



mineral resources

Department:

Mineral Resources

REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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: **MESSINA DIAMONDS (PTY) LTD**

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FILE REFERENCE NUMBER SAMRAD: **(NC) 30/5/1/1/2/11830 PR**

1. 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.

2. OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

The objective of the basic assessment process is to, through a consultative process—

- (a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives;
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:-
 - (i) the nature, significance, consequence, extent, duration and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts—
 - (aa) can be reserved;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be managed, avoided, or mitigated.
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

PART A SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

Contact Person and Correspondence Address

a) Details of

i) Details of the EAP

Name of the Practitioner: ROELIEN OOSTHUIZEN
 Tel No.: 084 208 9088
 Fax No.: 086 510 7120
 E-mail address: roosthuizen950@gmail.com

ii) Expertise of the EAP

(1) The qualifications of the EAP

(with evidence)

MASTERS IN ENVIRONMENTAL MANAGEMENT (UFS)

B-Comm in Human and Industrial- Psychology (NWU)

Waiting for registration please attached resume and MEM certificate.

(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:	<ul style="list-style-type: none"> • Farm No.: 84 Portions: Remaining Extent Title Deed: T2783/2011 • Farm No: 393 Portions: A Portion Title Deed: T490/2009
Application area (Ha):	2529.4042 ha
Magisterial district:	Barkly West
Distance and direction from nearest town:	The farm is situated approximately 100 kilometers north-west of Kimberley, 33km north-west of Windsorton close to the R370 and R371 crossing, approximately 6km west of the Spitskop Dam.
21 digit Surveyor General Code for each farm portion:	Farm 84 – C00700000000008400000 Farm 393 – C007000000000039300000

c) Locality map

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

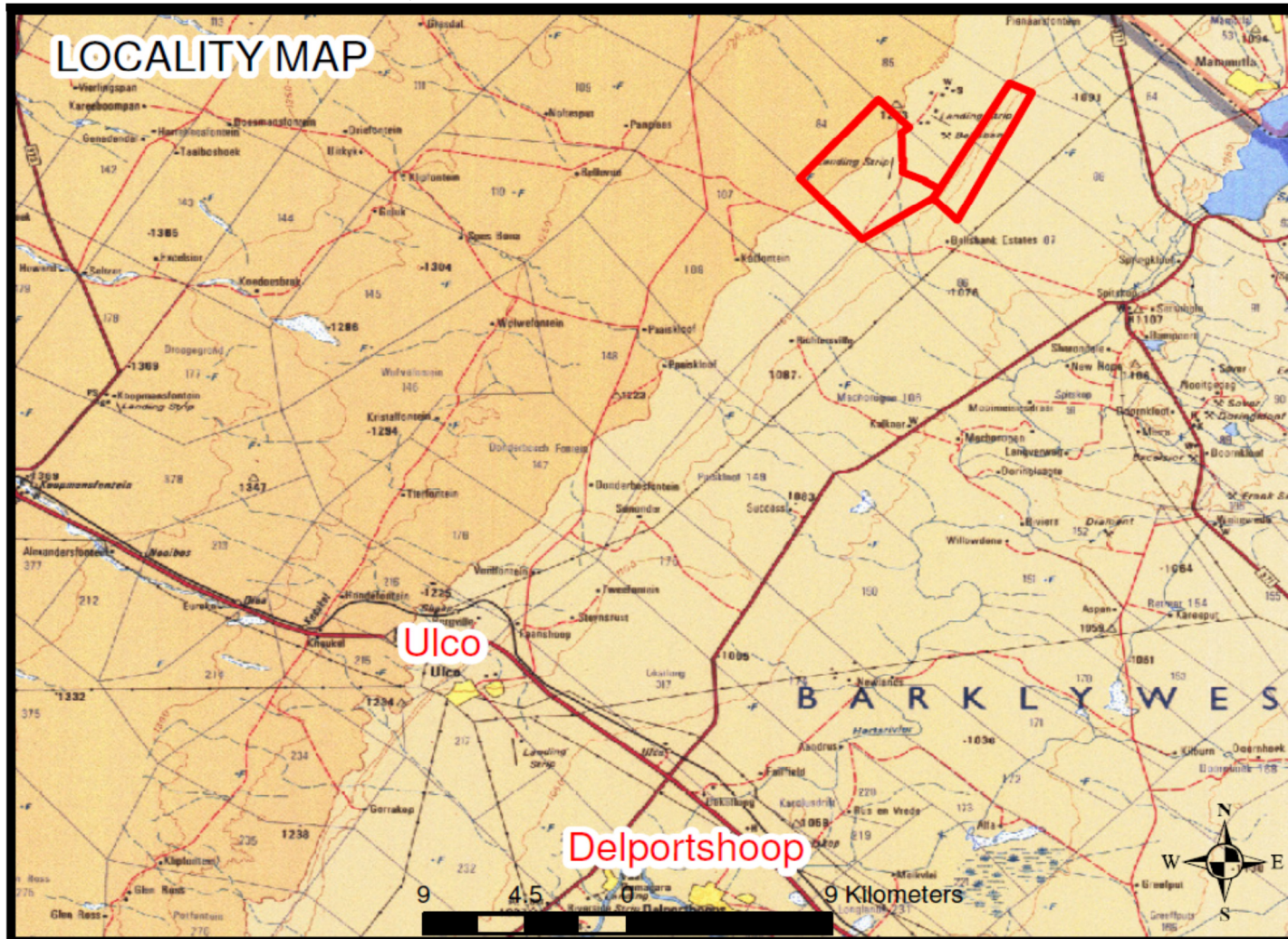


Figure 1: Farms 84 and 393 situated in the magisterial district of Barkly West. Locality indicated in red. (2824 Kimberley 1:250 000 Map)

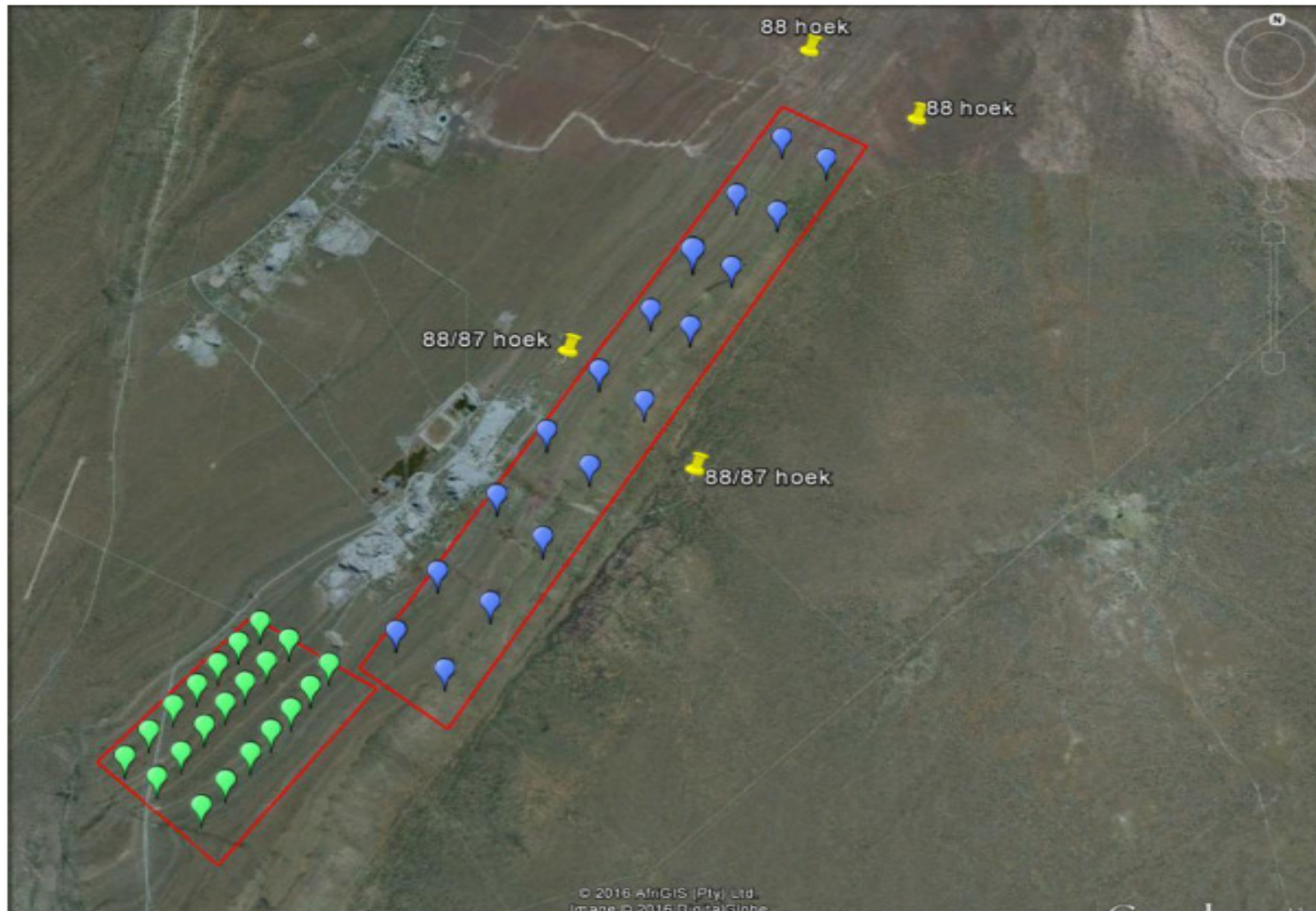


Figure 3: Drill hole Coordinates (Green markers) for farm 84 & 86 / Drill hole Coordinates (Blue markers) for farm 393 only drilling will be done on this prospecting right.

i) Listed and specified activities

NAME OF ACTIVITY (E.g. for prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route, etc. ... etc. ... etc. E.g. for prospecting – excavations, blasing, 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 m²	LISTED ACTIVITY (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)	WASTE MANAGEMENT AUTHORISATION (Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)
(Activity 20 of Listing Notice 1) 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 associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	2529.4042 ha application lodged for the surveyed portion ONLY DRILLING INVASIVE WILL BE DONE WHICH WILL BE 0.5 HA IN EXTENT	X	NEMA LN 1 (GNR 983)	
Activity 27 of GNR 983 The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	2529.4042 ha on the total hectares of the area a total of 0.5 ha will be disturbed with the drill pads, drill holes.	X	NEMA LN1 (GNR983)	
OTHER ACTIVITIES (Associated infrastructure not considered to be listed activities) Ablution Facilities	±25m 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 prospected/mined and for a linear activity, a description of the route of the activity)

Non-Invasive Activities

Ground and/or airborne magnetic survey over prospecting area. The area will be flown with an airborne gradient magnetic survey in conjunction with other adjacent prospecting rights applied for. If the survey area is too small for a cost effective airborne survey then ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. Minimal disturbance of vegetation and wildlife is envisaged

Target-specific ground geophysics (magnetics, electromagnetics and gravity). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated. Minimal disturbance of vegetation and wildlife is envisaged

Target specific loam sampling. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material. Minimal disturbance of vegetation and wildlife is envisaged.

Invasive Activities

Scout and delineation drilling. If carried out, drilling may necessitate the establishment of access tracks and minor bush clearing for establishment of drill pads. The need for drilling can only be established once phase 1 and 2 of the Prospecting Works Program have been completed

Drill hole locations

A program of thirty nine (18 + 21) drill holes are planned, comprising at depths of 50m-100m, thus producing drilled cores. Each hole will be drilled in a NW direction three times at different angles. First -25°, Second-45°, Third-65°

The drill hole location co-ordinates are listed in the table below followed by a map illustration of the drill hole locations in the field:

Drill hole Coordinates (Green markers) for farm 84 & 86.

From NW side, top left downwards

Latitude	Longitude
28°6'45.03"S	24°23'34.83"E
28°6'50.38"S	24°23'30.48"E
28°6'55.74"S	24°23'26.40"E
28°7'1.17"S	24°23'22.29"E
28°7'6.47"S	24°23'17.54"E
28°7'12.92"S	24°23'12.76"E
28°7'19.41"S	24°23'8.09"E

Middle row downwards

Latitude	Longitude
28°6'48.76"S	24°23'42.03"E
28°6'54.44"S	24°23'37.60"E
28°6'59.72"S	24°23'33.29"E
28°7'5.01"S	24°23'29.37"E
28°7'10.69"S	24°23'25.32"E
28°7'17.36"S	24°23'20.79"E
28°7'23.68"S	24°23'16.06"E

Right row SE side downwards

Latitude	Longitude
28°6'53.84"S	24°23'51.94"E
28°6'59.53"S	24°23'48.36"E
28°7'5.23"S	24°23'44.61"E
28°7'10.62"S	24°23'40.69"E
28°7'16.34"S	24°23'36.65"E
28°7'23.32"S	24°23'31.76"E
28°7'29.69"S	24°23'26.95"E

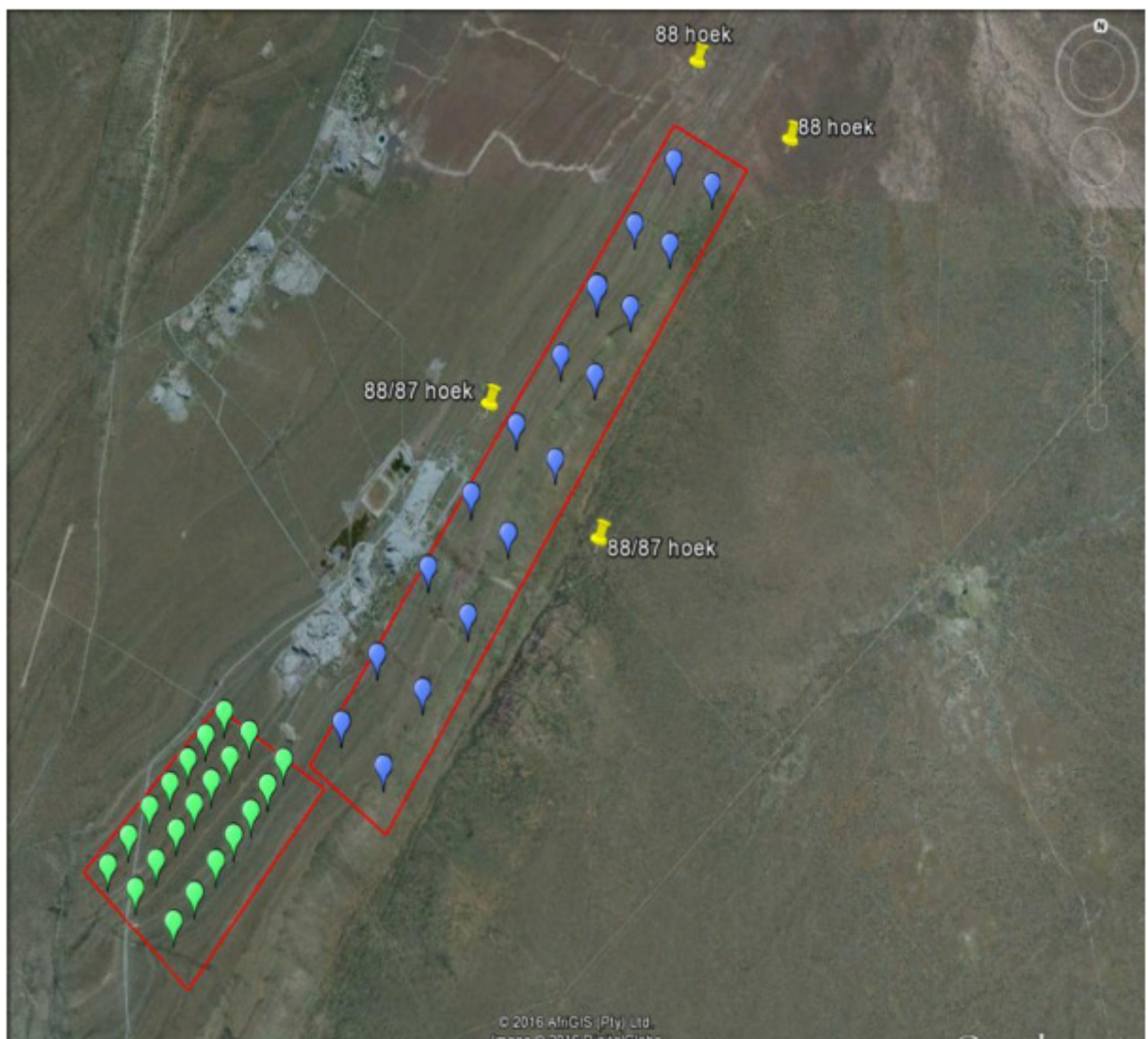
Drill hole Coordinates(Blue markers) for farm 2/88 & 1/87

From NW side, top left downwards

Latitude	Longitude
28°4'33.43"S	24°25'24.76"E
28°4'49.22"S	24°25'15.08"E
28°5'5.36"S	24°25'6.02"E
28°5'20.41"S	24°24'57.37"E
28°5'36.83"S	24°24'46.69"E
28°5'53.05"S	24°24'35.93"E
28°6'9.92"S	24°24'25.99"E
28°6'29.73"S	24°24'14.30"E
28°6'44.88"S	24°24'6.39"E

Right row SE side downwards

Latitude	Longitude
28° 4'37.44"S	24°25'36.14"E
28° 4'52.39"S	24°25'25.42"E
28° 5'7.59"S	24°25'15.72"E
28° 5'23.65"S	24°25'7.26"E
28° 5'43.36"S	24°24'58.12"E
28° 6'0.70"S	24°24'46.80"E
28° 6'19.34"S	24°24'37.74"E
28° 6'36.27"S	24°24'27.22"E
28° 6'53.29"S	24°24'18.60"E



Rehabilitation

Rehabilitation of drill-sites will be done concurrently as each hole is completed. Access road rehabilitation is carried out when all prospecting phases are completed at the end of the diamond drilling activity. Rehabilitated sites will be monitored after drilling has been completed to ensure vegetation growth re-occurs.

On completion of the prospecting operation, the various surfaces, including the access road, will finally be rehabilitated as follows: Any compacted area will be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.

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

Rehabilitation of the secured storage areas

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

All buildings, structures or objects in the secured storage areas shall be dealt with in accordance with regulation 44 of the Minerals and Petroleum Resources Development Act, 2002.

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

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

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

e) Policy and Legislative Context

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 	- 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 	- 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. 	- To be implemented upon the approval of the EMPR.
Fencing Act (Act 31 of 1963)	- Section 17: States that any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5m on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora.	- Control measures are to be implemented upon the approval of the EMPR.
Hazardous Substances Act (Act 15 of 1973) and Regulations read together with NEMA and NEMWA	- Definition, classification, use, operation, modification, disposal or dumping of hazardous substances.	- Noted and Considered measures are to be implemented upon the approval of the EMPR.

Intergovernmental Relations Act (Act 13 of 2005)	- This Act establishes a framework for the National, Provincial and Local Governments to promote and facilitate intergovernmental relations.	
Mine, Health and Safety Act (Act 29 of 1996) and Regulations	- Entire Act.	- Control measures are to be implemented upon the approval of the EMPR.
Mineral and Petroleum Resources Development Act (Act 28 of 2002) and Regulations as amended	- Entire Act. - Regulations GN R527	- Rights and obligations to be adhered to.
National Environmental Management Act (Act 107 of 1998) and Regulations as amended	- Section 2: Strategic environmental management principles, goals and objectives. - Section 24: Foundation for Environmental Management frameworks. - Section 24N: - Section 24O: - Section 28: The developer has a general duty to care for the environment and to institute such measures to demonstrate such care. - Regulations GN R547, more specifically Chapters 5 and 7, where applicable (the remainder was repealed) published on 18 June 2010 in terms of NEMA (Environmental Management Framework Regulations) - Regulations GN R982 to R985, published on 4 December 2014 in terms of NEMA (Listed Activities) - Regulations GN R993, published on 8 December 2014 in terms of NEMA (Appeal) - Regulations GN R994, published on 8 December 2014 in terms of NEMA (exemption) - Regulations GN R205, published on 12 March 2015 in terms of NEMA (National appeal Amendment Regulations) - Regulations GN R1147, published on 20	- The document is being compiled in order to fulfil the requirements thereof.

