, implying that the water is classified as Class II, and therefore not fit for drinking. It is however, suitable for agricultural purposes.

Ground-water zone:

The diamond bulk sampling 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, thus no aquifers and aquicludes are on the property.

(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

Existing Sources

The current source of air pollution in the area stems from numerous mining operations along the Vaal River and from vehicles travelling on the gravel roads of the area. Farming activity, especially ploughing of

the irrigation fields, may generate dust during certain periods of the year. The general air quality on the area is expected to be good.

New source

The source of air pollution on the farm will be nuisance dust generated by the opencast Prospecting process, the loading of gravels onto the transport trucks, the dumping of gravels over each sites 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

The dust is controlled by watering down the roadway used by these trucks while bulk sampling. 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 (tip trucks, front-end loader, back actor), from the working pan.

There are farming operations on both sides of the proposed prospecting operation. Although these operations do generate noise the overall impact can be described as negligible.

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 prospecting site would possibly be visible from the secondary gravel roads on the farms. The negative visual impacts associated with open pits for the bulk sampling and the washing pan will however have a low negative impact since it will be visible to the landowners and can be visible from the secondary gravel road. There is however no method of reducing the impact during bulk sampling operations (operational phase), it can only be mitigation by doing concurrent rehabilitation of open pits as prospecting progress.

(12) AREAS OF CULTURAL-HISTORICAL OR ARCHAEOLOGICAL INTEREST

It is not certain if any areas of cultural-historical value is present on the prospecting right area. No heritage resources such as built structures or sites of cultural significance associated with oral histories, burial grounds and graves of victims of conflict, and cultural landscapes or views capes are known to be present on the proposed prospecting operation. An archaeologist will be contacted to do a heritage survey and this will be submitted as soon as it has been received with the EIA EMP documents as well as a desktop palaeontological study.

(13) TOPOGRAPHY, SOIL EROSION AND ASSOCIATED DEGRADATION OF ECOSYSTEMS:

The only potential sensitive feature is the natural drainage channels within the possible Prospecting area. The bulk sampling activities will not go into any drainage channel it is thus not foreseen that prospecting can have a possible influence on this water features.

The prospecting area in general exhibits almost no soil horizons that have developed by pedogenetic processes. The dominant soil types are the result of alluvial deposits and are even found on the high laying areas.

The soils are predominantly rocky and shallow on the higher lying areas and moderately deep to deep in the lower lying areas (mainly derived from wind transported sands). Therefore, the risk of erosion in natural areas is expected to be very low. The areas around the bulk sampling sites are more likely to generate significant amounts of runoff during rainfall events.

(14) 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.

(15) SOCIO-ECONOMIC STRUCTURE OF THE REGION:Population density, growth and location

The Dikgatlong local Municipality is made up of former municipalities of Barkly West, Windsorton and Delportshoop. The municipality derived its name from Setswana word meaning “confluence”, and refers to the place where the Harts and Vaal Rivers flow into each other in Delortshoop. It is situated 30km west of Kimberley the geographical area of the municipality is 2377.6 square kilometres or 19.2% of the district. The population density of the municipality is currently standing at 9.1 people per square kilometre.

The Northern Cape population is estimated at 1,103,900 according to Statistics South Africa mid-year estimates of 2010, this is 2.2% of the South Africa’s population.

Population Profile

The total population of Dikgatlong is estimated at 35 765 people (Census, 2001). The estimate indicates that Dikgatlong is the second lowest municipality in the district in terms of the population size. The population represents 11.01% of the total population of the district which is approximately 324 798 persons and 4.4% of the province. The dominant population groups in Dikgatlong are Africans (60.2%) and Coloureds (32.5%). The other two groups share the remaining 7.3%, with Indians constituting only 0.1% and Whites 7.2%. The province, the district and the municipality have experienced a declining growth rate of -2.09%, -0.22% and -3.21% respectively.

An independent population count commissioned by Urban Dynamic (Independent Consultant) in 2003 the total population was actually found to be 63,258.

The population pyramid of Dikgatlong is distinctive to other municipalities. It indicates a significant number of economically active group (15 to 64 years) at the top of the pyramid and pensioners (over 65) at the bottom. The economically active group and pensioner constitute 63.1% and 5.1% respectively. The remaining 31.8% is comprised of pre-school and school going population. With the inclusion of Sydney-on-

Vaal, Vaalbos and Pniel the geographic size of the municipality has increased considerably.

Economic Profile The Northern Cape economy is anchored by the primary sector specifically the mining industry with the primary sector contributing 32.6%, secondary 6.2% and the tertiary sector 49.8% (Statistics SA: GDP p0441: 2010). Although the tertiary sector contributes almost 50%, the mining industry alone contributes 24.6% to the provincial value addition.

Northern Cape recorded an average real annual economic growth rate of 2,5% between 1996 and 2007. Average real annual economic growth rate of South Africa for the same period (1996 to 2007) was 3.6%. Global Insight estimated the gross value added of Frances Baard for 2008 at R9.3 billion (constant 2000 prices), this was a growth of 2% of 2007.

For the period 2005 to 2008 the Northern Cape Province had a growth of 3.6%, 4.1%, 4% and 21% respectively.

This however, if put in perspective in terms of the average annual growth (see table below), the district is not comparing badly to the Province which had an average annual growth rate of 3.3% for the period 2002 to 2008 while South Africa for the same period had an average annual growth of 4.6% (Statistics SA: GDP p0441: 2010).