	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 GNR 150/GG 29657/23-02-2007</p> <p>Publication of lists of critically endangered, vulnerable and protected species GNR</p>	<ul style="list-style-type: none"> - A permit application regarding protected plant species need to be lodged with DENC if necessary. - Control measures are to be implemented upon the approval of the EMPR.

	<p>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"> - Not applicable. The prospecting operation does not fall within any protected area.
<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) - Regulations GN R921 published on 29 	<ul style="list-style-type: none"> - To be implemented upon the approval of the EMPR.

	<p>November 2013 in terms of NEM:WA (Categories A to C – Listed activities)</p> <ul style="list-style-type: none"> - 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 any protected trees is encountered. - 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 	<ul style="list-style-type: none"> - Control measures are to be implemented upon the approval of the EMPR.

	<p>issued by SAHRA or a provincial heritage resources 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 	
National Water Act (Act 36 of 1998) and regulations as amended, <i>inter alia</i> Government Notice No. 704 of 1999	<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; - Regulation GN R704, published on 4 June 1999 	<ul style="list-style-type: none"> - A water use application will not be submitted at this stage until there is a water requirement later in the prospecting operation (DWS). - Control measures are to be implemented upon the approval of the EMPR.

	<p>in terms of the National Water Act (Use of water for mining and related activities)</p> <ul style="list-style-type: none"> - 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.
Northern Cape Nature Conservation Act (Act 9 of 2009)	<ul style="list-style-type: none"> - Addresses protected species in the Northern Cape and the permit application process related thereto. 	<ul style="list-style-type: none"> - A permit application regarding provincially protected plant species as well as for large-scale harvesting of indigenous flora need to be lodged with DENC if applicable.

		- 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. 	- Control measures are to be implemented upon the approval of the EMPR.
Road Traffic Act (Act 93 of 1997) and Regulations	- Entire Act.	- Control measures are to be implemented upon the approval of the EMPR.
Water Services Amendment Act (Act 30 of 2007)	- It serves to provide the right to basic water and sanitation to the citizens of South Africa (giving effect to section 27 of the Constitution).	- Control measures are to be implemented upon the approval of the EMPR.
National Land Transport Act, (Act 5 of 1998)		- To take note.
Northern Cape Planning and Development Act (Act 7 of 1998)	- To control planning and development	- To be implemented upon the approval of the EMPR.
Spatial Planning and Land Use Management (Act 16 of 2013 (SPLUMA) and regulations	<ul style="list-style-type: none"> - 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	- To provide for planning and development	- To take note.

1995) and regulations		
Development Facilitation (GN24, PG329, 24/07/1998)	- Regulations re Northern Cape LDO's	- To take note.
Development Facilitation (GNR1, GG20775, 07/01/2000)	- Regulations re application rules S26, S46, S59	- To take note.
Development Facilitation (GN732, GG14765, 30/04/2004)	- Determines amount, see S7(b)(ii)	- To take note.
Land Survey Act (Act 8 of 1997)) and regulations, more specifically GN R1130	- To control land surveying, beacons etc. and the like; - Agriculture, land survey S10	- To take note.
National Veld and Forest Fire Act (Act 101 of 1998)) and regulations, more specifically GN R1775	- To regulate law on veld and forest fires - (Draft regulations s21)	- To be implemented upon approval of the EMPR
Municipal Ordinance, 20/1974	- To control pollution, sewers etc.	- To be implemented upon approval of the EMPR
Municipal Ordinance, PN955, 29/08/1975	- Nature conservation Regulations	- To be implemented upon approval of the EMPR
Cape Land Use Planning Ordinance, 15/85	- To control land use planning	- To take note.
Cape Land Use Planning Ordinance, PN1050, 05/12/1988	- Land use planning Regulations	- To take note.

f) Need and desirability of the proposed activities

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

The farm portions over which the application was applied for is currently utilized for grazing for cattle access to the farm is gained by an existing farm road. Only a small portion of the grazing land will be impacted on (± 1 ha at any given time which represents the footprints of all activities on the farm combined) the rest of the areas can proceed normally. The area applied for is over the entire portions but the main prospecting focus area will be on the grazing land as. After prospecting the land will be utilized for grazing again.

g) Motivation for the overall preferred site, activities and technology alternative

A Prospecting Right application was lodged to identify the preferred areas on the property. The prospecting will be done with drilling which will indicate if there are areas on the property that can be viably mined or if there is a diamond resource to prospect even further.

The prospecting method of drilling is the only economic viable method currently being used by the diamond fraternity; it is also the only cost effective method. An application for a bulk sample can also be done but it is not cost effective if drilling did not prove a reserve to bulk sample. There is no alternative prospecting method.

h) Full description of the process followed to reach the proposed preferred alternatives within the site

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

There are no alternatives, as the application area applied for is the area where the applicant has identified a potential for a diamond prospecting operation. The farm is also situated in an area known for Kimberlite and Alluvial Diamond deposits.

A Prospecting Right application was lodged and accepted by the Department of Mineral Resources to do drilling whereby the presence of a resource will be determined.

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 property on which or location where it is proposed to undertake the activity:

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

Farm Name	Title Deed	In Extent
Remaining Extent of Farm 84, Barkly-Wes	T2783/2011	2529.4042 Ha
A Portion of Farm 393, Barkly-Wes	T490/2009	

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

The property is accessible via good roads from different directions.

Infrastructure in the area is developed with gravel roads, electricity grid and underground water. Experienced labour is available in the area as is an extensive network of secondary industries geared towards small and large-scale mining.

The surrounding areas rely on groundwater for both domestic and livestock watering purpose. The rest of the water sources are used primarily for game and livestock watering and to a lesser extent for domestic purpose.

Alternatives considered:-

As the Prospecting Right has been accepted over the said area, it would not be viable to consider an alternative site for the prospecting.

Therefore there are no alternatives to the area.

(b) The type of activity to be undertaken:

Scout and delineation drilling for Diamonds (Alluvial) - Code-DA - Type-D, Diamonds (in Kimberlites) - Code-DK - Type-D and Diamonds (General) – Code-D – Type -D.

Alternatives considered:-

The only alternative land use is livestock and game farming; however the applicant's main economic activity is mining (prospecting) and for this reason does not favour any other alternative land use.

Further, since a prospecting right has been accepted the option of amending the prospecting area or the type of activity is neither available nor considerable.

(c) 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 access roads, proximity to the areas earmarked for prospecting as well as limited additional impact on the environmental (non-perennial drainage lines and wind direction), heritage resources.

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

Scout and delineation drilling. If carried out, drilling may necessitate the establishment of access tracks and minor bush clearing for establishment of drill pads. The need for drilling can only be established once phase 1 and 2 of the Prospecting Works Program have been completed

Drill hole locations

A program of thirty nine (18 + 21) drill holes are planned, comprising at depths of 50m-100m, thus producing drilled cores. Each hole will be drilled in a NW direction three times at different angles. First -25°, Second-45°, Third-65°.

(d) The technology to be used in the activity:

- Technique

Non-Invasive Activities

Ground and/or airborne magnetic survey over prospecting area. The area will be flown with an airborne gradient magnetic survey in conjunction with other adjacent prospecting rights applied for. If the survey area is too small for a cost effective airborne survey then ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. Minimal disturbance of vegetation and wildlife is envisaged

Target-specific ground geophysics (magnetics, electromagnetics and gravity). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated. Minimal disturbance of vegetation and wildlife is envisaged

Target specific loam sampling. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material. Minimal disturbance of vegetation and wildlife is envisaged.

Invasive Activities

Scout and delineation drilling. If carried out, drilling may necessitate the establishment of access tracks and minor bush clearing for establishment of drill pads. The need for drilling can only be established once phase 1 and 2 of the Prospecting Works Program have been completed

Drill hole locations

A program of thirty nine (18 + 21) drill holes are planned, comprising at depths of 50m-100m, thus producing drilled cores. Each hole will be drilled in a NW direction three times at different angles. First -25⁰, Second-45⁰, Third-65⁰

- Technology

Prospecting Work

The prospecting work programme will be designed in phases, each phase conditional on the success of the previous phase.

Phase 1: Data Acquisition and Desktop Study:

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

Phase 2: Target Generation and Ground Truthing:

Should the initial results of the desktop study be encouraging, further data will be generated through airborne or ground geophysics. Targets generated by geophysics and/or historical information will be investigated on the ground and subject to more detailed target-specific ground geophysics and loam sampling for the presence of Kimberlite Indicator Minerals (KIM).

If any of the exploration targets give a positive result, a drilling program will be undertaken in order to identify the causative body for the geophysical/geochemical targets.

Phase 3: Scout Drilling and Delineation drilling:

Targets that have been prioritized through detailed anomaly-specific loam sampling and ground geophysics will be tested by initial diamond or percussion drilling. If kimberlite is intersected, one or more 10kg sample will be taken for HMA (Heavy Mineral Abundance) sampling to extract KIM such as garnet, chromite, ilmenite and chrome diopside in representative quantities. These will be analyzed by electron microprobe for major and

selected minor elements, and the results will be interpreted to assess diamond potential.

Dependent on HMA results, further delineation drilling and micro-diamond (MiDA) sampling would be carried out to further define the deposit and give a better indication of grade.

Positive results from MiDA would be followed by more detailed delineation diamonds drilling and geological modelling to assess potential resource tonnage and diamond content. Information gathered during this phase would be used in the decision to embark on additional prospecting and evaluation activities not covered in the scope of this Prospecting Works program. Additional work would only be carried out an appropriate amendment to the prospecting Works Program have been submitted and approved.

Alternatives considered:-

The planned prospecting activities, include Data Acquisition and Desktop Studies, Target Generation and Ground Truthing, Scout Drilling and Delineation drilling if possible. These are the most economic viable method currently being used by the diamond fraternity. There is no other feasible, alternative prospecting method for the prospecting and drilling for diamonds.

(e) The operational aspects of the activity:

Please refer to d) for a complete description of the prospecting methods.

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

Alternatives considered:-

The planned prospecting activities include Data Acquisition and Desktop Studies, Target Generation and Ground Truthing, Scout Drilling and Delineation drilling if possible. The operation is also associated with processing techniques that make use of modern technologies. These are the most economic viable method currently being used by the diamond fraternity. There is no other feasible, alternative prospecting method for the prospecting and drilling for diamonds.

(f) The option of not implementing the activity:

Potential land use includes grazing and mining. The majority of the area is classified to have low to moderate potential for grazing land and no suitability for crop yield. Therefore, prospecting activities are believed to be the most economically beneficial option for the area. Whether the diamond operation continues or not, the other mining operations already granted will most likely persist. The farming of livestock will only be able to continue in areas not affected by mining operations. The most significant impacts associated with grazing activities include the provision of water. These are not expected to have a serious impact on the existing groundwater features. Cumulative impacts associated to grazing include overgrazing and destruction of natural vegetation. The cumulative effect of prospecting activities on the property are expected to be equal to any potential negative effects that agriculture might have.

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

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

Alternative Prospecting Methods

The prospecting method of drilling is the only economic viable method currently being used by the diamond fraternity; it is also the only cost effective method. There is no alternative prospecting method.

Consequence if not proceeding with the Operation

The operation will make provision for 10 job opportunities. This will be lost if the project does not proceed. Substantial tax benefits to the State and Local Government will also be lost. The property will not be potentially prospected for diamonds that naturally occur in this area and the relevant job opportunities and positive impacts that can be made in the surrounding communities will not be happening.

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 consultation process with interested and affected parties was completed.

The process as described by NEMA for Environmental Authorisation was followed. See table below for the identification of Interested and Affected Parties to be consulted with. The landowner is the Republic of South Africa through the Department of Rural Development and Land Reform. A site notice was placed on the fence of the farm, at the entrance to Bellsbank mine, Boetsap Police station and the General dealer at Spitskop dam.

With this site notice all passers-by are requested to register and submit any written comments to be forwarded to the consultant.

An Advert (Notice) was placed in the DFA on 27 September 2016 to notify all other interested and affected parties and to invite any parties to register.

Registered letters were sent on 26 September to all relevant Departments as prescribed by NEMA with a BID document on the project. Also all the neighbours received a letter.

A notice was published on 29 November 2016 to inform all parties of a public meeting that was convened at the Training Centre at Sedibeng Diamond Mine JV, Bellsbank. The attendance register and the minutes and Agenda of the meeting is attached.

A meeting was also convened with the Department of Public Works on 21 November 2016 which was thought to be the property owner. The Department indicated that they are not the property holder and the applicant was referred to The Department of Rural Development and Land Reform who confirmed that they were the property owners.

Another meeting was then scheduled with Department of Rural Development and Land Reform on 28 November 2016 which is the property owner. The necessary agreements will be put in place.

I&AP	ADDRESS	DATE CONSULTED
Dikgatlong Municipality	Private Bag X5 Barkly West 8375	Registered letter posted on 26 September 2016.
Petra Diamonds	P.O. Box 71007 Bryanston 2021	Registered letter posted on 26 September 2016.
SANRAL	P O Box 415 Pretoria 0001	Registered letter posted on 26 September 2016.
Department of Environment and Nature Conservation	Private Bag X6012 Kimberley 8300	Registered letter posted on 26 September 2016.
Department of Agriculture, Forestry and Fisheries: Directorate: Forestry Management	P O Box 2782 Upington 8800	Registered letter posted on 26 September 2016.
Department of Agriculture, Land Reform and Rural Development	Private Bag X5018 Kimberley 8300	Registered letter posted on 26 September 2016.
ESKOM Holdings SOC Limited Northern Cape Operating Unit: Land Development	P O Box 606 Kimberley 8300	Registered letter posted on 26 September 2016.
Department of Water & Sanitation Northern Cape	Private Bag X6101 Kimberley 8300	Registered letter posted on 26 September 2016.
National Department of Public Works	P.O. Box 1931 Kimberley 8300	Registered letter posted on 26 September 2016.
Transnet	P.O. Box 72501 Parkview 2122	Registered letter posted on 26 September 2016.
SAHRA	P.O. Box 4637 Cape Town 8000	Registered letter posted on 26 September 2016.
National Department of Public Works	Private Bag X5002 Kimberley	Registered letter posted on 26 September 2016.

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iii) Summary of issues raised by I&APs

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

Interested and Affected Parties		Date Comments Received	Issues Raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted					
AFFECTED PARTIES					
Landowner/s	X				
National Government of Republic of South Africa (Farm 84)	Department of Rural Development and Land Reform X	Meeting on 29 November 2016	On meeting it was agreed that concerns will be communicated in writing. An agreement will be put in place.		l (b)
Messina Diamonds (Pty) Ltd (0.5%). Dancarl Diamonds (Pty) Ltd. (0.5%) of Portion of the Farm 393.	X				
Lawful occupier/s of the land					
There are no lawful occupiers, there is no one living on the farm					
Landowners or lawful occupiers on adjacent properties	X				
Municipal Councillor					
Municipality					
Dikgatlong Local Municipality Private Bag X5 Barkly West 8375	X				
Organs of State (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA					
ESKOM Environmental Division P.O. Box 606 Kimberley 8300	X	04 October 2016	Eskom distribution will raise no objection to the proposed Mining operations on the above mentioned properties provided that Eskom's rights and services are acknowledged and respected at all times. There is a 15.5m building and tree restriction on either side of the 132kV power lines which must be adhered to in all future developments and or construction. Eskom's rights are protected by	Acknowledgement of receipt.	L (ii)

			Wayleave agreements and Servitudes. The approximate positions of these services are indicated on the attached sketches.		
Department of Agriculture, Forestry & Fisheries: Forestry Management P.O. Box 2782 Uppington 8800	X				
Department of Agriculture, Land Reform and Rural Development Private Bag X5018, Kimberley 8300	X				
National Department of Public Works, Kimberley Regional Office P.O. Box 1931 Kimberley 8300	X				
Department of Water & Sanitation Northern Cape Private Bag X6101, Kimberley 8300	X				
Department of Environment & Nature Conservation Private Bag X6102, Kimberley 8300	X				
SANRAL P.O. Box 415 Pretoria 0001	X				
TRANSNET P.O. Box 72501 Parkview 2122	X				
SAHRA P.O. Box 4637 Cape Town 8000	X				
National Department of Public Works Private Bag X5002, Kimberley 8300	X				
Petra Diamonds South Africa P.O. Box 71007, Bryanston 2021	X	Letter was returned by the Post Office			
Communities					
No Communities					
Dept. Land Affairs					
Department of Agriculture, Land Reform and Rural Development Private Bag X5018, Kimberley 8300	X				
Traditional Leaders					
No Traditional leaders					
Dept. Environmental Affairs					

Department of Environment & Nature Conservation Private Bag X6102, Kimberley 8300	X				
Other Competent Authorities affected					
<u>OTHER AFFECTED PARTIES</u>					
<u>INTERESTED PARTIES</u>					
ACTIONAID Christopher Rutledge Mining and Extractives Coordinator South Africa		e-mail received from Mr. Rutledge to register as an interested party.	No issues raised. Requested for all documents to be send.	Email was acknowledged and registration forms were send to complete.	

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)

Regional Geology

Much of the region of the north-eastern Cape Province is underlain by flat-lying Palaeozoic rocks of the Karoo Supergroup and the sub-vertical Proterozoic rocks of the Transvaal Supergroup. The Transvaal Supergroup consists of dolomitic rocks and mafic lavas. Permian Dwyka-Ecca Group tillites, shales and marine sediments form the base of the Karoo succession and are overlain by arenaceous continental sediments of the Beaufort and Stormberg Groups. The sedimentary rocks are capped by an accumulation of Cretaceous amygdaloidal basalt flows up to 1,700 m thick belonging to the Drakensburg Group. Feeder dykes and sills of basalt are common within the underlying 1,000 m of sediments. Kimberlite intrusions, some of which are diamondiferous, represent the final phase of igneous activity in the region. They were emplaced during the Cretaceous in several parallel north-northeast and east-west trending structures.

Southern African kimberlites intrusions are divided into Group I (basaltic) and Group II (micaceous) kimberlites. This division was originally made along mineralogical grounds. However, the Group I/Group II distinction is better defined by isotopic ratios. Group I kimberlites have lower $^{87}\text{Sr}/^{86}\text{Sr}$ and higher $^{143}\text{Nd}/^{144}\text{Nd}$ ratios than Group II kimberlites. Mineralogically the Group I kimberlites have olivine, monticellite, serpentine-rich

groundmass, while the Group II kimberlites have a phlogopite, tetraferriphlogopite, olivine groundmass.

Spatially, the occurrence of Group I and Group II kimberlites overlap, though Group II kimberlites (110Ma – 200 Ma.) are older than the majority of Group I kimberlites (generally less than 90 Ma.). Economically viable Group II kimberlites occur as both pipes and dykes (fissures), while the only economically viable Group I kimberlites to date are pipes.

Local Geology and Historic Information

This application covers an area of approximately 5 600.7680 Ha, and is situated approximately 70Km south-east of Reivilo and approximately 100km north-west of Kimberly, adjacent to the provincial border between the North West Province and the Northern Cape.

The area lies on the Kaapvaal craton, on the Eastern edge of the Griqualand West basin, and consists of dolomite, limestone and chert of the Reivilo formation (2567Ma). These shallow water carbonate deposits form the lower section of the Campbellrand Subgroup of the Ghaap Group, and are overlain in places by recent cover of calcrete and sand which can exceed 30m in thickness. Ghaap Group sediments are underlain by andesitic lavas and rare tuffaceous sediments of the Ventersdorp Supergroup. These lithologies are known to occur at a depth of approximately 400m from surface at Sedibeng Diamond mine 10km to the SW, and are separated from the overlying Ghaap Group sediments by a major geological unconformity.

Historically, several kimberlite occurrences are known in the area, and number of these have been exploited for diamonds in the past (e.g. the Bobbejaan and Bellsbank fissures on the edge of the Ghaap plateau are directly adjacent to the area applied for). There have also been various alluvial diamond operations in this region (e.g. Mahura Muthla 60km to the north), however, the calcretised nature of these deposits has made them relatively difficult to mine.

The detailed geology and economic potential of the area under application is currently unknown, though the area is perceived to have good potential for hosting economically viable kimberlites due to the proximity of current, or historically producing, hard-rock diamond mines. The regional geology is also conducive to the possibility of alluvial diamonds in palaeochannels.

The Bellsbank and Bobbejaan kimberlite occurrences in the immediate vicinity are Group II “fissures” (kimberlite dykes with an average width of 0.5m to 1m) and occasional blows (irregular shaped enlargements on the fissures, often with large amounts of wall rock included with the kimberlite to form a breccia). Fissures are not continuous intrusions, but systems of discrete, disc-like lenses of kimberlite that pinch and swell along strike (typical lenses are 70-80m in diameter). If one lens pinches out and

disappears, the next is usually located to the side of the first, offset by several metres. The same offset, or en-echelon, pattern between lenses is evident vertically as well as horizontally.

This system is often repeated at a larger scale with fissure “segments” (made up of groups of individual lenses) of hundreds of metres in length being separated by offsets of more than 100m in places. These larger offsets often coincide with major geological features, e.g. discontinuities in host rock lithologies such as faults and unconformities.

As stated earlier, the known kimberlite occurrences adjacent to the area under application are sub-parallel to the Ghaap Plateau escarpment, and only outcrop on surface in the immediate vicinity of the escarpment edge. To the west of the escarpment underlying rock types (especially kimberlite) can be masked by recent calcrete and overburden. Blind kimberlite deposits may also exist below the unconformity between the Ghaap Group Sediments and the Ventersdorp volcanics. This unconformity has been shown to disrupt and “displace” the kimberlite fissure at Sedibeng Diamond Mine by up to 70m.

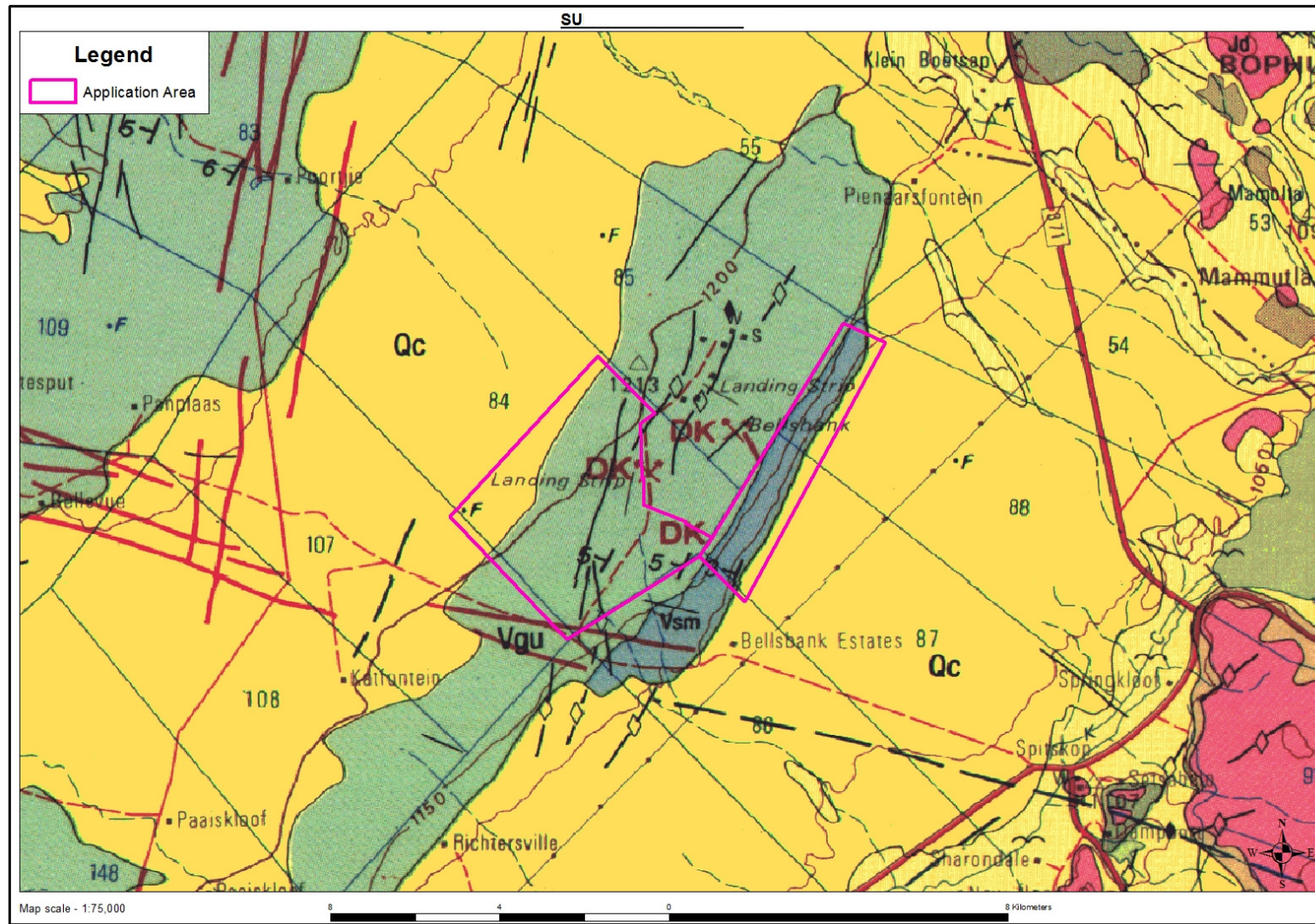


Figure 4: Geological Map of the application area.

Air Quality:

Current sources of impacts on air quality are the dust from the unpaved gravel road. Prospecting activities such as drilling and gravel roads from where the tar road end to the prospecting site will add impact on the environment.

The general air quality on the area is expected to be good.

Fauna:

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

No areas of faunal significance or sensitivity within the natural habitat were observed within the study area. This is probably due the the close proximity of the mine.

Vertebrates that could occur in the area.

Order	Family	Scientific name	Common name
Phylum Vertebrata; Class Amphibia			
Anura			
	Brevicipitidae	<i>Poyntonophrynus vertebralis</i>	Southern Pygmy Toad
	Bufonidae	<i>Amietophrynus rangeri</i>	Raucous Toad
		<i>Amietophrynus gutturalis</i>	Guttural Toad
		<i>Vandijkophrynus gariiepensis</i>	Karoo Toad
	Hyperoliidae	<i>Kassina senegalensis</i>	Bubbling Kassina
	Pipidae	<i>Xenopus laevis</i>	Common Platanna
	Pixycephalidae	<i>Cacosternum boettgeri</i>	Boettger's Caco
		<i>Amietia fuscigula</i>	Cape River Frog
		<i>Amieta angolensis</i>	Common River Frog
		<i>Pixycephalus adspersus</i>	Giant Bullfrog
		<i>Tomopterna cryptotis</i>	Tremolo Sand Frog
		<i>Tomopterna tandyi</i>	Tandy's Sand Frog
Phylum Vertebrata; Class Reptilia			
Testudines	Testudinidae	<i>Geochelone pardalis</i>	Leopard Tortoise
		<i>Homopus femoralis</i>	Greater Padloper
		<i>Psammobates oculiferus</i>	Kalahari Tent Tortoise
	Trionychidae	<i>Pelomedusa subrufa</i>	Marsh Terrapin
Squamata	Typhlopidae	<i>Rhinotyphlops lalandei</i>	Delalande's Blind Snake
	Leptotyphlopidae	<i>Leptotyphlops scutifrons</i>	Peter's Thread Snake

Order	Family	Scientific name	Common name
	Leptotyphlopidae	<i>Lycodonomorphus rufulus</i>	Common Brown Water Snake
	Atractaspidae	<i>Atractaspis bibronii</i>	Bibron's burrowing Asp
	Colubridae	<i>Lamprophis fuliginosus</i>	Brown House Snake
		<i>Lamprophis aurora</i>	Aurora House Snake
		<i>Lycophidion capense</i>	Cape Wolf Snake
		<i>Pseudaspis cana</i>	Mole Snake
		<i>Prosymna sundevallii</i>	Sundevall's Shovel-snout
		<i>Psammophylax rhombeatus</i>	Rhombic Skaapsteker
		<i>Psammophis notostrictus</i>	Karoo Sand Snake
		<i>Psammophis leightonii</i>	Cape Fork-marked Snake
		<i>Psammophis crucifer</i>	Cross-marked Snake
		<i>Dasypeltis scabra</i>	Common Egg Eater
		<i>Crotaphopeltis hotamboeia</i>	Red-lipped Snake
		<i>Telescopus semiannulatus</i>	Eastern Tiger Snake
	Elapinae	<i>Elapsoidea boulengeri</i>	Boulenger's Garter Snake
		<i>Elapsoidea sundevallii</i>	Sundevall's Garter Snake
		<i>Naja nivea</i>	Cape Cobra
		<i>Hemachatus haemachatus</i>	Rinkhals
	Viperidae	<i>Bitis arietans</i>	Puff Adder
	Amphisbaenidae	<i>Zygaspis quadrifrons</i>	Cape Spade-snouted Worm Lizard

Order	Family	Scientific name	Common name
	Scincidae	<i>Acontias gracilicauda</i>	Thin-tailed Legless Skink
		<i>Mabuya capensis</i>	Cape Skink
		<i>Mabuya striata</i>	Striped Skink
		<i>Mabuya sulcata</i>	Western Rock Skink
		<i>Mabuya variegata</i>	Variegated Skink
	Lacertidae	<i>Ichnotropis squamulosa</i>	Common Rough-scaled Lizard
		<i>Nucras intertexta</i>	Spotted Sandveld-Lizard
		<i>Pedioplanis lineocellata</i>	Spotted Sand lizard
		<i>Nucras holubii</i>	Holub's Sandveld Lizard
		<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard
		<i>Cordylus polyzonus</i>	Karoo Girdled Lizard
	Varanidae	<i>Varanus albigularis</i>	Rock Monitor
		<i>Varanus niloticus</i>	Water Monitor
	Agamidae	<i>Agama aculeate</i>	Ground Agama
		<i>Agama atra</i>	Southern Rock Agama
		<i>Agama hispida</i>	Southern Spiny Agama
	Chamaeleonidae	<i>Chamaeleo dilepis</i>	Flap-neck Chameleon
	Gekkonidae	<i>Lygodactylus capensis</i>	Cape Dwarf Gecko
		<i>Pachydactylus bibronii</i>	Bibron's Thick-toed Gecko
		<i>Pachydactylus capensis</i>	Cape Thick-toed Gecko
		<i>Pachydactylus mariquensis</i>	Marico Thick-toed Gecko
Phylum Vertebrata; Class Mammalia			
Insectivora	Erinaceidae	<i>Atelerix frontalis</i>	Hedgehog
	Soricidae	<i>Suncus varilla</i>	Lesser Dwarf Shrew

Order	Family	Scientific name	Common name
		<i>Crocidura cyanea</i>	Reddish-grey musk shrew
		<i>Elephantulus myurus</i>	Rock Elephant Shrew
		<i>Chlorotalpa sclateri</i>	Sclater's Golden mole
Rodentia	Bathyergidae	<i>Cryptomys hottentotus</i>	Common Molerat
	Muridae	<i>Tatera leucogaster</i>	Bushveld Gerbil
		<i>Mastomys coucha</i>	Multimammate Mouse
		<i>Saccostomys campestris</i>	Pouched Mouse
		<i>Graphyurus murinus</i>	Woodland dormouse
		<i>Otomys angolensis</i>	Angoni vlei rat
		<i>Otomys iroratus</i>	Vlei rat
		<i>Rabdomys pumilio</i>	Striped mouse
		<i>Mus musculus</i>	House mouse
		<i>Mus minutoides</i>	Pygmy mouse
		<i>Mastomys natalensis</i>	Multimammate mouse
		<i>Aethomys namaquensis</i>	Namaqua rock mouse
		<i>Aethomys chrysophilus</i>	Red veld rat
		<i>Rattus rattus</i>	House rat
		<i>Desmodillus auricularis</i>	Short-tailed gerbil
		<i>Gerbillus paeba</i>	Hairy-footed gerbil
		<i>Tatera leucogaster</i>	Bushveld Gerbil
		<i>Tatera brandsii</i>	Highveld Gerbil
		<i>Mastomys albicaudatus</i>	White-tailed mouse
		<i>Malacothrix typical</i>	Large-eared mouse
		<i>Dendromys melanotis</i>	Grey climbing mouse
	Sciuridae	<i>Xerus inauris</i>	Cape Ground Squirrel
	Pedetidae	<i>Pedetes capensis</i>	Spring Hare
	Hystriidae	<i>Hystrix africae australis</i>	South African Porcupine
Lagomorpha	Leporidae	<i>Lepus saxatilis</i>	Scrub Hare
Carnivora		<i>Lepus capensis</i>	Cape Hare
	Canidae	<i>Canis mesomelas</i>	Black-backed Jackal
		<i>Vulpes chama</i>	Cape Fox

Order	Family	Scientific name	Common name
		<i>Otocyon megalotis</i>	Bad-eared Fox
	Herpestidae	<i>Suricata suricata</i>	Meerkat
		<i>Cynictis penicillata</i>	Yellow mongoose
		<i>Galerella sanguinea</i>	Slender Mongoose
	Mustelidae	<i>Ictonix striatus</i>	Zorilla
		<i>Poecilogale albinucha</i>	Striped Weasel
	Viverridae	<i>Genetta genetta</i>	Common genet
	Felidae	<i>Caracal caracal</i>	Caracal
		<i>Felis nigripes</i>	Black-footed Cat
		<i>Felis sylvestris</i>	Wild Cat
Tubulidentata	Orycteropidae	<i>Orycteropus afer</i>	Aardvark
Artiodactyla	Bovidae	<i>Raphicerus campestris</i>	Steenbok
		<i>Sylvicapra grimmia</i>	Common Duiker

Animal Species of Importance

Red Listed Fauna Species

The World Conservation Organization (IUCN) has three threatened categories, namely Critically Endangered (CE), Endangered (EN) and Vulnerable (VU). Species that have been evaluated according to the IUCN criteria and do not fall into one of the threatened categories can be classified as Least Concern (LC), Near Threatened (NT) or Data Deficient (DD). Species classified as Least Concern have been evaluated and do not qualify for the Critically Endangered, Endangered, and Vulnerable or Near Threatened categories. Species that are widespread and abundant are normally included in this category. Table 1 lists red data species found in habitat typical of the study area and surrounding areas.

Table 1: Red Listed fauna species for the region

Scientific name	Common name	Threatened Status
<i>Atelerix frontalis</i>	South African Hedgehog	NT
<i>Poecilogale albinucha</i>	African Weasel	DD
<i>Pedetes capensis</i>	Spring Hare	VU
Scientific name	Common name	Threatened Status
<i>Mastomys albicaudatus</i>	White-tailed mouse	VU

Most of the above-mentioned species are habitat specialists and are restricted to specific sensitive habitat types (ridges, seasonal pans, etc.). The study site does

not cater for unique and specialized habitats. Only a few Red Data species would frequent this site.

Birds

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

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

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

Table 2. Bird of conservation concern that are likely to occur on site. Species are indicated in terms of the SA Bird Atlas and Schedule 1 of the Northern Cape Nature Conservation Act (NCNCA).

Scientific name NCNCA	Common name	SA Bird Atlas	
<i>Accipiter badius</i>	Shikra		X
<i>Anthropoides paradisea</i>	Blue Crane	NT	
<i>Aquila rapax</i>	Tawny Eagle	EN	X
<i>Aquila verreauxii</i>	Verreaux's Eagle	VU	X
<i>Ardeotis kori</i>	Kori Bustard	NT	
<i>Bubo africanus</i>	Spotted Eagle-Owl		X
<i>Bubo lacteus</i> Verreaux's	Eagle-Owl		X
<i>Buteo rufofuscus</i>	Jackal Buzzard		X
<i>Buteo vulpinus</i>	Steppe Buzzard		X
<i>Caprimulgus europaeus</i>	European Nightjar		X
<i>Caprimulgus rufigena</i>	Rufous-cheeked Nightjar		X
<i>Caprimulgus tristigma</i>	Freckled Nightjar		X
<i>Charadrius pallidus</i>	Chestnut-banded Plover	NT	X
<i>Ciconia abdimii</i>	Abdim's Stork	NT	
<i>Ciconia nigra</i>	Black Stork	VU	X
<i>Circaetus pectoralis</i>	Black-chested Snake-Eagle		X
<i>Circus maurus</i>	Black Harrier	EN	X
<i>Circus pygargus</i>	Montagu's Harrier		X
<i>Circus ranivorus</i>	African Marsh-Harrier	EN	X
<i>Coracias garrulus</i>	European Roller	NT	
<i>Cursorius rufus</i>	Burchell's Courser	VU	
<i>Elanus caeruleus</i>	Black-shouldered Kite		X
<i>Falco biarmicus</i>	Lanner Falcon	VU	X
<i>Falco naumanni</i>	Lesser Kestrel		X
<i>Falco peregrinus</i>	Peregrine Falcon		X
<i>Falco rupicolis</i>	Rock Kestrel		X
<i>Falco rupicoloides</i>	Greater Kestrel		X
<i>Glareola nordmanni</i>	Black-winged Pratincole	NT	X

<i>Glaucidium perlatum</i>	Pearl-spotted Owlet		X
<i>Gyps africanus</i>	White-backed Vulture	CR	X
<i>Gyps coprotheres</i>	Cape Vulture	EN	X
<i>Haliaeetus vocifer</i>	African Fish-Eagle		X
<i>Hieraaetus pennatus</i>	Booted Eagle		X
<i>Leptoptilos crumeniferus</i>	Marabou Stork	NT	X
<i>Melierax gabar</i>	Gabar Goshawk		X
<i>Milvus migrans</i>	Black Kite		X
<i>Neotis ludwigii</i>	Ludwig's Bustard	EN	X
<i>Oxyura maccoa</i>	Maccoa Duck	NT	
<i>Phoenicopus minor</i>	Lesser Flamingo	NT	X
<i>Phoenicopus ruber</i>	Greater Flamingo	NT	X
<i>Polemaetus bellicosus</i>	Martial Eagle	EN	X
<i>Polhierax semitorquatus</i>	Pygmy Falcon		X
<i>Polyboroides typus</i>	African Harrier-Hawk		X
<i>Ptilopus granti</i>	Southern White-faced Scops-Owl		X
<i>Rostratula benghalensis</i>	Greater Painted-snipe	NT	X
<i>Sagittarius serpentarius</i>	Secretarybird	VU	X
<i>Torgos tracheliotus</i>	Lappet-faced Vulture	EN	X
<i>Tyto alba</i>	Barn Owl		X

Flora:

According to Mucina & Rutherford (2006) the Schmidtsdrif Thornveld, the Ghaap Plateau Vaalbosveld is dominated by the Vaalbos (*Tachonanthus camphoratus*) and to a lesser extent by Swarthaak (*Acacia mellifera*) other trees are the Wild Olive (*Olea europaea* subsp *africana*), Common Karee (*Searsia lancea*) and Buffalo Thorn (*Ziziphus mucronata*).

The grass layer is typically sweet grassland. Grasses such as *Aristida congesta*, *Eragrostis lehmanniana*, *Stipagrostis uniplumis*, *Schmidtia pappophoroides*, *Enneapogon scoparius*, *E. desvauxii* and *Heteropogon contortus* are some of the dominant grass species.

The herbaceous layer is dominated by the abovementioned grasses as well as species such as *Elephantorrhiza elephantina*, *Selago densiflora*, *Hermannia depressa*, *Herbmstaedtia odorata*, *Barleria macrostegia*, *Geigeria filifolia*, *Gisekia africana*, *Chrysocoma ciliaris*, *Felicia muricata*, *Jamesbrittenia aurantiaca* and *Vahlia capensis*.