Average annual growth (% Constant 2000 prices) (Sector 1996-2008)

Agriculture	3.8%
Mining	0.8%
Manufacturing	1.3%
Electricity	-2.4%
Construction	3.8%
Trade	5.3%
Transport	4.9%
Finance	3.5%
Community Services	2.8%
Total Industries/GDPR	3.2%

Table 4. Average annual Growth (global Insight:2009)

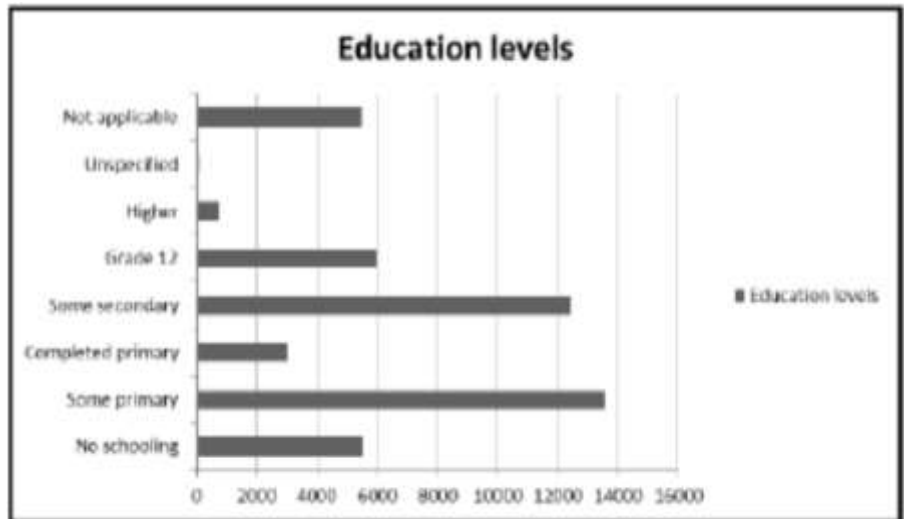
Community services is the foremost contributor in terms of value addition in the district contributing about 28% followed by finance at 23%, trade at 15%, transport at 11% and mining at 9%.

Education Levels

Education prepares individuals so that they are able to play an active role in the labour market, which directly affects their quality of life as well as

the economy of a country and the area they live in. Through the education level, one can understand the skills that an area has and its potential to contribute positively to the economy (Stats SA). Dikgatlong Local Municipality has a large number of people with some secondary school followed by those with some primary levels.

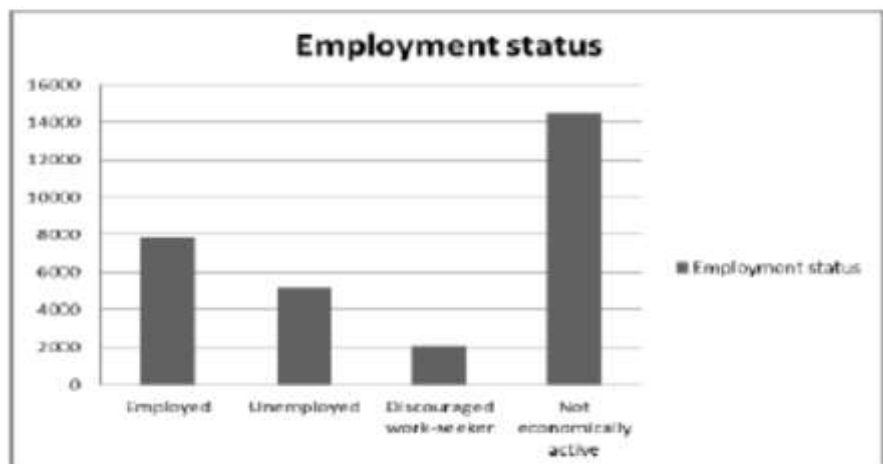
Those with Grade 12 constitute 12.83% while those higher than Grade 12 only constitute 1.64%. There are a limited number of skilled people from which the labour market can draw skills/expertise from.



Graph 1: Education Levels

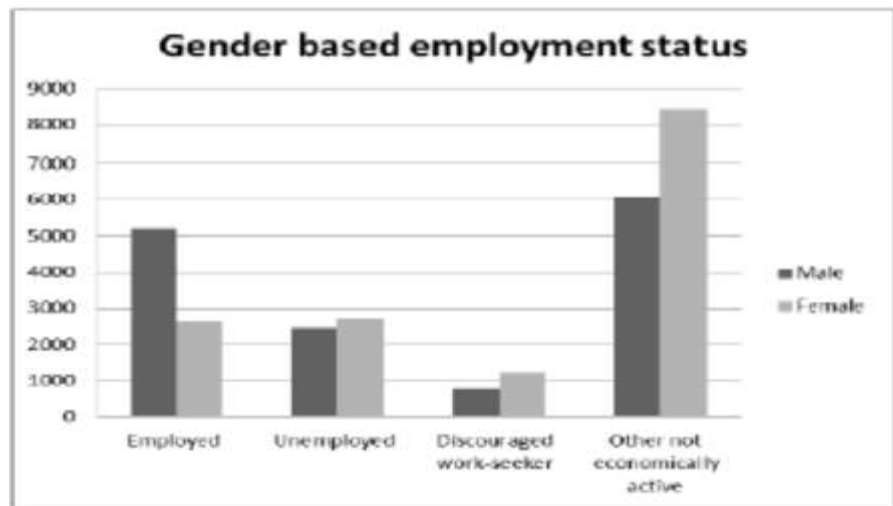
Employment Profile

The number of those who are not economically active is very high, which means a large portion of the population is highly dependent on social grants or on those that work. The number of employed people has increased from 5 924 people (2001) to 7 841 (2011). Thus the unemployment rate has decreased from 45.3% (2001) to 39.7% (2011).