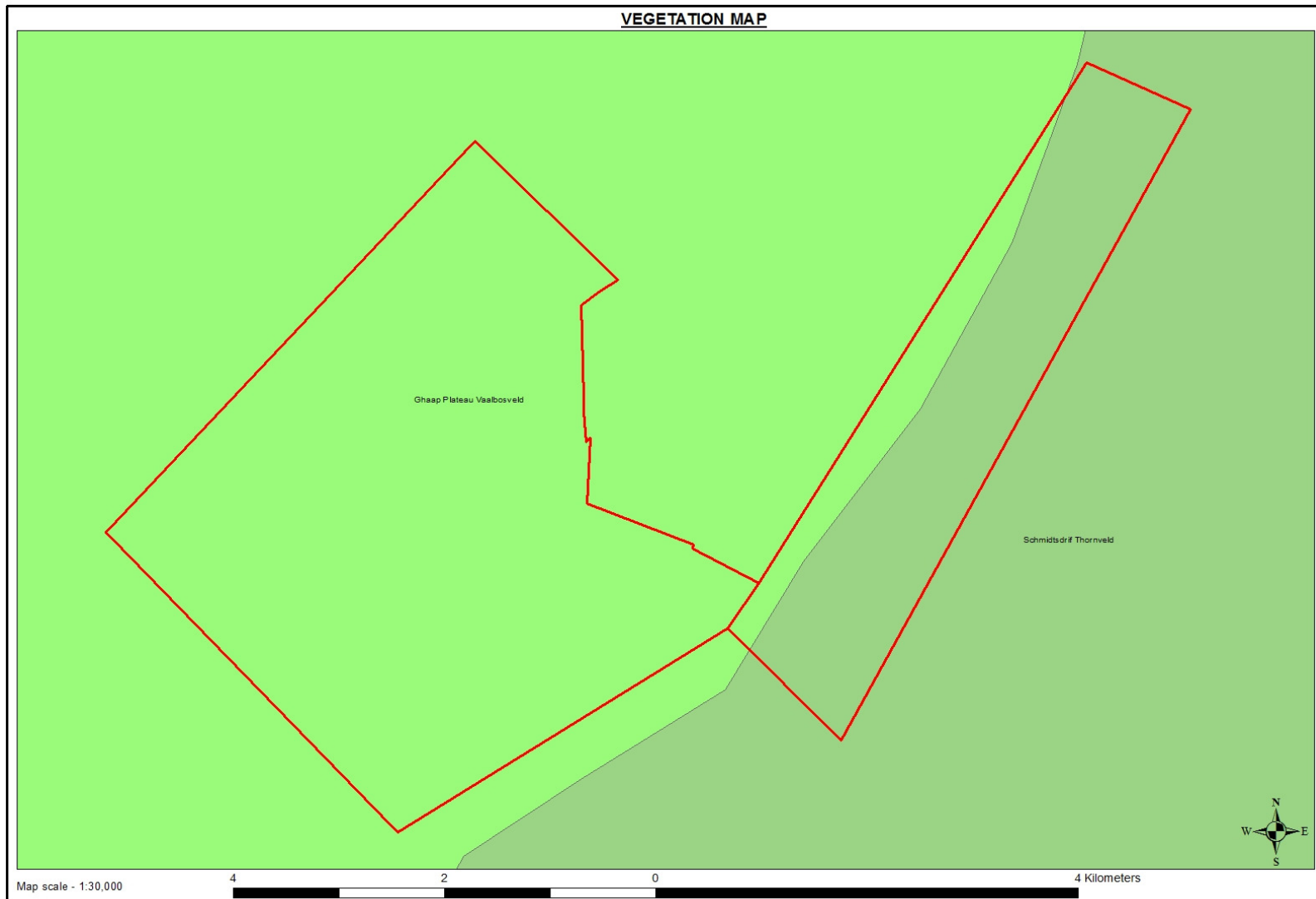


Figure 5: Vegetation of the application area.

Surface Water:

The application area falls into the C33C catchment area. It is unlikely that the prospecting operation (drilling) will negatively affect any surface water. The Spitskopdam are about 9 km from the proposed application area.

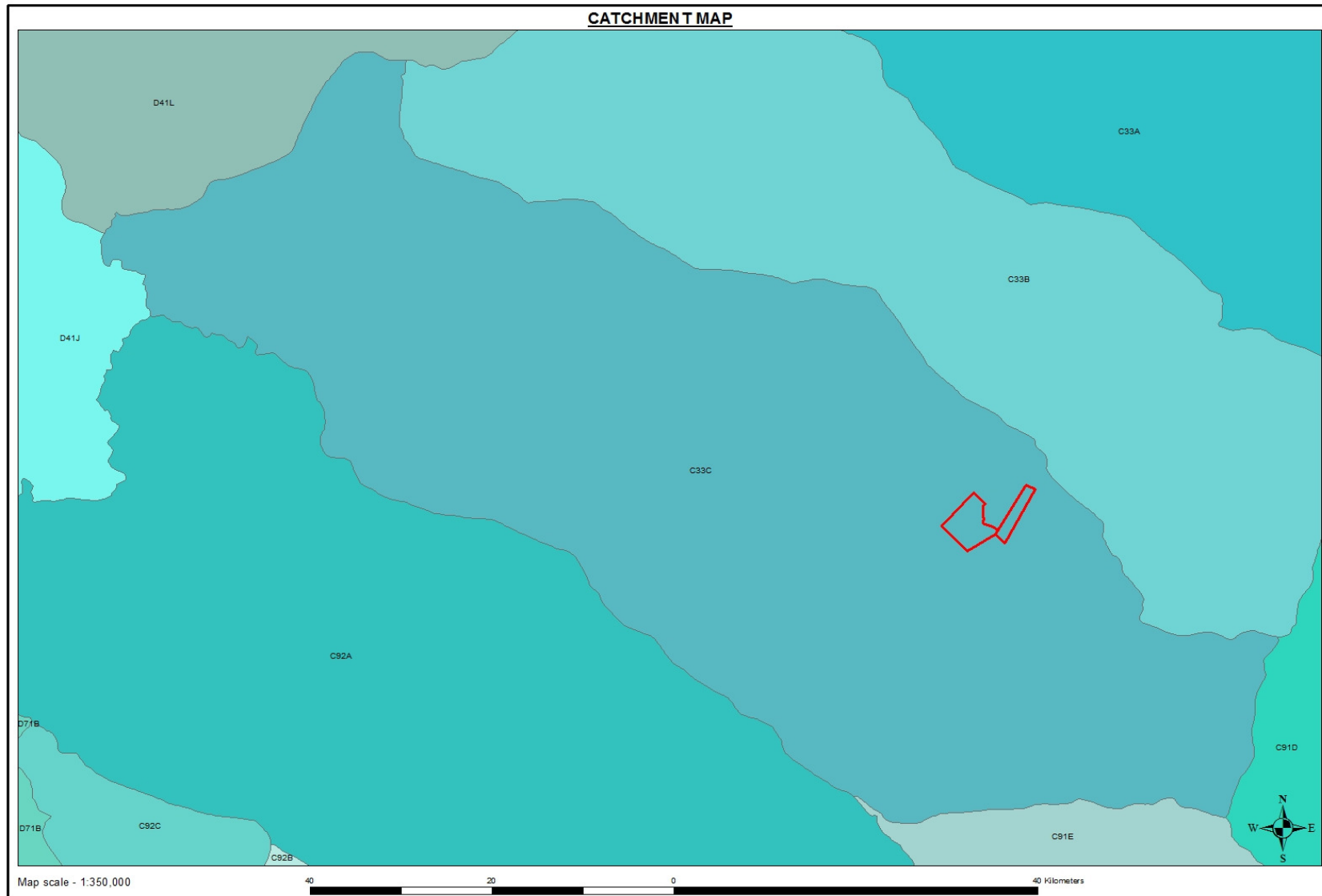


Figure 6: Catchment map of the application area.

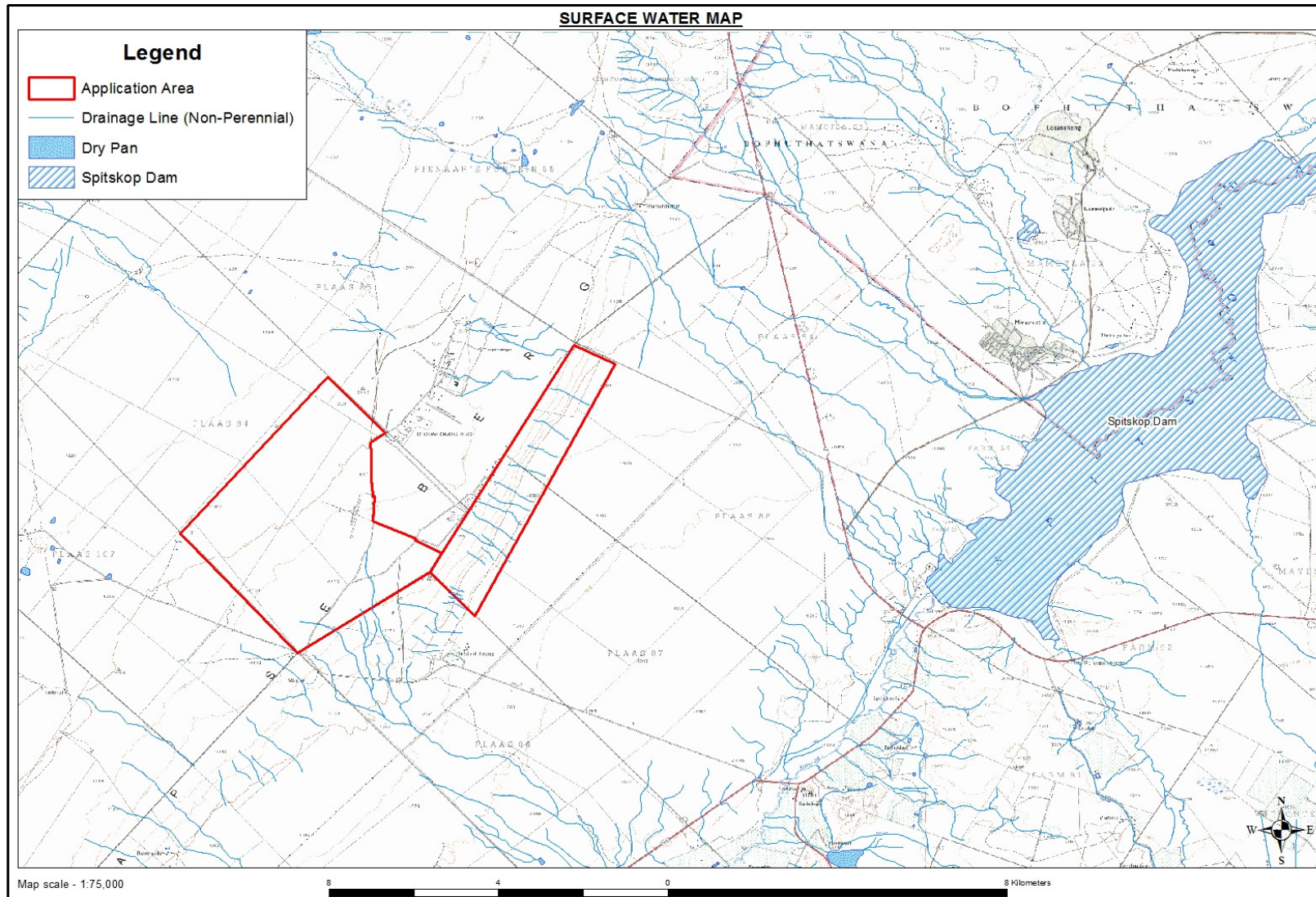


Figure 7: Surface Water map of the application area.

Noise:

The current sources of noise are from the gravel road R371 from Spitskop towards Klein Boetsap.

Soil:

The area has not been irrigated and is engaged by livestock grazing land, as a result has a low agricultural potential for cropping production. There are no centre pivots, irrigation schemes or active agricultural fields, which will be influenced by the proposed prospecting operation.

Geology:

Much of the region of the north-eastern Cape Province is underlain by flat-lying Palaeozoic rocks of the Karoo Supergroup and the sub-vertical Proterozoic rocks of the Transvaal Supergroup. The Transvaal Supergroup consists of dolomitic rocks and mafic lavas. Permian Dwyka-Ecca Group tillites, shales and marine sediments form the base of the Karoo succession and are overlain by arenaceous continental sediments of the Beaufort and Stormberg Groups. The sedimentary rocks are capped by an accumulation of Cretaceous amygdaloidal basalt flows up to 1,700m thick belonging to the Drakensburg Group. Feeder dykes and sills of basalt are common within the underlying 1,000m of sediments. Kimberlite intrusions, some of which are diamondiferous, represent the final phase of igneous activity in the region. They were emplaced during the Cretaceous in several parallel north-northeast and east-west trending structures.

Southern African kimberlites intrusions are divided into Group I (basaltic) and Group II (micaceous) kimberlites. This division was originally made along mineralogical grounds. However, the Group I/Group II distinction is better defined by isotopic ratios. Group I kimberlites have lower $87\text{Sr}/86\text{Sr}$ and higher $143\text{Nd}/144\text{Nd}$ ratios than Group II kimberlites. Mineralogically the Group I kimberlites have olivine, monticellite, serpentine-rich, groundmass, while the Group II kimberlites have a phlogopite, tetraferriphlogopite, olivine groundmass.

Spatially, the occurrence of Group I and Group II kimberlites overlap, though Group II kimberlites (110Ma – 200Ma) are older than the majority of Group I kimberlites (generally less than 90 Ma). Economically viable Group II kimberlites occur as both pipes and dykes (fissures), while the only economically viable Group I kimberlites to date are pipes.

Heritage:**PORTION OF THE FARM 393**

Eighteen sites (18) were recorded (see Inventory above and Catalogue in Section 8 of the heritage report attached as Annexure B).

The Stone Age

Four (4) Stone Age Sites were recorded all with a low density of lithics, and none demonstrating concentrated or regular activity. None of the sites represent substantial settlement to warrant further investigation. The sites appear to be spread all over the plateau and escarpment.

The Iron Age

No Iron Age sites were found on the properties.

Early Modern Mining

The occurrence of many mine claim pegs (an iron plaque standing in a concrete cube base) is evidence of the existence of many small claims in the early pioneering years. None of the trenches made by the small-scale minors are worth preserving. The claim pegs in concrete are portable and can be moved, displayed in a park or garden.

Two instances of early fissure mining have been recorded. One site is fenced off with a steel palisade. One or both fissures may be wholly or partially preserved as evidence of early mining methods.

Modern Mine infrastructure and associated buildings

Buildings and Infrastructure at four the mine shafts were recorded, of which none is more than 60 years old. Although these are important utilities they carry no heritage significance in terms of statutory provisions.

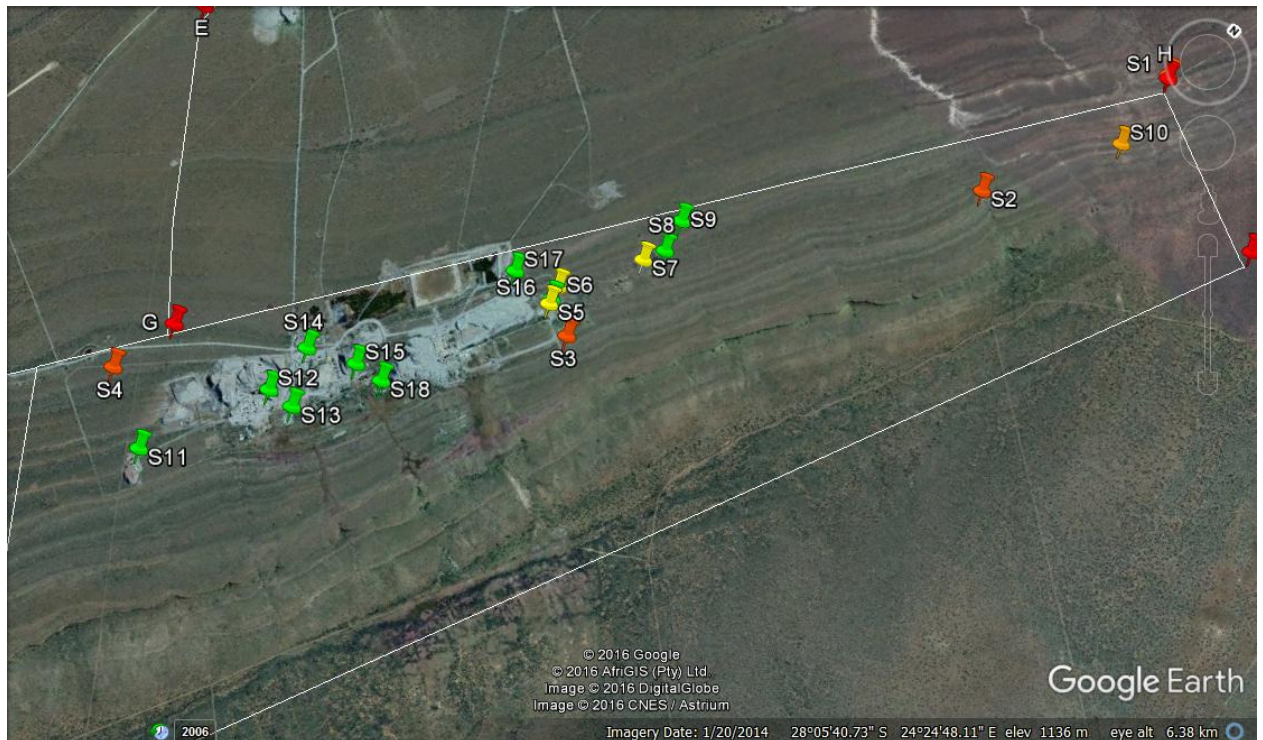


Figure 8: Sites on a Portion of the Farm 393. Orange= Stone Age sites; Yellow = sites of the early mining period; Green = Sites of no heritage value in terms of statutory provisions.

THE REMAINING EXTENT OF 84

Fifteen sites (15) were recorded (see Inventory above and Catalogue in Section 8 of the heritage Report attached as Annexure B).

The Stone Age

Twelve (12) Stone Age Sites were recorded of which all have a low density of lithics, and none demonstrating concentrated or regular activity (S19 – S27, S30-S31). They seem to represent general activity and movement of foragers in the area in the MSA/LSA, and no particular regular settlement can be pinpointed. The sites have been recorded and no further mitigation is recommended.

The Iron Age

No Iron Age sites were found on the properties.

Early Modern Mining

A deep mine trench was recorded (S28). An old concrete ramp or terrace with a stone revetment wall with a maximum height of 220m was built on the crest of the ridge. It appears to be the remains of a processing plant. This structure is in a sound state and can be preserved as a footprint of early modern mining in the area.

Linear pile of stones

A linear pile of stones 470m long is laid transverse to the ridge. The stones appear to have been extracted during trenching for a water pipeline. They were replaced after laying of the pipe and backfilling. The pile is a significant linear feature in the landscape seen from the top of the ridge, and may be worth preserving.

Recommendations

The proposed mine prospecting can go ahead subject to the precautions stated above taken. In the event of discovery of other heritage resources in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.

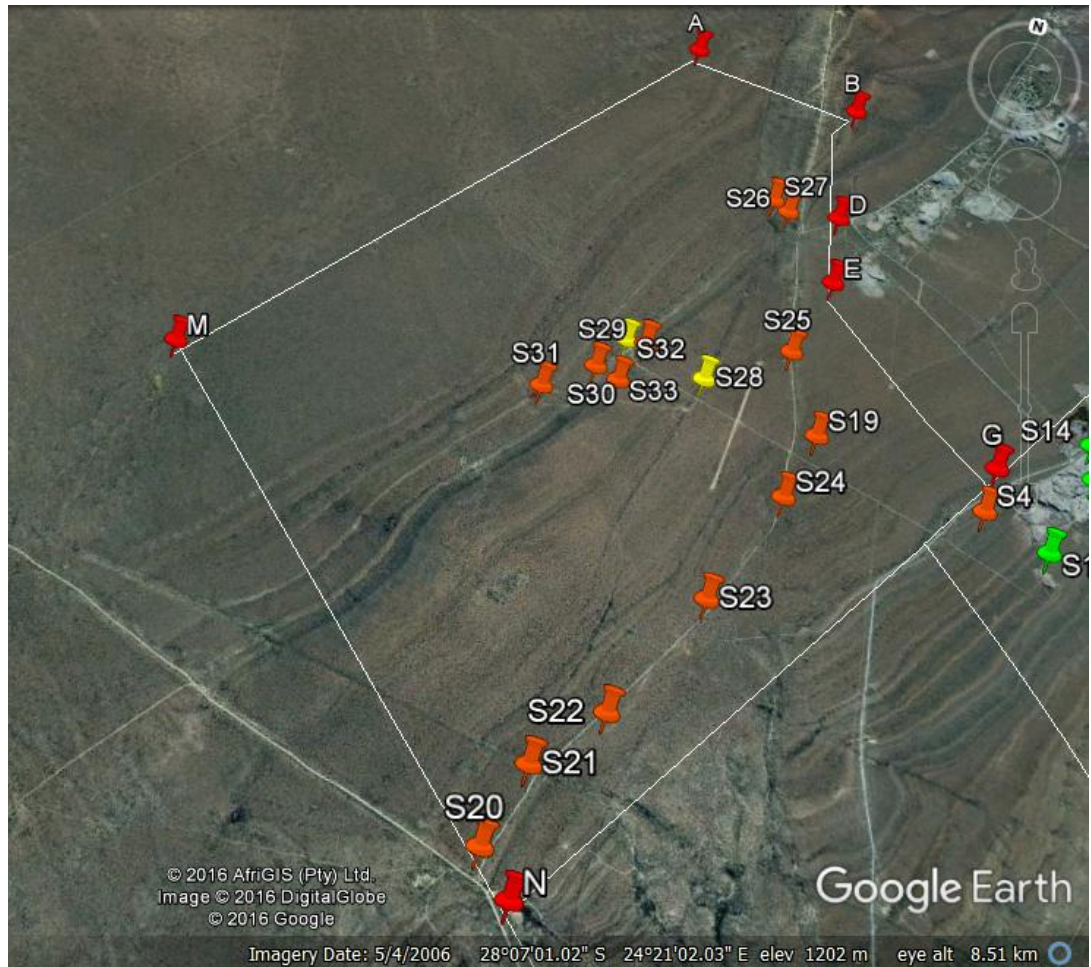


Figure 9: Sites on Portion of the Remaining extent of the Farm 393. Orange= Stone Age sites; Yellow = sites of the early mining period.

(b) Description of the current land uses

The current land use on this property is for livestock grazing and game.

Please see Baseline Description above.

(c) Description of specific environmental features and infrastructure on the site

Please see description of the environment under section (a) Baseline Description above.

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

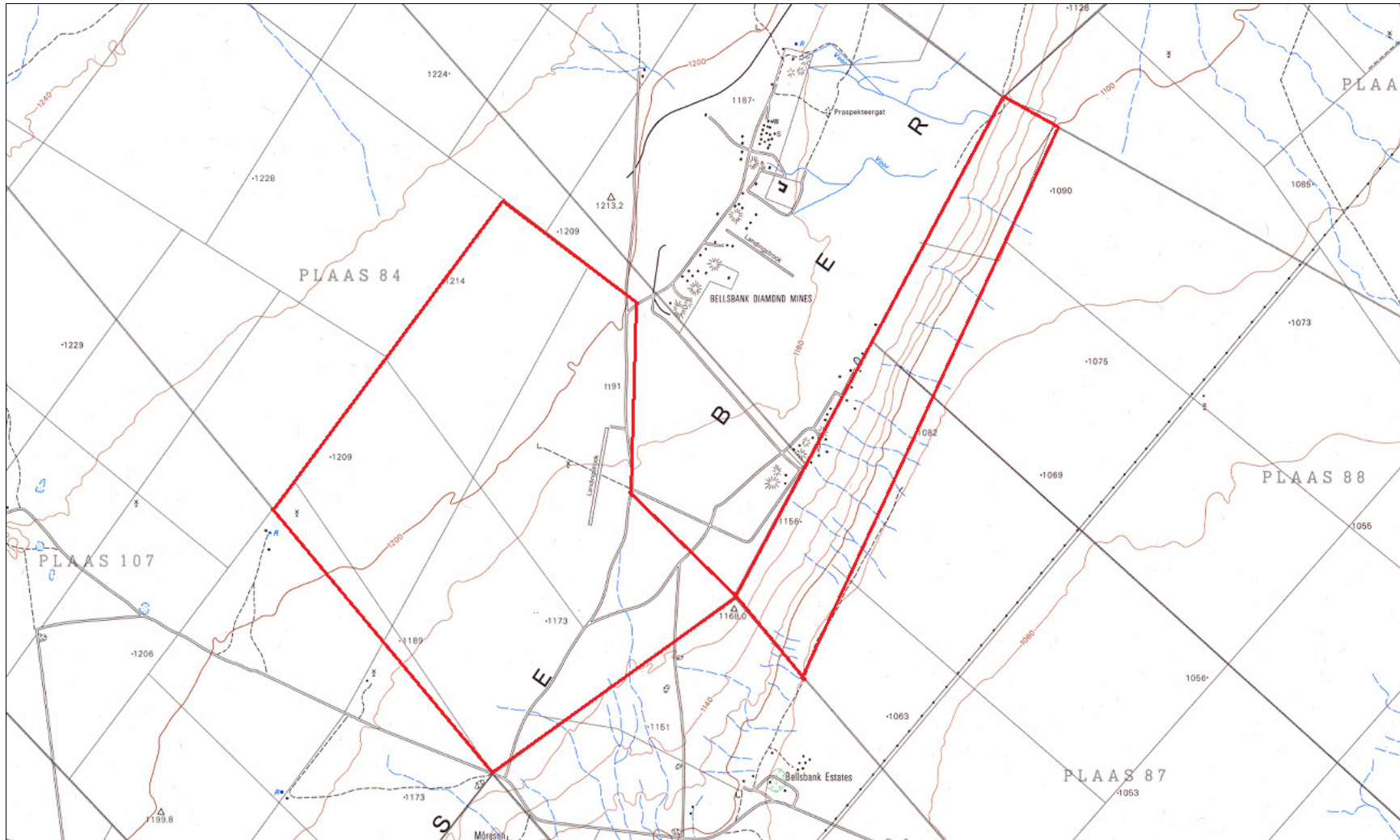


Figure 10: Environmental and current land use features

v) **Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts**

(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. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated)

Mining Activity	Impact On	Duration	Probability	Significance
Roads	Air quality	Short	Definite	Medium
	Fauna	Long	Definite	High
	Flora	Long	Definite	High
	Noise	Short	Definite	Low
	Visual	Long	Probable	No significance
Drilling	Air quality	Short	Definite	Medium
	Fauna	Long	Definite	High
	Flora	Long	Definite	High
	Noise	Short	Definite	Medium
	Soil	Long	Definite	High
	Topography	Long	Definite	Low
Abatement facilities	Visual	Long	Definite	No significance
	Air quality	Short	Definite	Medium
	Fauna	Long	Definite	High
	Flora	Long	Definite	High
	Noise	Short	Definite	Medium
	Soil	Long	Definite	High
	Surface water	Long	Definite	Medium
Visual	Long	Definite	No significance	

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 different environmental components on which the project can/may have an impact are:-

- a) Geology
- b) Topography
- c) Soil
- d) Land Capability
- e) Land Use
- f) Vegetation (Flora)
- g) Wild Life (Fauna)
- h) Surface Water
- i) Ground Water

- j) Air Quality
- k) Noise
- l) Archaeological and Cultural Sites
- m) Sensitive Landscapes
- n) Visual Aspects
- o) Socio-economic Structure
- p) Interested and Affected Parties

1) Impact Assessment

Before the impact assessment could be done the different project activities were identified.

2) Activities

- a) Access Roads for drilling;
- b) Drilling;
- c) Ablution facilities

3) Environment Impact Assessment Summary

Environment likely to be affected by the mining operation.

Please see Map Figure 2 for the location of the prospecting operation.

Table 3: Environment impact assessment summary

ENVIRONMENTAL ASPECT	AFFECTED	AFFECTED	NOT AFFECTED
	NEGLIBLE	SUBSTANTIAL	
GEOLOGY		X	
TOPOGRAPHY	X		
SOIL		X	
LAND CAPABILITY	X		
LAND USE	X		
VEGETATION		X	
WILDLIFE	X		
SURFACE WATER	X		
GROUND WATER			X
AIR QUALITY	X		
NOISE	X		
SENSITIVE LANDSCAPES			X
VISUAL ASPECTS	X		
SOCIO ECONOMICS	X		
INTERESTED AND AFFECTED PARTIES	X		
ARCHAEOLOGICAL	X		

4) Environment likely to be affected by the alternative land use

Prospecting will not be new land use over this area. The areas that will be prospected makes up about $\pm 0.05\%$ of the total area being applied for. The rest of the terrain would continue to be used for agricultural purposes.

5) Assessment of the impacts created by the mining activity

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

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

Probability of impact occurrence	Explanation of probability
Very low	<20% sure of particular fact or likelihood of impact occurring
Low	20 – 39% sure of particular fact or likelihood of impact occurring
Moderate	40 – 59% sure of particular fact or likelihood of impact occurring
High	60 – 79% sure of particular fact or likelihood of impact occurring
Very high	80 – 99% sure of particular fact or likelihood of impact occurring
Definite	100% sure of particular fact or likelihood of impact occurring

Table 5: Explanation of **extent** of impact

Extent of impact	Explanation of extent
Site specific	Direct and indirect impacts limited to site of impact only
Local	Direct and indirect impacts affecting environmental elements within the Barkly West area
Regional	Direct and indirect impacts affecting environmental elements within the Northern Cape
National	Direct and indirect impacts affecting environmental elements on national level
Global	Direct and indirect impacts affecting environmental elements on a global level

Table 6: Explanation of **duration** of impact

Duration of impact	Explanation of duration
Very short	Less than 1 year
Short	1 to 5 years
Medium	6 to 12 years
Long	13 to 50 years

Very long	Longer than 50 years
Permanent	Permanent

Table 7: Explanation of impact significance

Impact significance	Explanation of significance
No impact	There will be no impact at all- not even a very low impact on the system or any of its parts.
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.
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 likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
Moderate significance	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 of covering these benefits would be about equal in cost and effort.
High significance	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.
Very high significance	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.

Assessment of the nature, extent, duration, probability and significance of the potential environment, social and cultural impacts of the proposed prospecting operation, including the cumulative environmental impacts.

Table 8: Impacts – Aspect Geology

ASPECT 1. GEOLOGY	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Geology – diamond deposits will be destroyed during the prospecting operation. During the operation the mineral resource (diamond drill cores) will be extracted from diamond deposits.				
Extent	Site				Activity causing the impact
Duration	Very Short				A drilling programme will be conducted on the application area. Therefore the original geology will be destroyed.
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 9: Impacts – Aspect Topography

ASPECT 2. TOPOGRAPHY	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	<ul style="list-style-type: none"> The prospecting site is situated on undulating terrain; Disturbance of the surface drainage <p>The prospecting of the deposits will result in the creation of drill holes that act as depressions in the environment that captures run-off. Normal surface drainage will be disturbed on a given point. Run-off if any will be diverted away from the specific site.</p>				
Extent	Site				Activity causing the impact
Duration	Very short				A drilling programme will be conducted on the application area
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 10: Impacts – Aspect Soil

ASPECT 3. SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	The surface area is characterised by various soil depths. Any construction of infrastructure should be preceded by the removal of all available topsoil.				
Extent	Site				Activity causing the impact
Duration	Short				In the process of removing topsoil the soil layers are mixed and the structure may be
Probability	High				
Significance	Moderate				
Phase responsible	Phase 1	Phase 2	Phase 3	Closure	

for the impact		X	X		disturbed.
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Table 11: Impacts – Aspect Soil

ASPECT SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	The establishment, construction, operation and eventually rehabilitation (demolision) of listed structures such as the access roads/tracks can cause compaction of soil. All prospecting activities will be concentrated on the identified prospecting area where diamond deposits could be found. In the same time a certain surface area is therefore alienated. The active prospecting surface area (alienated) would be restricted within the minimum area required for prospecting purposes.				
Extent	Site				Activity causing the impact
Duration	Short				Site preparation for additional prospecting areas and the construction, operation, of listed infrastructure.
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 12: Impacts – Aspect Soil

ASPECT SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Soil Erosion: due to the fact that certain surface areas would become compacted and this would lead to lesser infiltration of storm water and more run-offs could cause erosion on bare disturbed surfaces. Erosion would always be possible until such time a vegetation cover is provided during the rehabilitation phase.				
Extent	Site				Activity causing the impact
Duration	Very short				When removing topsoil during site preparation, the storm water control structures are in place. If a severe storm hits the area, it may lead to erosion on site. Topsoil stockpiles may be prone to erosion due to lack of
Probability	Very low				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

					vegetation cover water control structures may fail or severe rainstorms may cause excess run-off.
					Surface compaction due to activities taking place.

Table 13: Impacts – Aspect Soil

ASPECT SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Potential of soil contamination.				None
Extent	Site				Activity causing the impact
Duration	Short				Vehicle/equipment breakages and oil/lubricant, diesel spills may contaminate soil.
Probability	Moderate				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 14: Impacts – Aspect Soil

ASPECT SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Loss of soil structure.				None
Extent	Site				Activity causing the impact
Duration	Short				In the process of removing topsoil the soil layers are mixed and the structure may be disturbed.
Probability	High				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 15: Impacts – Aspect Soil

ASPECT SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Loss of soil fertility.				None
Extent	Site				Activity causing the impact
Duration	Short				The mixing of the soil during site preparation, compaction and potential pollution (spillages from oil etc.) all may cause loss of soil fertility.
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 16: Impacts – Aspect Land Capability

ASPECT 4. LAND CAPABILITY	IMPACTS				CUMULATIVE IPACTS
Nature of the	Temporary loss of land capability to support				

impact	grazing. The active area where prospecting takes place (drill holes) will be temporary alienated until the area is rehabilitated. All drill holes would be rehabilitated as part of the prospecting process during which drill holes are backfilled. The rest of the area will be used for grazing.				
Extent	Site				Activity causing the impact
Duration	Short				Site preparation for adding prospecting areas and the construction, operation of listed infrastructure, the land capability of the active mining site will be totally destroyed.
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	x	

Table 17: Impacts – Aspect Land Use

ASPECT 5. LAND USE	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Only small portions of land would be affected by the prospecting operation in relation to the total prospecting area. All drill holes would be rehabilitated as part of the prospecting process during which drill holes are back-filled.				None
Extent	Site				Activity causing the impact
Duration	Short				Site preparation for prospecting and the construction operation of listed infrastructure.
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 18: Impacts – Aspect Vegetation

ASPECT 6. VEGETATION	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Vegetation clearance, disturbance and trampling. Destruction of habitats of vegetation. Due to a disturbed ecosystem, bare ground and spreading of exotics can follow.				
Extent	Site				Activity causing the impact
Duration	Short				Drilling will be done prospecting method will be used to extract samples. Therefore the original geology will be totally destroyed.
Probability	Definite				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 19: Impacts – Aspect Vegetation

ASPECT VEGETATION	IMPACTS				CUMULATIVE IPACTS
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Nature of the impact	Habitat change, loss of species, spread of alien and invasive species.				
Extent	Site				Activity causing the impact
Duration	Short				The change in the habitat will be mitigated during final rehabilitation.
Probability	High				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 20: Impacts – Aspect Vegetation

ASPECT VEGETATION	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Dust coverage of plants				None
Extent	Site				Activity causing the impact
Duration	Short				Drill Rig and other vehicles on dirt roads, drilling are mainly responsible for this impact.
Probability	High				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 21: Impacts – Aspect Fauna

7. WILDLIFE FAUNA	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Wildlife habitat destruction/change/disturbance.				
Extent	Site				Activity causing the impact
Duration	Short				The flora which normally serves as habitat for animals would be destroyed during site preparation. The increase in activity will temporarily scare the animals. The area will serve as a new habitat after rehabilitation.
Probability	Very high				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 22: Impacts – Aspect Wildlife

ASPECT WILDLIFE	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Injury or death to wildlife				None
Extent	Site				Activity causing the impact
Duration	Short				The movement of vehicles may kill certain insects, rodents, and possible birds. Most of the remaining animal life will however move away due to noise.
Probability	Low				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 23: Impacts – Aspect Wildlife

ASPECT WILDLIFE	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Restoration of habitat.				None
Extent	Site				Activity causing the impact
Duration	Short				As rehabilitation progresses the habitat of certain species will be restored/created (closure objective). Animals will probably only move back when human movement is limited.
Probability	Low				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 24: Impacts – Aspect Surface Water

ASPECT 8. SURFACE WATER	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Increased silt load. Clearing topsoil for footprint areas can increase infiltration rates of water to groundwater system and decrease buffering capacity of soils to absorb contaminants from soils to surface. This can increase the risk of contamination of the groundwater system (increase aquifer vulnerability).				
Extent	Local				Activity causing the impact
Duration	Short				The clearance of vegetation and the traffic on access roads will all contribute to an increase in the silt load on the prospecting area.
Probability	Moderate				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 25: Impacts – Aspect Surface Water

ASPECT SURFACE WATER	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Change in surface water quality. Spillages from vehicles and also surface water run-off that is not adequately diverted away from the active prospecting drill holes could end-up in the drill holes creating problems regarding water quality and hindering the prospecting process. Surface run-off from active prospecting sites (drill holes) not adequately controlled on site could end up in the adjacent undisturbed natural veld.				
Extent	Local				Activity causing the impact
Duration	Short				Dirty/clean water systems at facilities like
Probability	Moderate				

Significance	High				the roads may impact on the quality of the surface water. The water should be contained in the surface run-off control measures provided therefore.
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 26: Impacts – Aspect Surface Water

ASPECT SURFACE WATER	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	Change in surface water quality. Notwithstanding the above-mentioned facts, it is not expected that prospecting operations will have any effect on the boundaries or the general water flow of the catchment.				
Extent	Site				Activity causing the impact
Duration	Short				It is an operational objective to contain or divert all surface run-offs from the active prospecting activities merely due to pollution (sediment) potential. This will reduce the run-off quantity, although small in comparison with the drainage area in total.
Probability	High				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 27: Impacts – Aspect Ground Water

ASPECT 9. GROUNDWATER	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	Reduction of groundwater quality. Prospecting activities are not likely to impact on local ground water quality. No chemical are used during the prospecting process. Handling of waste and transport of building material can cause various types of spills (domestic waste, hydrocarbons) which can infiltrate and contaminate the groundwater system.				
Extent	Site				Activity causing the impact
Duration	Short				
Probability	Definite				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 28: Impacts – Aspect Ground Water

ASPECT GROUNDWATER	IMPACTS				CUMULATIVE IMPACTS
Nature of the	Even though abstraction is key to have an				

impact	effect on the surrounding groundwater users, this is a new very limited use, and groundwater levels are expected to continue current trends. Groundwater could be abstracted for portable water supply only. The volume of water used is very small in comparison to other water use and will have a very small impact on the surrounding aquifer				
Extent	Site				Activity causing the impact
Duration	Short				Prospecting operation.
Probability	Low				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 29: Impacts – Aspect Air Quality

ASPECT 10. AIR QUALITY	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	Dust will be generated during the prospecting operation (loading with an excavator onto a dump truck) and transportation to the plant (conveyor, drum screen and washing pans) and on gravel/dirt roads. The process of the gravel is a wet process and therefore minimum dust is generated.				
Extent	Site				Activity causing the impact
Duration	Short				Dust will be generated during drilling prospecting and vehicles on the gravel roads.
Probability	Moderate				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 30: Impacts – Aspect Noise Pollution

ASPECT 11. NOISE POLLUTION	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	Noise will be generated during the prospecting operation (drill rig). The prospecting area is located in a rural landscape. The impact would be more important during the direct worker environment that should adhere to the requirements in terms of the Mine Health and Safety Act.				
Extent	Local				Activity causing the impact
Duration	Short				Drill rig and vehicles.
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 31: Impacts – Aspect Archaeological and Cultural Sites

ASPECT	IMPACTS				CUMULATIVE IMPACTS
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12. ARCHAEOLOGICAL & CULTURAL SITES					
Nature of the impact	The sites have been ranked to show potential risks and appropriate protection measures which must be taken. It is unlikely that the proposed development will result in any significant archaeological impact at the site. Thirty-three (33) sites were recorded.				
Extent	Site				Activity causing the impact
Duration	Short				Drill rig and vehicles
Probability	Definite				
Significance	Medium				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X			

Table 32: Impacts – Aspect Sensitive Landscape

ASPECT	IMPACTS				CUMULATIVE IMPACTS
13. SENSITIVE LANDSCAPE					
Nature of the impact	No sensitive landscapes identified that will be affected.				
Extent	Not applicable				Activity causing the impact
Duration	Short				Diamond prospecting operation.
Probability	Not applicable				
Significance	Not applicable				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	

Table 33: Impacts – Aspect Socio Economics

ASPECT	IMPACTS				CUMULATIVE IMPACTS
15. SOCIO ECONOMICS					
Nature of the impact	Increase in socio-economic activity at local level. The project itself will employ 10 people. Job creation plays a major role in increasing the economic well-being of employees and their dependents in the Barkly West district. Once prospecting operations cease it will have a negative impact.				
Extent	Local				Activity causing the impact
Duration	Short				Additional employment opportunities created.
Probability	Definite				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 34: Impacts – Aspect Interested and Affected Parties

ASPECT	IMPACTS				CUMULATIVE IMPACTS
16. INTERESTED & AFFECTED PARTIES					

Nature of the impact	Impact of activities on I & APs will be temporary loss of utilization of the prospecting focus areas for grazing purposes. The long-term benefits far out-weight the current benefits from the current use. No negative impact is foreseen that cannot be appropriately mitigated such as drill holes that will be rehabilitated concurrently.				
Extent	Local				Activity causing the impact
Duration	Short				
Probability	High				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

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)

Please see (vi).