Graph 1: Employment Status

The Stats SA 2011 indicates that more men are employed than their female counterparts. Furthermore women are the most discouraged work seekers. Additionally, the economical not active female population is also higher than their male counterparts. There is a need to have initiatives that make it easy for women to find employment.



Graph 2: Gender Based employment status

Income Profile

The majority of people in Dikgatlong Local Municipality do not generate an income, followed by those who get below R400 per month. Approximately 63% of the population live below the poverty line (R500). “Income variable is one of the variables that measure individual and household welfare. It is important variables that assists in generating indicators relating to poverty and development” (Statistics SA, 2012). Such information is important, as it assist in facilitating planning and the allocation of resources.

Income	Population	Percentage
No income	20 368	43.48
R1 – R400	9 013	19.24
R401 – R800	1 596	3.41
R801 – R1 600	7 759	16.55
R1 601 – R3 200	2 188	4.67
R3 201 – R6 400	1 248	2.66
R6 401 – R12 800	883	1.89
R12 801 – R25 600	435	0.93
R25 601 – R51 200	110	0.23
R51 201 – R102 400	23	0.05
R102 401 – R204 800	15	0.03
R204 801 or more	14	0.03
Unspecified	2 936	6.27
Not Applicable	262	0.56
Total	46 841	100

Table 5. Income Distribution

Infrastructure

“Good urban environments are, by definition, convenient. They allow inhabitants to conduct daily activities quickly and easily. Inconvenient environments, on the other hand, impose on lifestyles, reduce choices and increase costs. Access lies at the heart of convenience” (Redbook, 2000: 3). Settlements that perform well are settlements that are convenient and give people access to facilities (Redbook). The presence of the social facilities to the residents of Dikgatlong Local Municipality gives them a sense of belonging who do not have. Below is an overview of the facilities that each ward has.

Ward	Educational	Library	Health Services	Recreational	Safety	Community Facilities
1 <u>Mataleng</u>	3 Schools	1	Clinic	Sport Complex	-	Community Hall
2 <u>Bikkiesdorp</u> , <u>De Beershoogte</u>	3 Schools, 3 ECD's	1	Clinic	Swimming Pool	Magistrate Court	Community Hall
3 <u>Rooirant</u> , <u>Makweteng</u> , <u>Priel</u> , <u>Spitskopweg</u>	2 Schools, 1 ECD	-	Hospital	Resort	Police Station	-
4 <u>Windsorton</u> , <u>Kutlwano</u> , <u>Hebronpark</u> , <u>Stilwater</u>	3 Schools	1	Clinic	Park	Police Station	2
5 <u>Gong Gona</u> , <u>Keisekama</u> , <u>Longlands</u>	2 Schools, 1 ECD	-	Clinic	-	-	-
6 <u>Bikfontein</u> , <u>Koopmansfontein</u> , <u>Rooikoppies</u>	2 Schools, 3 ECDs	1	-	-	Police Station	Community Hall
7 <u>Deportschoop</u> , <u>Tidimalo</u> , <u>7de Laan</u>	2 Schools, 3 ECDs	-	Clinic	Sport Complex	-	Community Hall

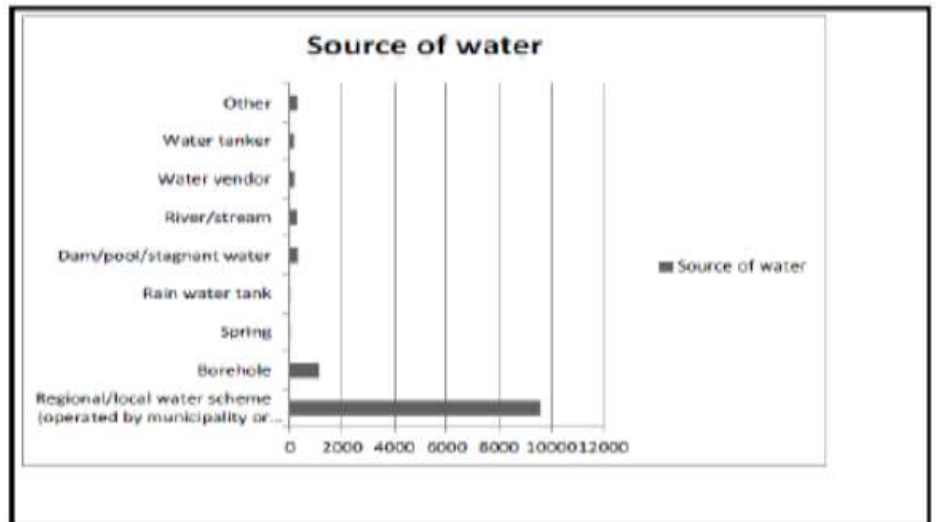
Table 6. Social Facilities

Housing

The population of the municipal area lives in three different types of dwellings; formal, informal and traditional. The formal dwellings constitutes of 6 793 households which is 71.9% of the total number of households in the area. This is slightly lower than the district and Magareng, which have 80% and 78.9% respectively. More than a tenth (12.8%) of the households resides in informal and traditional houses. Each household has an average of 3.8 people.

Access to clean water and proper sanitation are key environmental elements that affect health outcomes of households. From the graph below it is evident that a large number of households receive water from a regional/local water scheme. However there are still those households who drink water from the river/stream, dam/pool/stagnant water and

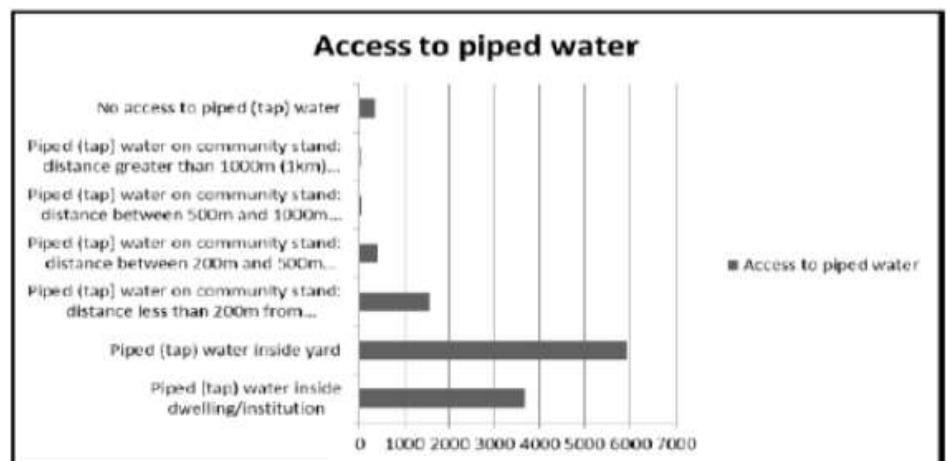
those that could not be ascertained as to where they get their water from. Drinking water that has not been purified can make the households vulnerable to a number of communicable diseases such as diarrhoea. The municipality is the water service authority for Ward 6, 7 and a portion of Ward 5. The rest of the municipal area is supplied with water by Sedibeng Water.



Graph 3: Source of water

Access to Water

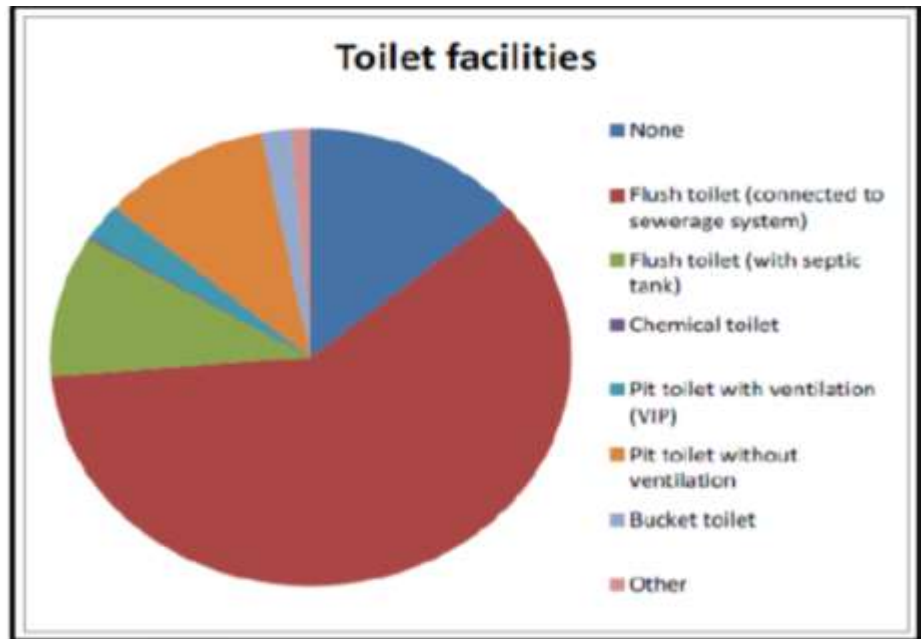
The majority of households (5 935) have access to piped water inside their yard, followed by those who have access to piped water inside their dwelling (3 670). The concern is for those households that must travel more than 1km (more than 20 minutes) to access a community piped water stand (0.24%), as it technical indicates that such service is not accessible. The concern is also for those who have access to tap water (2.77%), as they might be drinking water that is un-purified and not good for health purposes.



Graph 4: Access to piped water

Sanitation

The Millennium Development Goal states the need for “sustainable access to safe drinking water and basic sanitation”. 13.72% of households in the Dikgatlong LM do not have access to basic sanitation, while 1.84% still uses the bucket toilet. The 13.72% of none access, is higher than the Provincial one which is 8.04% of households with no access to basic sanitation.



Graph 5: Toilet facilities

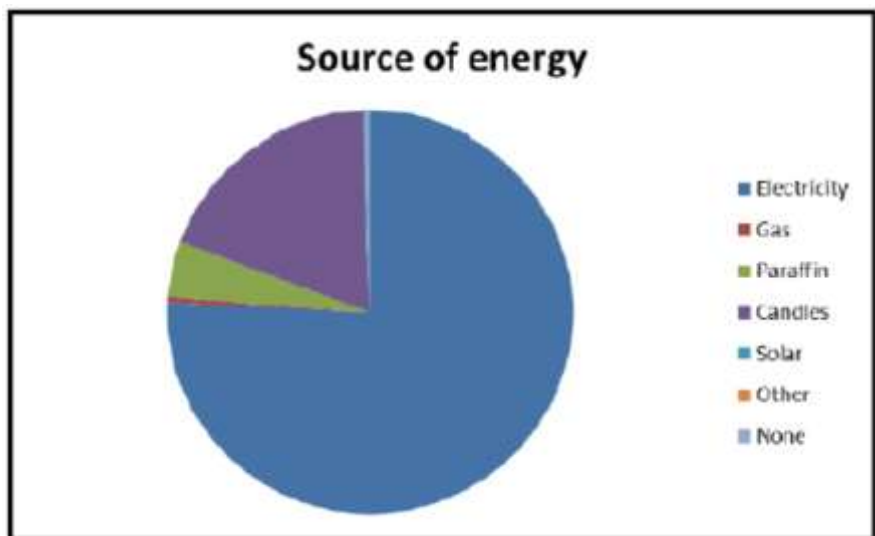
From the table below it is clear that Ward 3 and Ward 5 have the highest number of households with no access to sanitation, while Ward 2 and Ward 7 have the highest number of households who still use the bucket system.