There are no communities residing on the property under application, the registered owner of the Remaining Extent of Farm 84 is the National Government of the Republic of South Africa. There are no lawful occupiers, there is no one living on the farm.

Portion of the Farm 393 is owned by Messina Diamonds (Pty) Ltd (0.5%) and Dancarl Diamonds (Pty) Ltd. (0.5%).

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)

❖ *Air Quality:*

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

- Avoidance of unnecessary removal of vegetation;
- Routine spraying of unpaved site areas and roads with water;
- Re-vegetation of rehabilitated areas to take place as soon as possible.

❖ *Fauna and Flora:*

- Indigenous vegetation to be used for landscaping to minimize watering requirements.

- If any endangered species are found on the prospecting area they will be relocated. If this is not possible potential changes in the habitat of endangered species will be monitored.
 - The above programme will also focus on species that depend on specific host plants or on specific symbiotic relationships, with specific reference to possible impacts on such related to emissions from the prospecting area.
 - If monitoring shows that endangered species are being negatively affected to the degree that they are at risk of die-off, measures will be put in place to safeguard their continued existence.
 - Any area that is rehabilitated or decommissioned will be seeded with a seed mixture reflecting the natural vegetation as is currently found. If this not found to be feasible during rehabilitation a general seed mixture of the area will be used.
 - Management will also take responsibility to control declared invader or exotic species on the prospecting area. The following control methods will be used:-
 - “The plants will be uprooted, felled or cut-off and can be destroyed completely.”
 - “The plants will be treated with a herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such a herbicide.”
 - The end objective of the re-vegetation program will be to achieve a stable self-sustaining habitat unit.
 - Vegetation on flat surfaces will be established using the dry lands technique requiring no irrigation.
 - Valid permits from Northern Cape Nature Conservation will be obtained before any protected plant species are removed.
 - Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a firebreak will be cleared around the perimeter of the prospecting area.
 - Any form of poaching by workers of the prospecting area will result in the maximum form of punishment as allowed for by common law. Any form of snares or traps on the site will be removed.
 - If any endangered species are encountered the Department of Nature Conservation will be contacted.
- ❖ *Noise:*
- As a minimum, ambient noise levels emanating from the prospecting area will not exceed 82 dB (A) at the site boundary.
 - The applicant will comply with the occupational noise regulations of the Occupational Health and Safety Act, Act 85 of 1993.
 - The applicant will comply with the measures for good practice with regard to management of noise related impacts during construction and operation.

- The management objective will be to reduce any level of noise, shock and lighting that may have an effect on persons or animals, both inside the plant and that which may migrate outside the plant area.
- When the equivalent noise exposure, as defined in the South African Bureau of Standards Code of Practice for the Measurement and Assessment of Occupational Noise for Hearing Conservation Purposes, SABC 083 as amended, in any place at or in any mine or works where persons may travel or work, exceeds 82 dB (A), the site manager will take the necessary steps to reduce the noise below this level.
- Hearing protection will be available for all employees where attenuation cannot be implemented.
- If any complaints are received from the public or state department regarding noise levels the levels will be monitored at prescribed monitoring points.

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

- ❖ *Soil:*
 - In all places of development the first 300mm of loose or weathered material found will be classified as a growth medium.
 - In all areas where the above growth medium will be impacted on, it will be removed and stockpiled on a dedicated area. The maximum height of stockpiles will be 2.5 meters.
 - The growth medium/topsoil will be used during the rehabilitation of any impacted areas, after sloping in order to re-establish the same land capability.
 - If any soil is contaminated during the prospecting operations, it will either be treated on site or be removed together with the contaminant and placed in acceptable containers to be removed with the industrial waste to a recognised facility or company.
 - Erosion control in the form of re-vegetation and contouring of slopes will be implemented on disturbed areas in and around the site.
 - Topsoil will be kept separate from overburden and will not be used for building or maintenance of access roads.
 - The stored topsoil will be adequately protected from being blown away or being eroded.

ix) Motivation where no alternative sites were considered

The option to explore the possibility for mining is in itself an alternative land use. The applicant are not interested in any other alternative land use over this land aside for diamonds exploration, or any other activity, or any other method used other than mining for diamonds in the conventional way, which is the most cost effective.

x) Statement motivating the alternative development location within the overall site (Provide a statement motivating the final site layout that is proposed)

Please see (ix) above.

There can be many more positive impacts if Messina Diamonds (Pty) Ltd are granted permission to continue prospecting over this area. The option to prospect the site can have many positive impacts, in that 10 households will benefit from the income generated and thus improving their living standards. The area within which the proposed prospecting area is located is within a rural area that is known for big economic growth, because of its location. A prospecting right within this area will however further benefit the local economy because of the mines monthly expenditure that will contribute towards different service providers locally and nationally. Prospecting will also not adversely impend the landowner's use of its land since the potential area will be concurrently rehabilitated and will become available to grazing animals as it re-vegetates.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity (Including (i) a description of all environmental issues and risks that are identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures)

Please see (vi) above.

j) **Assessment of each identified potentially significant impact and risk**

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered interested and affected parties)

Table 8: Impacts – Aspect Geology

ASPECT 1. GEOLOGY	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	Geology – diamond deposits will be destroyed during the prospecting operation. During the operation the mineral resource (diamond drill cores) will be extracted from diamond deposits.				
Extent	Site				Activity causing the impact
Duration	Very Short				A drilling programme will be conducted on the application area. Therefore the original geology will be destroyed.
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 9: Impacts – Aspect Topography

ASPECT 2. TOPOGRAPHY	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	<ul style="list-style-type: none"> The prospecting site is situated on undulating terrain; Disturbance of the surface drainage The prospecting of the deposits will result in the creation of drill holes that act as depressions in the environment that captures run-off. Normal surface drainage will be disturbed on a given point. Run-off if any will be diverted away from the specific site.				
Extent	Site				Activity causing the impact
Duration	Very short				A drilling programme will be conducted on the application area
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 10: Impacts – Aspect Soil

ASPECT 3. SOIL	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	The surface area is characterised by various soil depths. Any construction of infrastructure should be preceded by the removal of all available topsoil.				
Extent	Site				Activity causing the impact
Duration	Short				In the process of removing topsoil the soil
Probability	High				

Significance	Moderate				layers are mixed and the structure may be disturbed.
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 11: Impacts – Aspect Soil

ASPECT SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	<p>The establishment, construction, operation and eventually rehabilitation (demolition) of listed structures such as the access roads can cause compaction of soil. All prospecting activities will be concentrated on the identified prospecting area where diamond deposits could be found.</p> <p>In the same time a certain surface area is therefore alienated. The active prospecting surface area (alienated) would be restricted within the minimum area required for prospecting purposes.</p>				
Extent	Site				Activity causing the impact
Duration	Short				Site preparation for additional prospecting areas and the construction, operation, of listed infrastructure.
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 12: Impacts – Aspect Soil

ASPECT SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Soil Erosion: due to the fact that certain surface areas would become compacted and this would lead to lesser infiltration of storm water and more run-offs could cause erosion on bare disturbed surfaces. Erosion would always be possible until such time a vegetation cover is provided during the rehabilitation phase.				
Extent	Site				Activity causing the impact
Duration	Very short				When removing topsoil during site preparation, the storm water control structures are in place. If a severe storm hits the area, it may lead to
Probability	Very low				
Significance	Low				
Phase responsible	Phase 1	Phase 2	Phase 3	Closure	

for the impact		X	X	X	erosion on site. Topsoil stockpiles may be prone to erosion due to lack of vegetation cover water control structures may fail or severe rainstorms may cause excess run-off.
					Surface compaction due to activities taking place.

Table 13: Impacts – Aspect Soil

ASPECT SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Potential of soil contamination.				None
Extent	Site				Activity causing the impact
Duration	Short				Vehicle/equipment breakages and oil/lubricant, diesel spills may contaminate soil.
Probability	Moderate				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 14: Impacts – Aspect Soil

ASPECT SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Loss of soil structure.				None
Extent	Site				Activity causing the impact
Duration	Short				In the process of removing topsoil the soil layers are mixed and the structure may be disturbed.
Probability	High				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 15: Impacts – Aspect Soil

ASPECT SOIL	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Loss of soil fertility.				None
Extent	Site				Activity causing the impact
Duration	Short				The mixing of the soil during site preparation, compaction and potential pollution (spillages from oil etc.) all may cause loss of soil fertility.
Probability	Definite				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 16: Impacts – Aspect Land Capability

ASPECT	IMPACTS				CUMULATIVE IPACTS
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4. LAND CAPABILITY					
Nature of the impact	Temporary loss of land capability to support grazing. The active area where prospecting takes place (drilling) will be temporary alienated until the area is rehabilitated. All drilling would be rehabilitated as part of the prospecting process during which drilling are backfilled. The rest of the area will be used for grazing.				
Extent	Site				Activity causing the impact
Duration	Short				Site preparation for adding prospecting areas and the construction, operation of listed infrastructure, the land capability of the active mining site will be totally destroyed.
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	x	

Table 17: Impacts – Aspect Land Use

ASPECT		IMPACTS				CUMULATIVE IPACTS
5. LAND USE						
Nature of the impact	Only small portions of land would be affected by the prospecting operation in relation to the total prospecting area. All drilling would be rehabilitated as part of the prospecting process during which drilling are back-filled.				None	
Extent	Site				Activity causing the impact	
Duration	Short				Site preparation for prospecting and the construction operation of listed infrastructure.	
Probability	Definite					
Significance	Moderate					
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure		
		X	X			

Table 18: Impacts – Aspect Vegetation

ASPECT		IMPACTS				CUMULATIVE IPACTS
6. VEGETATION						
Nature of the impact	Vegetation clearance, disturbance and trampling. Destruction of habitats of vegetation. Due to a disturbed ecosystem, bare ground and spreading of exotics can follow.					
Extent	Site				Activity causing the impact	
Duration	Short				Drilling will be done prospecting method will be used to extract samples. Therefore the original geology will be totally destroyed.	
Probability	Definite					
Significance	High					
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure		
		X	X			

Table 19: Impacts – Aspect Vegetation

ASPECT VEGETATION	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Habitat change, loss of species, spread of alien and invasive species.				
Extent	Site				Activity causing the impact
Duration	Short				The change in the habitat will be mitigated during final rehabilitation.
Probability	High				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 20: Impacts – Aspect Vegetation

ASPECT VEGETATION	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Dust coverage of plants				None
Extent	Site				Activity causing the impact
Duration	Short				Drill Rig and other vehicles on dirt roads, drilling are mainly responsible for this impact.
Probability	High				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 21: Impacts – Aspect Fauna

7. WILDLIFE FAUNA	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Wildlife habitat destruction/change/disturbance.				
Extent	Site				Activity causing the impact
Duration	Short				The flora which normally serves as habitat for animals would be destroyed during site preparation. The increase in activity will temporarily scare the animals. The area will serve as a new habitat after rehabilitation.
Probability	Very high				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 22: Impacts – Aspect Wildlife

ASPECT WILDLIFE	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Injury or death to wildlife				None
Extent	Site				Activity causing the impact
Duration	Short				The movement of vehicles may kill certain insects, rodents, and possible birds. Most of the remaining animal life
Probability	Low				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

					will however move away due to noise.
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Table 23: Impacts – Aspect Wildlife

ASPECT WILDLIFE	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Restoration of habitat.				None
Extent	Site				Activity causing the impact
Duration	Short				As rehabilitation progresses the habitat of certain species will be restored/created (closure objective). Animals will probably only move back when human movement is limited.
Probability	Low				
Significance	Low				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 24: Impacts – Aspect Surface Water

ASPECT 8. SURFACE WATER	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Increased silt load. Clearing topsoil for footprint areas can increase infiltration rates of water to groundwater system and decrease buffering capacity of soils to absorb contaminants from soils to surface. This can increase the risk of contamination of the groundwater system (increase aquifer vulnerability).				
Extent	Local				Activity causing the impact
Duration	Short				The clearance of vegetation and the traffic on access roads will all contribute to an increase in the silt load on the prospecting area.
Probability	Moderate				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 25: Impacts – Aspect Surface Water

ASPECT SURFACE WATER	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Change in surface water quality. Spillages from vehicles and also surface water run-off that is not adequately diverted away from the active prospecting drilling could end-up in the drilling creating problems regarding water quality and hindering the prospecting process. Surface run-off from active prospecting sites (drill holes) not adequately controlled on site could end up in the adjacent undisturbed natural veld.				
Extent	Local				Activity causing the impact

Duration	Short				Dirty/clean water systems at facilities like the roads may impact on the quality of the surface water. The water should be contained in the surface run-off control measures provided therefore.
Probability	Moderate				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 26: Impacts – Aspect Surface Water

ASPECT SURFACE WATER	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	Change in surface water quality. Notwithstanding the above-mentioned facts, it is not expected that prospecting operations will have any effect on the boundaries or the general water flow of the catchment.				
Extent	Site				Activity causing the impact
Duration	Short				It is an operational objective to contain or divert all surface run-offs from the active prospecting activities merely due to pollution (sediment) potential. This will reduce the run-off quantity, although small in comparison with the drainage area in total.
Probability	High				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		

Table 27: Impacts – Aspect Ground Water

ASPECT 9. GROUNDWATER	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	Reduction of groundwater quality. Prospecting activities are not likely to impact on local ground water quality. No chemical are used during the prospecting process. Handling of waste and transport of building material can cause various types of spills (domestic waste, hydrocarbons) which can infiltrate and contaminate the groundwater system.				
Extent	Site				Activity causing the impact
Duration	Short				
Probability	Definite				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 28: Impacts – Aspect Ground Water

ASPECT	IMPACTS				CUMULATIVE IMPACTS
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GROUNDWATER				
Nature of the impact	Even though abstraction is key to have an effect on the surrounding groundwater users, this is a new very limited use, and groundwater levels are expected to continue current trends. Groundwater could be abstracted for portable water supply only. The volume of water used is very small in comparison to other water use and will have a very small impact on the surrounding aquifer			
Extent	Site			
Duration	Short			
Probability	Low			
Significance	High			
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure
		X	X	X
Activity causing the impact				
Prospecting operation.				

Table 29: Impacts – Aspect Air Quality

ASPECT 10. AIR QUALITY	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	Dust will be generated during the prospecting operation (loading with an excavator onto a dump truck) and transportation to the plant (conveyor, drum screen and washing pans) and on gravel/dirt roads. The process of the gravel is a wet process and therefore minimum dust is generated.				
Extent	Site				
Duration	Short				
Probability	Moderate				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	
Activity causing the impact					
Dust will be generated during drilling prospecting and vehicles on the gravel roads.					

Table 30: Impacts – Aspect Noise Pollution

ASPECT 11. NOISE POLLUTION	IMPACTS				CUMULATIVE IMPACTS
Nature of the impact	Noise will be generated during the prospecting operation (drill rig). The prospecting area is located in a rural landscape. The impact would be more important during the direct worker environment that should adhere to the requirements in terms of the Mine Health and Safety Act.				
Extent	Local				
Duration	Short				
Probability	Definite				
Significance	Moderate				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X		
Activity causing the impact					
Drill rig and vehicles.					

Table 31: Impacts – Aspect Archaeological and Cultural Sites

ASPECT 12. ARCHAEOLOGICAL & CULTURAL SITES	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	The sites have been ranked to show potential risks and appropriate protection measures which must be taken. It is unlikely that the proposed development will result in any significant archaeological impact at the site. Thirty-three (33) sites were recorded.				
Extent	Site				Activity causing the impact
Duration	Short				
Probability	Definite				
Significance	Medium				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X			

Table 32: Impacts – Aspect Sensitive Landscape

ASPECT 13. SENSITIVE LANDSCAPE	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	No sensitive landscapes identified that will be affected.				
Extent	Not applicable				Activity causing the impact
Duration	Short				Diamond prospecting operation.
Probability	Not applicable				
Significance	Not applicable				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	

Table 33: Impacts – Aspect Socio Economics

ASPECT 15. SOCIO ECONOMICS	IMPACTS				CUMULATIVE IPACTS
Nature of the impact	Increase in socio-economic activity at local level. The project itself will employ 10 people. Job creation plays a major role in increasing the economic well-being of employees and their dependents in the Barkly West district. Once prospecting operations cease it will have a negative impact.				The increase in socio-economic activity will add to the current growth and development in the Barkly West area.
Extent	Local				Activity causing the impact
Duration	Short				Additional employment opportunities created.
Probability	Definite				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

Table 34: Impacts – Aspect Interested and Affected Parties

ASPECT 16. INTERESTED &	IMPACTS				CUMULATIVE IPACTS
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AFFECTED PARTIES					
Nature of the impact	Impact of activities on I & APs will be temporary loss of utilization of the prospecting focus areas for grazing purposes. The long-term benefits far out-weight the current benefits from the current use. No negative impact is foreseen that cannot be appropriately mitigated such as drill holes that will be rehabilitated concurrently.				
Extent	Local				Activity causing the impact
Duration	Short				
Probability	High				
Significance	High				
Phase responsible for the impact	Phase 1	Phase 2	Phase 3	Closure	
		X	X	X	

k) Summary of specialist reports

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):-

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
<p>PHASE I HERITAGE IMPACT ASSESSMENT REQUESTED IN TERMS OF SECTION 38 OF THE NATIONAL HERITAGE RESOURCES ACT NO 25/1999 FOR THE PROPOSED MINE PROSPECTING ON A PORTION OF THE REMAINING EXTENT OF THE FARM 84 & PORTION OF FARM 393, BARKLY WEST DISTRICT, NORTHERN CAPE PROVINCE</p> <p>Prepared by Edward Matenga (MPhil, Archaeology; PhD Archaeology & Heritage, Uppsala/Sweden)</p> <p>Annexure B to the Report</p>	<p>PORTION OF THE FARM 393</p> <p>Eighteen sites (18) were recorded (see Inventory above and Catalogue in Section 8).</p> <p>The Stone Age Four (4) Stone Age Sites were recorded all with a low density of lithics, and none demonstrating concentrated or regular activity. None of the sites represent substantial settlement to warrant further investigation. The sites appear to be spread all over the plateau and escarpment.</p> <p>The Iron Age No Iron Age sites were found on the properties.</p> <p>Early Modern Mining The occurrence of many mine claim pegs (an iron plaque standing in a concrete cube base) is evidence of the existence of many small claims in the early pioneering years. None of the trenches made by the small-scale minors are worth preserving. The claim pegs in concrete are portable and can be moved, displayed in a park or garden.</p> <p>Two instances of early fissure mining have been recorded. One site is fenced off with a steel palisade. One or both fissures may be wholly or partially preserved as evidence of early mining methods.</p> <p>Modern Mine infrastructure and associated buildings Buildings and Infrastructure at four the mine shafts were recorded, of which none is more than 60 years old. Although these are important utilities they carry no heritage significance in terms of statutory provisions.</p> <p>THE REMAINING EXTENT OF 84</p> <p>Fifteen sites (15) were recorded (see Inventory above and Catalogue in</p>	<p>X</p>	<p>J</p>

	<p>Section 8).</p> <p>The Stone Age</p> <p>Twelve (12) Stone Age Sites were recorded of which all have a low density of lithics, and none demonstrating concentrated or regular activity (S19 – S27, S30-S31). They seem to represent general activity and movement of foragers in the area in the MSA/LSA, and no particular regular settlement can be pinpointed. The sites have been recorded and no further mitigation is recommended.</p> <p>The Iron Age</p> <p>No Iron Age sites were found on the properties.</p> <p>Early Modern Mining</p> <p>A deep mine trench was recorded (S28). An old concrete ramp or terrace with a stone revetment wall with a maximum height of 220m was built on the crest of the ridge. It appears to be the remains of a processing plant. This structure is in a sound state and can be preserved as a footprint of early modern mining in the area.</p> <p>Linear pile of stones</p> <p>A linear pile of stones 470m long is laid transverse to the ridge. The stones appear to have been extracted during trenching for a water pipeline. They were replaced after laying of the pipe and backfilling. The pile is a significant linear feature in the landscape seen from the top of the ridge, and may be worth preserving.</p> <p>The proposed mine prospecting can go ahead subject to the precautions stated above taken. In the event of discovery of other heritage resources in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.</p>		
<p>SCOPING PALAENTOLOGICAL REPORT FOR THE PROPOSED MINE PROSPECTING ON PORTION OF FARM 393 & A PORTION OF THE REMAINING EXTENT OF FARM 84 &, BARKLY WEST DISTRICT, NORTHERN CAPE PROVINCE</p>	<p>The Campbell Rand Subgroup has yielded well preserved stromatolites as well as filamentous microfossils. There is most likely to be good material in the area under study. The impact of prospecting on fossil resources is likely to be minimal. However when mining commences, and if good exposures are found/uncovered, these should be safeguarded preferably in situ and reported as soon as possible to the relevant heritage management authority (South African Heritage</p>		

Nonhlanhla Vilakazi, PhD Department of Anthropology and Archaeology University of South Africa Pretoria Annexure C to the report	Resources Agency).		