Ward	None	Bucket Toilet
Ward 1 Mataleng	78	4
Ward 2 Blikkiesdorp De Beershoogte	87	58
Ward 3 Boolrants Makwetang Pniel Spitskopweg	533	27
Ward 4 Windserton Kutlwano Hebronpark Stillwater	202	3
Ward 5 Gong Gong Kesekama Longlands	484	22
Ward 6 Blikfontein Koopmansfontein Rooikoppies	158	18
Ward 7 Deloortshoop Tidimalo 7de Laan	99	86

Table 7. Sanitation Analysis

Electricity

There has been an improvement on the energy use across the whole country. The majority of households (75.86%) use electricity as the source of energy for lighting, this was previously 68.5% (in 2001). The number of households that use candles has also decreased from 32% to 18.66% as well as those that use gas and paraffin. However, there seems to be no visible efforts of using solar energy, to decrease the dependency of electricity.



Graph 6: Source of energy

The unemployment rate in Dikgatlong is lower than the province and country; it is currently estimated at 27.5% and 28.2% respectively. However, the statistics indicates that the unemployment in Dikgatlong

has increased by 1.4% since 1996. Of the 22 581 persons falling under the economically active group, only 26.2% are employed. This can be partly attributed to the lack of basic education and basic skills. A third or 32.1% of the educable population (5 to 65 years) have no schooling or some primary schooling.

Unlike Magareng and FBDM, whereby community and social sectors provide work to more than a quarter of the currently employed people, in Dikgatlong 26.2% of the employed portion of the labour forces is mainly employed by Agriculture and Mining sectors. Furthermore, over 60% (25 494) of the population of the area have no income and only 28.7% have income. Of the 28.7% 9 271 persons earn less than R3 200 per month.

(16) 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 / Mining:**

The current land use on this property is for grazing and limited agriculture, the soil on the property does not provide for any other land use on the property or alternative uses.

If the prospecting operation proves positive the only other use in this area will be for prospecting / mining.

(2) Evidence of Disturbance:-

On the application area there are existing roads.

(7) Existing Structures:-

The only structures on the application area is the existing roads, some houses and small agricultural lands next to the Vaal River. The prospecting will have no impact on any of the agricultural lands. All 100m safety borders from infrastructure will be kept.



Figure 17. Satellite image of the application area

(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 / Mining 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)