Attach copies of the Specialist Reports as appendices

I) Environmental impact statement

(i) Summary of the key findings of the environmental impact assessment;

The prospecting operation is definitely going to have an impact on the environment. The main impacts relates to topography, geology, soil, vegetation, land use and land capability.

The application is for drilling to establish if there are potential viable resources of diamonds to mine. This will be done over a 5 year period.

The existing land-use is cattle farming, and while prospecting is on-going the farm will still be able to be used as grazing for the cattle. Only a small portion will be disturbed if the drilling phase of the Prospecting Right is to be continued.

The conservation of topsoil is of utmost importance and therefore in order ensure a sustainable land use again o the areas to be prospected the top 15 – 30cm if available need to be removed prior to any prospecting, drilling. This will be used as growth medium during the rehabilitation phase of the drill sites. Topsoil should be stored in a berm wall on the border of each drill hole in order to divert any surface runoff during a rain event.

Other environmental impacts relate to day to day prospecting and could easily be managed with sound housekeeping rules such as dust and noise.

(ii) Final Site Map;

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicated any areas that should be avoided, including buffers. Attach as **Appendix**

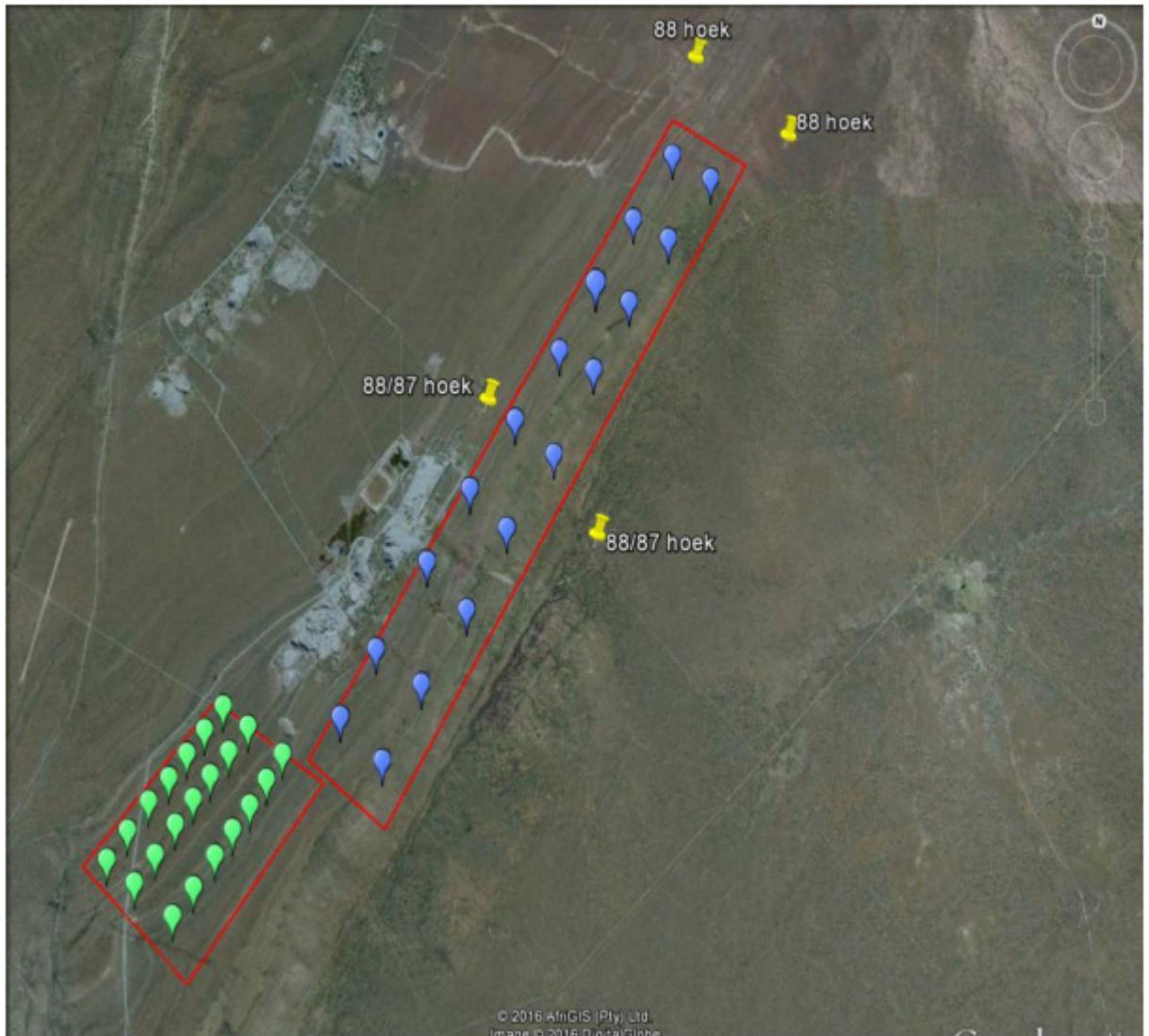


Figure 11: Final Site map with drill locations indicated.

The only buffers that must be implemented is the 100m away from any fixed infrastructure like the tar road and the farm house and out buildings in terms of Mine Health and Safety Act, 1996) Regulations relating to surveying, mapping and mine plans. These regulations states that a mine must take reasonable measures to ensure that –

No prospecting operations are carried out within a horizontal distance of 100 (one hundred) metres from reserve land, buildings, roads, railways, dams, waste dumps, or any other structure whatsoever including such structures beyond the mining boundaries, or any surface, which it may be necessary to protect in order to prevent any significant risk, unless a lesser distance has been determined safe by risk assessment and all restrictions and conditions in terms of the risk assessment are complied with.

There is a 15.5m building and tree restriction on either side of the 132kV power lines which must be adhered to in all future developments and or construction. Eskom's rights are protected by Wayleave.

(iii) Summary of the positive and negative implications and risks of the proposed activity and identified alternatives;

The proposed prospecting operation will be done in such a way that farming will still be possible on the rest of the farm. If drilling is done the loss of land use will be temporary as the site will be rehabilitated in such a way that it allows the establishment of a grass cover again. The rest of the farm will still be able to be used for grazing purposes.

Although this is only a prospecting operation it will provide 10 jobs when drilling is reached. This will also add to the increased economic activity and 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 EMP are adhered to e.g. rehabilitation.

No concerns in terms of the prospecting itself have been raised.

The specific occurrence of diamonds in the area dictates the selection of the specific prospecting site.

m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as conditions of authorisation.

The main closure objective of Messina Diamonds (Pty) Ltd. planned prospecting operation is to restore the site to its current land capability in a sustainable manner.

- To prevent the sterilization of any reserves.
- To prevent the establishment of any permanent structures or features except where the owners have indicated that they would prefer structures to be left.
- The prospecting operation also has the objective to establish a stable and self-sustainable vegetation cover if necessary.
- To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability of the prospecting operation.
- To limit and manage the visual impact of the prospecting operation.
- To safeguard the safety and health of humans and animals on the prospecting operation.
- The last closure objective is that the prospecting operation is closed efficiently, cost effectively and in accordance with government policy.

Rehabilitation Plan

Infrastructure Areas:

On completion of the prospecting operation, the various surfaces, including the access road, the office area, storage areas and the ablution facilities, will finally be rehabilitated as follows:-

- ❖ All remaining material on the surface will be removed to the original topsoil level. This material will then be backfilled into the depressions. Any compacted area will then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.
- ❖ All infrastructures, equipment, ablution facilities and other items used during the operational period will be removed from the site.
- ❖ On completion of operations, all buildings, structures or objects on the office site will be dealt with in accordance with Regulation 44 of the Minerals and Petroleum Resources Development Act, 2002, which states:-
 1. *Regulation 44: When a prospecting right, mining right, retention permit or mining permit lapses, is cancelled or is abandoned or when any prospecting or mining operation comes to an end, the holder of such right or permit may not demolish or remove any building, structure or object –*
 - (a) *which may not be demolished or removed in terms of any other law;*
 - (b) *which has been identified in writing by the Minister for purposes of this section; or*
 - (c) *which is to be retained in terms of an agreement between the holder and the owner or occupier of the land, which agreement has been approved by the Minister in writing.*
 2. *The provision of subsection (1) does not apply to bona fide mining equipment, which may be removed.*

Topsoil :

- ❖ **Disposal Facilities:-**

Waste material of all description inclusive of receptacles, scrap, rubble and tyres will be removed entirely from the prospecting area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- ❖ **Ongoing Seepage, Control of Rain Water:-**

No monitoring of ground or surface water will take place, except is so requested by the DWS – Kimberley.
- ❖ **Long Term Stability and Safety:-**

It will be the objective of mine management to ensure the long term stability of all rehabilitated areas including the backfilled drill holes / depressions. This will be done by the monitoring of all areas until a closure certificate has been issued.
- ❖ **Final rehabilitation in respect of erosion and dust control:-**

Self-sustaining vegetation will result in the control of erosion and dust and no further rehabilitation is planned.

Final Rehabilitation Roads:-

- ❖ After rehabilitation has been completed, all roads will be ripped or ploughed, fertilized and seeded, providing the landowner does not want them to remain that way and with written approval from the Director: Mineral Development of the Department of Mineral Resources.

Submission of Information:-

- ❖ Reports on rehabilitation and monitoring will be submitted annually to the Department of Mineral Resources – Kimberley, as described in Regulation 55.

Maintenance (Aftercare):-

- ❖ Maintenance after closure will mainly concern the regular inspection and monitoring and/or completion of the re-vegetation programme.
- ❖ The aim of the Environmental Management Programme is for rehabilitation to be stable and self-sufficient, so that the least possible aftercare is required.
- ❖ The aim with the closure of the mine will be to create an acceptable post-mine environment and land-use. Therefore all agreed commitments will be implemented by Mine Management.

After-effects Following Closure:-

- ❖ Acid Mine Drainage:-
No potential for bad quality leachate or acid mine drainage development exists after mine closure.
- ❖ Long Term Impact on Ground Water:-
No after effect on the groundwater yield or quality is expected.
- ❖ Long-term Stability of Rehabilitated Land:-
One of the main aims of any rehabilitated ground will be to obtain a self-sustaining and stable end result. Cleaning of all drill chip material concurrently and replacing of topsoil where available.

n) Aspects for inclusion as conditions of Authorisation

Any aspects which must be made conditions of the Environmental Authorisation

None.

o) Description of any assumptions, uncertainties and gaps in knowledge

(Which relate to the assessment and mitigation measure proposed)

None.

p) Reasoned opinion as to whether the proposed activity should or should not be authorised

i) Reasons why the activity should be authorized or not.

There is no reason why the activity should not be authorised.

ii) Conditions that must be included in the authorisation.

None other than the implementation of the EMPr.

q) Period for which the Environmental Authorisation is required

It is required for 5 years.

r) Undertaking

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basis Assessment Report and the Environmental Management Programme Report.

I hereby undertake to meet the requirements as provided at the end of the EMPr and is applicable to both the Basic Assessment Report and the Environmental Management Programme Report.

s) Financial Provision

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation

No.	Description	Unit	A	B	C	D	E=A*B*C*D Amount (Rands)
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	12.21	1	1	-
2 (A)	Demolition of steel buildings and structures	m2	0	170.13	1	1	-
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	250.72	1	1	-
3	Rehabilitation of access roads	m2	0	30.44	1	1	-
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	295.49	1	1	-
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	161.18	1	1	-
5	Demolition of housing and/or administration facilities	m2	0	340.26	1	1	-
6	Opencast rehabilitation including final voids and ramps	ha	0.500	173174.97	0.52	1	45 025.49
	Drill holes		0.500	173174.97	0.52	1	45 025.49
				173174.97	0.52	1	-
				173174.97	0.52	1	-
				173174.97	0.52	1	-
				173174.97	0.52	1	-
				173174.97	0.52	1	-
				173174.97	0.52	1	-
				173174.97	0.52	1	-
7	Sealing of shafts adits and inclines	m3	0	91.33	1	1	-
8 (A)	Rehabilitation of overburden and spoils	ha	0	118912.29	1	1	-
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	148103.1	1	1	-
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	430161.62	1	1	-
9	Rehabilitation of subsided areas	ha	0	99571.13	1	1	-
10	General surface rehabilitation	ha	0.5	40000	1	1	20 000.00
11	River diversions	ha	0	94198.59	1	1	-
12	Fencing	m	0	107.45	1	1	-
13	Water management	ha	0	35816.95	1	1	-
14	2 to 3 years of maintenance and aftercare	ha	0	12535.93	1	1	-
15 (A)	Specialist study	Sum	0			1	-
15 (B)	Specialist study	Sum				1	-
Sub Total 1							65 025.49
1	Preliminary and General		3 901.53		weighting factor 2 1		3901.529532
2	Contingencies			6502.54922			6502.54922
Subtotal 2							75429.57
VAT (14%)							10560.14
Grand Total							85990

i) Explain how the aforesaid amount was derived

The quantum of the financial provision contemplated in Regulation 54 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) will be revised and adjusted accordingly annually, based on a survey assessment of the environmental liability of Messina Diamonds (Pty) Ltd. Logging and surveys of drill holes are conducted by a registered surveyor and results are forwarded to the Environmental Manager who calculates the outstanding rehabilitation as per the agreed rate in the DMR Guideline. A bank guarantee is prepared for the amount and submitted to the DMR.

Financial provision for the rehabilitation or management of negative environmental impacts caused by the mining operation [as required by Section 41 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)] will be made in the form of a financial guarantee from a South African registered bank. This document will guarantee the financial provision relating to the Environmental Management Programme in a format as approved by the Director-General.

ii) Confirm that this amount can be provided from operating expenditure

(Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining Work Programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be)

Messina Diamonds (Pty) Ltd. will fund the operation; please see last audited financial statements to undertake prospecting operations.

t) Specific information required by the competent Authority

i) 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:-

(1) 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 an **Appendix**)

Socio-economic upliftment will take place due to the creation of employment opportunities as well as economic support to the surrounding business community.

(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act (Provide the results of investigation, assessment, 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 No. 25 of 1999) with the exception of the national estate

contemplated in section 3(2)(j)(vi) and (vii) of that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12 herein)

A Heritage Impact Assessment was conducted in terms of Section 38 of the National Heritage Resources Act (25 of 1999) in respect of the proposed prospecting and application for mining rights a Portion of the Remaining Extent of the Farm 84 and a Portion of the Farm 393 (hereinafter the properties), Barkly West District, Northern Cape:

The following is a summary of the findings of the study:

Thirty-three (33) sites were recorded.

Summary of Findings

PORTION OF THE FARM 393

Eighteen sites (18) were recorded (see Inventory above and Catalogue in Section 8).

The Stone Age

Four (4) Stone Age Sites were recorded all with a low density of lithics, and none demonstrating concentrated or regular activity. None of the sites represent substantial settlement to warrant further investigation. The sites appear to be spread all over the plateau and escarpment.

The Iron Age

No Iron Age sites were found on the properties.

Early Modern Mining

The occurrence of many mine claim pegs (an iron plaque standing in a concrete cube base) is evidence of the existence of many small claims in the early pioneering years. None of the trenches made by the small-scale minors are worth preserving. The claim pegs in concrete are portable and can be moved, displayed in a park or garden.

Two instances of early fissure mining have been recorded. One site is fenced off with a steel palisade. One or both fissures may be wholly or partially preserved as evidence of early mining methods.

Modern Mine infrastructure and associated buildings

Buildings and Infrastructure at four the mine shafts were recorded, of which none is more than 60 years old. Although these are important utilities they carry no heritage significance in terms of statutory provisions.

THE REMAINING EXTENT OF 84

Fifteen sites (15) were recorded (see Inventory above and Catalogue in Section 8).

The Stone Age

Twelve (12) Stone Age Sites were recorded of which all have a low density of lithics, and none demonstrating concentrated or regular activity (S19 – S27, S30-S31). They seem to represent general activity and movement of foragers in the area in the MSA/LSA, and no particular regular settlement can be pinpointed. The sites have been recorded and no further mitigation is recommended.

The Iron Age

No Iron Age sites were found on the properties.

Early Modern Mining

A deep mine trench was recorded (S28). An old concrete ramp or terrace with a stone revetment wall with a maximum height of 220m was built on the crest of the ridge. It appears to be the remains of a processing plant. This structure is in a sound state and can be preserved as a footprint of early modern mining in the area.

Linear pile of stones

A linear pile of stones 470m long is laid transverse to the ridge. The stones appear to have been extracted during trenching for a water pipeline. They were replaced after laying of the pipe and backfilling. The pile is a significant linear feature in the landscape seen from the top of the ridge, and may be worth preserving.

Recommendations

The proposed mine prospecting can go ahead subject to the precautions stated above taken. In the event of discovery of other heritage resources in future phases of the project, the Provincial Heritage Resources Authority or SAHRA must be alerted immediately and an archaeologist or heritage expert called to attend.

v) 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 detailed, 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 4**)

There are no alternatives, as the application area applied for is the area identified with potential for a diamond prospecting operation.

PART B**ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT****1) Draft environmental management programme**

- a) Details of the EAP** (Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section 1(a) herein as required)

I hereby confirm that the requirements for the provision of the details and expertise of the EAP are already included in PART A, section 1(a).

Confirmed (Mark with an X)	X
-----------------------------------	----------

- b) Description of the Aspects of the Activity** (Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required)

I hereby confirm that the requirements to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section 1(h).

Confirmed (Mark with an X)	X
-----------------------------------	----------

c) Composite Map

(Provide a map (**Attached as an Appendix**) at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers)

The only buffers that must be implemented is the 100m away from any fixed infrastructure and the farm house and out buildings in terms of the Mine Health and Safety Act, 1996 (Act No. 29 of 1996) Regulations relating to surveying, mapping and mine plans. These regulations states that a mine must take reasonable measures to ensure that –

No prospecting activities are carried out within a horizontal distance of 100 (one hundred) metres from reserve land, buildings, roads, railways, dams, waste dumps, or any other structure whatsoever including such structures beyond the mining boundaries, or any surface, which it may be necessary to protect in order to prevent any significant risk, unless a lesser distance has been determined safe by risk assessment and all restrictions and conditions determined in terms of the risk assessment are complied with.