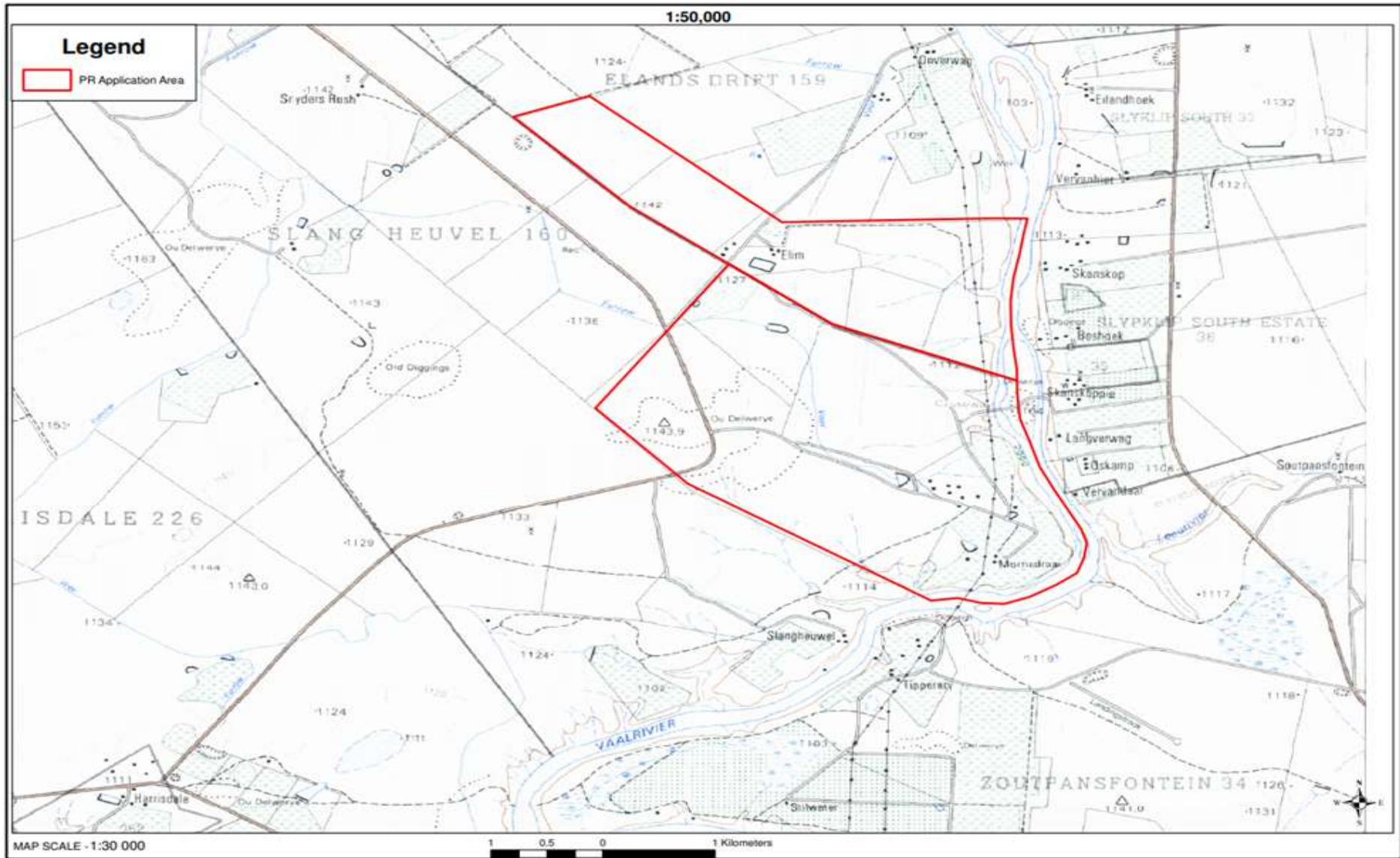


Figure 18. Environmental and current land use map on 1:50 000 topographical map

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.)

Nature of Impact	Significance	Probability	Duration
Sterilisation of mineral resources.	Very low	Highly unlikely	Decommissioning
Changes to surface topography due to topsoil removal, prospecting pits (bulk sampling), placement of infrastructure and development of residue deposits.	Low to medium	Certain	Permanent Post-closure
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 prospecting operation
Loss of land capability through topsoil removal, disturbances and loss of soil fertility.	Low	Possible	Short term
Loss of land use due to poor placement of surface infrastructure and ineffective rehabilitation of prospecting pits.	Very low	Possible	Short term
Pollution of underground water sources.	Low	Possible	Long Term Life of operation
Deterioration of water resources through prospecting.	Low	Possible	Long Term Life of operation
Deterioration in water quality through spillages and runoff from site.	Low	Possible	Long Term Life of operation
The clearance of vegetation; potential loss of floral species with conservation value; potential loss of ecosystem function when bulk sampling.	Low to medium	Certain	Long Term Life of operation
Proliferation of alien invasive plants species.	Low	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	Possible	Long Term life of prospecting operation
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 stockpile; visibility of dust.	Low to Medium	Certain	Life of Operation Decommissioning
Potential negative impacts on traffic safety and deterioration of the existing road networks.	Low to Medium	Possible	Life of Operation Decommissioning

The deterioration of sites of cultural and heritage importance.	Low	Possible	Life of Operation
Loss of agricultural 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 and 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.	Low to Medium	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 prospecting, 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 prospecting 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 temporary prospecting infrastructure, 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 some time, 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 prospecting operation, there is a possibility that equipment might leak oil, thus causing surface spillages. The hydrocarbon soil contamination will render the soil unusable 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 grazing and limited agriculture, 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. 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 can be destroyed during the bulk sampling operation.

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 temporary prospecting 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 prospecting 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 prospecting operation, and that the economy will not decline to its original level prior to the development of this project. This is because the prospecting operation 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 prospecting closure in advance, but it is acceptable to assume that the prospecting closure will have a negative impact on the local and regional economy with a high probability of occurrence, a medium severity due to small scale and a medium 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 prospecting opportunity to gain access to a mineral resource through proper planning .
- ❖ The prospecting area 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

- ❖ Prospecting with bulk sampling 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 pits 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 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 prospecting operation must co-ordinate different prospecting activities in order to optimise the utilisation of the invasive prospecting and thereby prevent repeated and unnecessary activities.
- ❖ 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 owner 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 area.
- ❖ All activities to be restricted within the demarcated areas.
- ❖ Ensure that land which is not used during construction is made available for grazing if possible.

Groundwater

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.

Surface Water

Level of risk: Very 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.
- ❖ Provide bins for staff at appropriate locations, particularly where food is consumed.
- ❖ The prospecting area 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 bulk sampling.

- ❖ These plants should, where possible, be incorporated into the design layout of bulk samples 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 prospected 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 prospecting areas (bulk sampling sites) 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 prospecting 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 bulk sampling 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 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 operations.
- ❖ 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: Very low

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 delination 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.

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 operations.
- ❖ A complaints management system should be maintained by the Applicant 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)

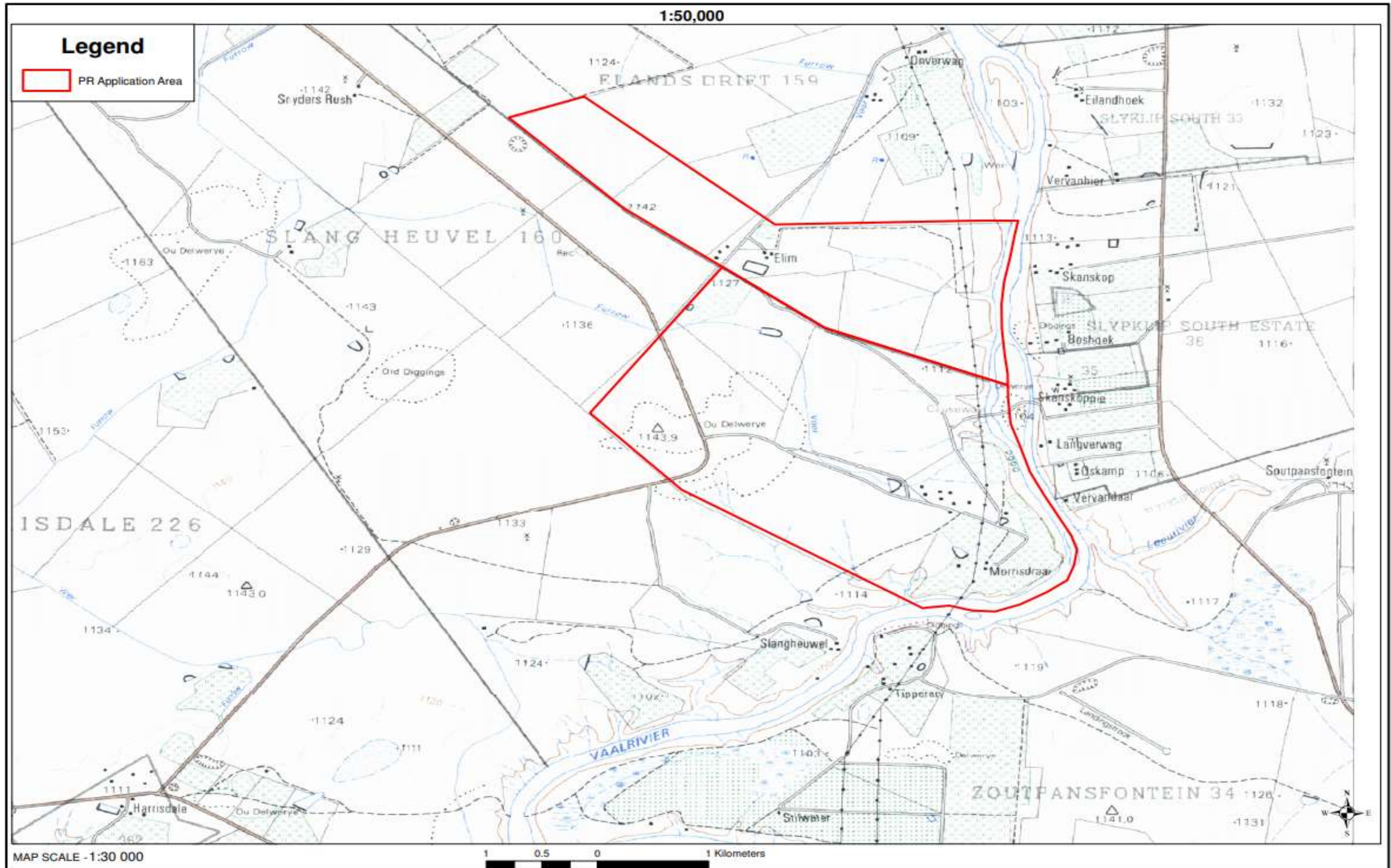


Figure 19. Final site layout plan

x) Motivation where no alternative sites were considered

No alternative location for the proposed prospecting operation was considered, as the proposed diamond deposits occur 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 mineral 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. However the final design and layout of the infrastructure have been planned and decided upon by the developer 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 the most economically beneficial option for the area as the prospecting activities indicated to be positive.

If the operation does not continue it would hold back any potential employment for Barkly West/Windsorton and the families who are likely to benefit from the positive employment opportunities. Substantial tax benefits to the State and Local Government will also be inhibited.

Prospecting and 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 prospecting operation (bulk sampling).
4. Altering the characteristics of surface water features.
5. The development of temporary stockpiles:
 - Topsoil storage area;
 - Mine Residue Stockpile for slime.
6. The rehabilitation of footprint areas where the bulk sampling pits have been excavated.
7. The construction of Processing plant.
8. Water holding facilities, pipeline and stormwater control:
 - Clean & Dirty water system: Stormwaterdam / Water storage facility;
 - Water distribution Pipeline;
 - Water tank.
9. Fuel storage and refuelling bays;
 - Fuel Storage facility (Diesel tanks);
 - Concrete bund walls and diesel depots.
10. 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:

An Archaeologist and Palaeontologist have been contacted to do a survey on the farm for archaeologically and palaeontology sensitive areas on the farm. Also an Ecological study will be done and a wetland delineation. All information will be used to identify areas that can be sensitive and to make the necessary provision to avoid these areas. Any other Specific specialist reports will be done when specifically requested by any Department or in interested and affected party consultation referred to.

(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, terrestrial ecology, heritage resources, socio-economy, 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, 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.

(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 prospecting, 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 with interested and affected parties (neighbouring farmers and land owners) was completed for the Scoping Report that will be submitted and consisted of the process below.

The process as described by NEMA for Environmental Authorisation was followed. See table 3 for the identification of Interested and Affected Parties to be consulted with. The landowner, and or occupants were consulted.

An Advert (Notice) was placed in the DFA on 28 August 2020 to notify all other interested or affected parties to register.

An consultation letter with a BID (Background information Document) was mailed per registered mail to all identified parties.

The Scoping Report was put on disc and was distributed to all the registered parties per registered mail on 10 September 2020.

The document will also be made available at the public library in Barkly West or Kimberley depending on the libraries being open due to the Covid 19 pandemic.

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

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:

- The Scoping Report will be distributed to all registered parties via registered mail in September 2020.
- All 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, mining 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 proposed mineral resource.

Process to assess and rank impacts

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

Table 8. 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 9. 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 Dikgatlong area
4	Regional/District	Direct and Indirect impacts affecting environmental elements within Barkly West District)
5	Provincial	Direct and Indirect impacts affecting environmental elements in the Northern Cape Province

Table 10. 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 11. 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:

(Severity + Extent + Duration) x 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 12

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:

ACTIVITY 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...)	POTENTIAL IMPACT (e.g. dust, noise, drainage, surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc...)	MITIGATION TYPE 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.)	POTENTIAL FOR RESIDUAL RISK
Ablution facilities Chemical toilets	<ul style="list-style-type: none"> • Soil contamination • Groundwater contamination • Odours 	<ul style="list-style-type: none"> • Maintenance of chemical toilets on regular basis. • Removal of containers upon closure. 	Very low
Clean & Dirty water system	<ul style="list-style-type: none"> • Surface disturbance • Groundwater contamination • Soil contamination • Surface water contamination 	<ul style="list-style-type: none"> • Maintenance of berms and trenches. • Oil traps used in relevant areas. • Drip trays used. • Immediately clean hydrocarbon spill. 	Low
Diesel tanks	<ul style="list-style-type: none"> • Groundwater contamination • Surfacewater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance 	<ul style="list-style-type: none"> • Maintenance of diesel tanks and bund walls. • Oil traps. • Groundwater quality monitoring. • Drip tray at re-fuelling point. • Immediately clean hydrocarbon spill. 	Low
Bulk sampling	<ul style="list-style-type: none"> • Dust • Possible Groundwater contamination • Noise 	<ul style="list-style-type: none"> • Access control • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Continuous rehabilitation • Stormwater run-off control 	Low

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

	<ul style="list-style-type: none"> • Soil contamination • Surface disturbance 	<ul style="list-style-type: none"> • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	
Water distribution Pipeline	<ul style="list-style-type: none"> • Surface disturbance • Possible Groundwater contamination • Soil contamination • Surface water contamination 	<ul style="list-style-type: none"> • Maintenance of pipes. 	Low
Roads	<ul style="list-style-type: none"> • Dust • Possible Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance 	<ul style="list-style-type: none"> • Maintenance of roads • Dust control and monitoring • Noise control and monitoring • Speed limits • Stormwater run-off control. • Erosion control • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	Low
Salvage yard	<ul style="list-style-type: none"> • Possible Groundwater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination • Surface disturbance • Surface water contamination 	<ul style="list-style-type: none"> • Access control • Maintenance of fence. • Stormwater run-off control • Immediately clean hydrocarbon spill 	Low
Stockpile area	<ul style="list-style-type: none"> • Dust • Possible Groundwater contamination • Surfacewater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna 	<ul style="list-style-type: none"> • Dust control and monitoring • Noise control and monitoring • Drip trays • Stormwater run-off control. • Immediately clean hydrocarbon spills • Rip disturbed areas to allow re-growth of vegetation cover 	Low

	<ul style="list-style-type: none"> • Surface disturbance 		
Topsoil storage area	<ul style="list-style-type: none"> • Dust • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil disturbance • Surface disturbance 	<ul style="list-style-type: none"> • Dust control and monitoring • Stormwater run-off control. • Continuous rehabilitation • Rip disturbed areas to allow re-growth of vegetation cover • Backfilling of topsoil during rehabilitation 	Low
Waste disposal site	<ul style="list-style-type: none"> • Groundwater contamination • Surface water contamination 	<ul style="list-style-type: none"> • Storage of waste within receptacles • Storage of hazardous waste on concrete floor with bund wall • Removal of waste on regular intervals. 	Low
Mine Residue Deposit – Slimes	<ul style="list-style-type: none"> • Dust • Possible Groundwater contamination • Noise • Removal and disturbance of vegetation cover and natural habitat of fauna • Surface disturbance 	<ul style="list-style-type: none"> • Dust control and monitoring • Groundwater quality monitoring • Noise control and monitoring • Stormwater run-off control. • Rip disturbed areas to allow re-growth of vegetation cover 	Low-Medium
Washbay	<ul style="list-style-type: none"> • Possible Groundwater contamination • Removal and disturbance of vegetation cover and natural habitat of fauna • Soil contamination 	<ul style="list-style-type: none"> • Concrete floor with oil/water separator • Stormwater run-off control • Immediately clean hydrocarbon spills 	Low
Water tank with filter system: It is anticipated that the operation will establish 1 x 10 000 litre water tanks for potable water.	<ul style="list-style-type: none"> • Vaal River water and usage • Surface disturbance 	<ul style="list-style-type: none"> • Monitor water quality and quantity • Maintenance of tanks (check for leaks). 	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 is known as yet of any such sites and/or objects on the site itself. A heritage and palaeontological desktop study will be done for this application.

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 occurrence of possible diamond resource 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 ± 15 - 25 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: 07 September 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: 07 September 2020

- END -

APPENDIX 1

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.

October 1997	Mineral Laws Administration & Environmental Management (University of Pretoria)
July 2002	Project Management for Environmental Systems (University of the Orange Free State)
August 2004	Environmental and Sustainability in Mining Minerals and Energy Education and Training Institute (MEETI)
September 2005	Converting Old Order Rights to New Order Rights in Mining International Quality & Productivity Centre Johannesburg)
November 2006	Mine waste disposal and Achievement of Mine Closure
February 2007	Introduction to ArcGis 1
April 2010	Mining Law Update Conference (IIR BV South Africa)
November 2010	Social Labour Plans for Mining Workshop (Melrose Training)
August 2011	Mineral Resources Compliance and Reporting (ITC)
May 2012	Enviro Mining Conference 2012 (Sustainability and Rehabilitation) (Spectacular Training Conferences)
August 2012	Mineral Resources Compliance and Reporting 4th Annual (ITC)
March 2013	1st EnviroMining-Ensuring Environmental Compliance and reporting
March 2014	4th Annual EnviroMining Conference
March 2015	5th Annual EnviroMining Conference
February 2018	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. Also waiting for registration at EAPASA (application was submitted in October 2019).

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 (½m²) 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.

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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. Booitze

.....
VISEKANSIELIER/VICE-CHANCELLOR

G. N. van Wyk

.....
DEKaan/DEAN

[Signature]

.....
REGISTRATEUR/REGISTRAR

BLOEMFONTEIN
2000-09-16