Please see Final Site Map.

d) Description of impact management objectives including management statements

i) Determination of closure objectives (ensure that the closure objectives are informed by the type of environment described)

- The main closure objective of Messina Diamonds (Pty) Ltd planned prospecting operation is to restore the site to its current land capability in a sustainable manner.
- To prevent the sterilization of any reserves.
- To prevent the establishment of any permanent structures or features except where the owners have indicated that they would prefer structures to be left.
- The prospecting operation also has the objective to establish a stable and self-sustainable vegetation cover if necessary.
- To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability of the prospecting operation.
- To limit and manage the visual impact of the prospecting operation.
- To safeguard the safety and health of humans and animals on the prospecting operation.
- The last closure objective is that the prospecting operation is closed efficiently, cost effectively and in accordance with government policy.

ii) Volumes and rate of water use required for the operation

The operation would require about 250 litres per day for drinking water. No water for the drilling is required.

iii) Has a water use licence been applied for?

No Water will be used for the drilling operation. Only a small amount of water will be used for drinking purposes of the workers.

iv) Impact to be mitigated in their respective phases

Measure to rehabilitate the environment affected by the undertaking of any listed activity

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
e.g. for prospecting – drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route, etc...etc...etc.	of operation in which activity will take place. State; Planning and design, Pre- construction, Construction, Operational, Rehabilitation, Closure, Post Closure	(volumes, tonnages and hectares or m ²)	(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:-
e.g. for mining –					

<p>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.</p>					<p>Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>
<p>Construction Phase: The construction phase will commence upon granting of the Prospecting Right drill site camp ablution facility, access route.</p>	<p>Pre-construction and construction.</p>	<p>* Temporary structures of 0.075 ha. * Tracks of 2000m² to drill sites</p>	<p><i>Air Quality:</i> * To control the incidence of unacceptable levels of dust pollution on site. <i>Surface Water:</i> * To conserve water; and * To eliminate the contamination of run-off and sources of surface water. <i>Ground Water:</i> * To minimise and prevent as far as practically possible the contamination of ground water. <i>Natural Flora:</i> * To re-establish self-sustaining vegetation units in rehabilitated areas; and * To control invasion by exotic and invasive plant species. <i>Fauna:</i> * To re-establish vegetation in cleared areas, and therefore a habitat for wildlife; and * To eliminate poaching and the extermination of animal species within the boundaries of the study area, as well as in the surrounding areas. <i>Noise:</i> * To control the incidence of unacceptable noise levels on site. <i>Aesthetics:</i> * To minimise</p>	<p>The applicant will, for as far as it is reasonably practicable, rehabilitate the environment affected by the proposed prospecting to its natural or a predetermined state or to a land use which conforms to the generally accepted principle of sustainable development.</p>	<p>This phase is expected to be complete within? granting of the Prospecting Right application.</p>

		<p>aesthetic disturbance; and</p> <ul style="list-style-type: none"> * To reduce the visual impact of the proposed prospecting operation through a process of ongoing rehabilitation and reclamation. <p><i>Soils:</i></p> <ul style="list-style-type: none"> * To prevent soil pollution; * To limit soil compaction; * To curb soil erosion; and * To reinstate a growth medium able to sustain plant life. <p><i>Land Capability:</i></p> <ul style="list-style-type: none"> * To minimise the reduction of land capability. <p><i>Sensitive Landscapes:</i></p> <ul style="list-style-type: none"> * To protect sensitive landscapes from potential negative impacts. <p><i>Surface environment – waste management:</i></p> <ul style="list-style-type: none"> * To ensure that the discarding of any waste material produced as a result of the proposed prospecting operation, including rubble, litter, garbage, rubbish or discards of any description, whether solid or liquid, takes place only at a site or sites demarcated for such purposes. * To prevent waste material from being dumped within the borders or the vicinity of the prospecting area. <p><i>Topography:</i></p> <ul style="list-style-type: none"> * To reduce the potential of surface erosion caused by run-off in drill areas and backfilled areas; and * To ensure the stability and safety of all backfilled drill 		
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<p>Operational Phase: The operational phase involves the drilling for diamonds.</p>	<p>Operational phase</p>	<ul style="list-style-type: none"> * Temporary structures of 0.075 ha. * Tracks of 2000m² ha to drill sites 	<p>holes.</p> <p><i>Air Quality:</i> To limit the creation of nuisance dust the following management guidelines will be followed:-</p> <ul style="list-style-type: none"> * Avoidance of unnecessary removal of vegetation; * Routine spraying of unpaved site areas and roads with water; * Re-vegetation of rehabilitated areas not occupied by plant infrastructure to take place as soon as possible. <p><i>Fauna & Flora:</i></p> <ul style="list-style-type: none"> * Indigenous vegetation to be used for landscaping to minimise water requirements. * If any endangered species are found on the mine they will be relocated. If this is not possible potential changes in the habitat of endangered species will be monitored. * The above programme will also focus on species that depend on specific host plants or on specific relationships, with specific reference to possible impacts on such related to emissions from the mine. * Any area that is rehabilitated or decommissioned will be seeded with a seed mixture reflecting the natural vegetation as is currently found. If it is not found to be feasible during rehabilitation a general seed mixture of the area will be used. * Management will also take responsibility to control declared invader or exotic species on the mine. 	<p>Rehabilitation of the entire prospecting area back to original land capability and use with available topsoil and proper levelling.</p>	<p>The rehabilitation programme will form an integral part of this phase, as every drill hole will be backfilled by using material taken from the hole.</p>
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			<p>The following control methods will be used:</p> <ul style="list-style-type: none"> * "The plants will be uprooted, felled or cut off and can be destroyed completely." * "The plants will be treated with a herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such a herbicide." * The end objective of the re-vegetation programme will be to achieve a stable self-sustaining habitat unit. * Vegetation on flat surfaces will be established using the dry lands technique requiring no irrigation. * Valid permits from Northern Cape Nature Conservation will be obtained before any protected plant species are removed. * Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a firebreak will be cleared around the perimeter of the mine. * Any form of poaching by workers of the mine will result in the maximum form of punishment as allowed for by common law. Any form of snares or traps on site will be removed. * If any endangered species are encountered the Department of Nature Conservation will be contacted. <p>Noise:</p>		
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			<p>* As a minimum ambient noise levels emanating from the mine will not exceed 82 dBA at the site boundary.</p> <p>* Messina Diamonds (Pty) Ltd. will comply with the occupational noise regulations of the Occupational Health and Safety Act, Act 85 of 1993.</p> <p>* Messina Diamonds (Pty) Ltd. will comply with the measures for good practice with regard to management of noise related impacts during construction and operation.</p> <p>* The management objective will be to reduce any level of noise, shock and lighting that may have an effect on persons or animals, both inside the plant and that which may migrate outside the plant area.</p> <p>* When the equivalent noise exposure, as defined in the South African Bureau of Standards Code of Practice for the Measurement and Assessment of Occupational Noise for Hearing Conservation Purposes, SABS 083 as amended, in any place at or in any mine or works where persons may travel or work, exceeds 82 dB (A), the site manager will take the necessary steps to reduce the noise below this level.</p> <p>* Hearing protection will be available for all employees where attenuation cannot be implemented.</p> <p>* If any complaints are received from the public or state department regarding noise levels the levels will</p>		
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			<p>be monitored at prescribed monitoring points.</p> <p><i>Mechanical Equipment:</i></p> <ul style="list-style-type: none"> * All mechanical equipment will be in good working order and vehicles will adhere to the relevant noise requirements of the Road Traffic Act. * All vehicles in operation will be equipped with a silencer on their exhaust system. * Safety measures, which generate noise such as reverse gear alarms on large vehicles, will be appropriately calibrated/adjusted. <p><i>Screening/Migration Control:</i></p> <ul style="list-style-type: none"> * Appropriate measures will specifically be installed and or employed at the plant to act as screen and to reflect/reduce the noise. * Appropriate non-metallic washers/insulation will be used with any joining apparatus to join screens such as corrugated iron to other structures and to each other. Such screens will be maintained in a fixed position. <p><i>Soil:</i></p> <ul style="list-style-type: none"> * In all places of development the first 300mm of loose or weathered material found will be classified as a growth medium. * In all areas where the above growth medium will be impacted on, it will be removed and stockpiled on a dedicated area. The maximum height of stockpiles will be 2.5 meters. * The growth medium/ topsoil will be used during the rehabilitation of any 		
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			<p>impacted areas, after sloping in order to re-establish the same land capability.</p> <p>* If any soil is contaminated during the life of the mine, it will either be treated on site or be removed together with the contaminant and placed in acceptable containers to be removed with the industrial waste to a recognised facility or company.</p> <p>* Erosion control in the form of re-vegetation and contouring of slopes will be implemented on disturbed areas in and around the site.</p> <p>* Topsoil will be kept separate from overburden and will not be used for building or maintenance of access roads.</p> <p>* The stored topsoil will be adequately protected from being blown away or being eroded.</p>		
<p>Decommissioning & Closure Phase:</p> <p>The last phase of the proposed prospecting operation will consist mainly of the following activities:</p> <p>* The removal of waste material of any description from the prospecting area and the disposal thereof at a recognised landfill facility.</p> <p>* The removal of infrastructure, equipment, and other items from the site.</p> <p>* The ripping of compacted areas to a level of 300mm and the levelling of such areas in order to re-establish a growth medium for plants (such areas will furthermore be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the prospecting operation, if the reestablishment of vegetation is unacceptably slow.</p>	Decommissioning	The entire area will be cleaned and sloped, the area will also have acceptable drainage.	<p>Rehabilitation of the new topographical landscape in such a way that it would blend in with the surrounding landscape and allow normal surface drainage to continue.</p> <p>Rehabilitation in such a way that the new landscape features would be stable and would not pose any safety hazard to human and animals anymore.</p>	<p>The main closure objective of Messina Diamonds (Pty) Ltd. is to rehabilitate the whole site in such a way to ensure that the topographical landscape would blend in with the surrounding landscape, not pose a safety hazard to humans and animals, while at the same time allow for alternative land uses.</p> <p>Establish a self-sustaining and stable vegetation cover in order to mitigate the visual impact, to control erosion and to create some habitat for animals. The rehabilitated environment also needs to be aesthetically acceptable according to the principle of BPEO.</p>	The last phase.

<p>* The backfilling of the final drill hole with subsoil and the covering thereof with previously stored topsoil (where- after this area will also be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the proposed operation, and seedlings protected for a period of one year) if the reestablishment of vegetation is unacceptably slow.</p>					

e) Impact Management Outcomes

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph(i))

ACTIVITY whether listed or not listed	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE in which impact is anticipated	MITIGATION TYPE	STANDARD TO BE ACHIEVED
(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.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc...etc...etc.)		(e.g. Construction, commissioning, operational decommissioning, closure, post-closure)	(modify, remedy, control, or stop through e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity, etc...etc.) e.g. <ul style="list-style-type: none"> • Modify through alternative method • Control through noise control • Control through management and monitoring • Remedy through rehabilitation 	(impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
See Table under d(iv)					

f) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraph (c) and (d) will be achieved)

ACTIVITY whether listed or not listed	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
(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.)	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution, etc...etc...etc.)	(modify, remedy, control, or stop through e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity, etc...etc.) e.g. <ul style="list-style-type: none"> • Modify through alternative method • Control through noise control • Control through management and monitoring • Remedy through rehabilitation 	Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either:- Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.	(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
<i>See Table under d(iv)</i>				

i) Financial Provision**(1) Determination of the amount of Financial Provision****(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.**

- ❖ The main closure objective of Messina Diamonds (Pty) Ltd. planned prospecting operation is to restore the site to its current land capability in a sustainable manner.
- ❖ To prevent the sterilization of any reserves.
- ❖ To prevent the establishment of any permanent structures or features except where the owners have indicated that they would prefer structures to be left.
- ❖ The mine also has the objective to establish a stable and self-sustainable vegetation cover if necessary.
- ❖ To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability of the mine.
- ❖ To limit and manage the visual impact of the mine.
- ❖ To safeguard the safety and health of humans and animals on the mine.
- ❖ The last closure objective is that the mine is closed efficiently, cost effectively and in accordance with government policy.

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

The process as described by NEMA for Environmental Authorisation was followed. The landowner is the Republic of South Africa through the Department of Rural Development and Land Reform. A site notice was placed on the fence of the farm, at the entrance to Bellsbank mine, Boetsap Police station and the General dealer at Spitskop dam.

With this site notice all passers-by are requested to register and submit any written comments to be forwarded to the consultant.

An Advert (Notice) was placed in the DFA on 27 September 2016 to notify all other interested and affected parties and to invite any parties to register.

Registered letters were send on 26 September to all relevant Departments as prescribed by NEMA with a BID document on the project. Dikgatlong Local Municipality; ESKOM Environmental Division; Department of Agriculture, Land Reform and Rural

Development; were included. Also all the neighbours received a letter.

A notice was published on 29 November 2016 to inform all parties of a public meeting that was convened at the Training Centre at Sedibeng Diamond Mine JV, Bellsbank. The attendance register and the minutes and Agenda of the meeting is attached.

A meeting was also convened with the Department of Public Works on 21 November 2016 which was thought to be the property owner. The Department indicated that they are not the property holder and the applicant was referred to The Department of Rural Development and Land Reform who confirmed that they were the property owners.

Another meeting was then scheduled with Department of Rural Development and Land Reform on 28 November 2016 which is the property owner. The necessary agreements will be put in place.

- (c) **Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.**

Infrastructure Areas:

On completion of the prospecting operation, the various surfaces, including the access road, storage areas and the ablution facilities, will finally be rehabilitated as follows:-

- ❖ All remaining material on the surface will be removed to the original topsoil level. This material will then be backfilled into the drill holes / depressions. Any compacted area will then be ripped to a depth of 300mm, where possible, the topsoil or growth medium returned and landscaped.
- ❖ All infrastructures, equipment, and other items used during the operational period will be removed from the site.
- ❖ On completion of operations, all buildings, structures or objects on the office site will be dealt with in accordance with Regulation 44 of the Minerals and Petroleum Resources Development Act, 2002, which states:-
 3. *Regulation 44: When a prospecting right, mining right, retention permit or mining permit lapses, is cancelled or is abandoned or when any prospecting or mining operation comes to an end, the holder of such right or permit may not demolish or remove any building, structure or object –*

- (d) *which may not be demolished or removed in terms of any other law;*
 - (e) *which has been identified in writing by the Minister for purposes of this section; or*
 - (f) *which is to be retained in terms of an agreement between the holder and the owner or occupier of the land, which agreement has been approved by the Minister in writing.*
4. *The provision of subsection (1) does not apply to bona fide mining equipment, which may be removed.*

Topsoil Deposits:

- ❖ Disposal Facilities:-
Waste material of all description inclusive of receptacles, scrap, rubble and tyres will be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- ❖ On-going Seepage, Control of Rain Water:-
No monitoring of ground or surface water will take place, except is so requested by the DWS – Kimberley.
- ❖ Long Term Stability and Safety:-
It will be the objective of mine management to ensure the long term stability of all rehabilitated areas including the backfilled depressions. This will be done by the monitoring of all areas until a closure certificate has been issued.
- ❖ Final rehabilitation in respect of erosion and dust control:-
Self-sustaining vegetation will result in the control of erosion and dust and no further rehabilitation is planned.

Final Rehabilitation Roads:-

- ❖ After rehabilitation has been completed, all roads will be ripped or ploughed, fertilized and seeded, providing the landowner does not want them to remain that way and with written approval from the Director: Mineral Development of the Department of Mineral Resources.

Submission of Information:-

- ❖ Reports on rehabilitation and monitoring will be submitted annually to the Department of Mineral Resources – Kimberley, as described in Regulation 55.

Maintenance (Aftercare):-

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

- ❖ The aim of the Environmental Management Programme is for rehabilitation to be stable and self-sufficient, so that the least possible aftercare is required.
- ❖ The aim with the closure of the mine will be to create an acceptable post-mine environment and land-use. Therefore all agreed commitments will be implemented by Mine Management.

After-effects Following Closure:-

- ❖ **Acid Mine Drainage:-**
No potential for bad quality leach ate or acid mine drainage development exists after mine closure.
- ❖ **Long Term Impact on Ground Water:-**
No after effect on the groundwater yield or quality is expected.
- ❖ **Long-term Stability of Rehabilitated Land:-**
One of the main aims of any rehabilitated ground will be to obtain a self-sustaining and stable end result. Cleaning of all drill chip material concurrently and replacing of topsoil where available.

(d) Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

- ❖ The removal of waste material of any description from the mining area and the disposal thereof at a recognised landfill facility.
- ❖ The removal of infrastructure, equipment, plant and other items from the site.
- ❖ The ripping of compacted areas to a level of 300mm and the levelling of such areas in order to re-establish a growth medium for plants (such areas will furthermore be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the prospecting operation, if the re-establishment of vegetation is unacceptably slow.
- ❖ The backfilling of the final drill hole with drill chips and subsoil and the covering thereof with previously stored topsoil (where-after this area will also be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the proposed operation, and seedlings protected for a period of one) if the re-establishment of vegetation is unacceptably slow.

- (e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

It is estimated at R 85990 for the financial provision to manage and rehabilitate the environment.

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	12.21	1	1	-
2 (A)	Demolition of steel buildings and structures	m2	0	170.13	1	1	-
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	250.72	1	1	-
3	Rehabilitation of access roads	m2	0	30.44	1	1	-
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	295.49	1	1	-
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	161.18	1	1	-
5	Demolition of housing and/or administration facilities	m2	0	340.26	1	1	-
6	Opencast rehabilitation including final voids and ramps	ha	0.500	173174.97	0.52	1	45 025.49
	Drill holes		0.500	173174.97	0.52	1	45 025.49
				173174.97	0.52	1	-
				173174.97	0.52	1	-
				173174.97	0.52	1	-
				173174.97	0.52	1	-
				173174.97	0.52	1	-
				173174.97	0.52	1	-
7	Sealing of shafts adits and inclines	m3	0	91.33	1	1	-
8 (A)	Rehabilitation of overburden and spoils	ha	0	118912.29	1	1	-
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	148103.1	1	1	-
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	430161.62	1	1	-
9	Rehabilitation of subsided areas	ha	0	99571.13	1	1	-
10	General surface rehabilitation	ha	0.5	40000	1	1	20 000.00
11	River diversions	ha	0	94198.59	1	1	-
12	Fencing	m	0	107.45	1	1	-
13	Water management	ha	0	35816.95	1	1	-
14	2 to 3 years of maintenance and aftercare	ha	0	12535.93	1	1	-
15 (A)	Specialist study	Sum	0			1	-
15 (B)	Specialist study	Sum				1	-
Sub Total 1							65 025.49
1	Preliminary and General		3 901.53		weighting factor 2 1		3901.529532
2	Contingencies			6502.54922			6502.54922
Subtotal 2							75429.57
VAT (14%)							10560.14
Grand Total							85990

- (f) Confirm that the financial provision will be provided as determined.

It is hereby confirmed that the financial provision will be provided as determined.

Messina Diamonds (Pty) Ltd. will fund the operation please see his last audited financial statements to undertake prospecting operations.

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

- g) **Monitoring of Impact Management Actions**
- h) **Monitoring and Reporting Frequency**
- i) **Responsible persons**
- j) **Time Period for Implementing Impact Management Actions**
- k) **Mechanisms for Monitoring Compliance**

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Topography	To minimise the reduction of land capability.	To ensure that rehabilitation post-mining slopes are stable, free draining and no slopes have an angle in excess of 20°.	Site Manager/ Environmentalists	Monitoring will be done on an <i>annual basis</i> to ensure that the levels and the slopes are in order.
Soil	To prevent soil pollution; To limit soil compaction; To curb soil erosion; and To reinstate a growth medium able to sustain plant life.	Soil depth and chemical composition will be tested and possible erosion damage will be assisted and rectified.	Site Manager/ Environmentalists	Monitoring will be done on an <i>annual basis</i> or after a heavy rain event.
Air Quality	To control the incidence of unacceptable levels of dust pollution on site.	To ensure that the mine minimizes dust emissions, so that dust does not become a nuisance for affected parties and a health hazard.	Site Manager/Foreman appointed SHE Consultant	Visual inspections will be done and managed by dust suppression by a water tanker. Quarterly tests will also be conducted by a Safety Health and Environmental Consultant and submitted to Mine Health and Safety for monitoring purposes.
Fauna	To minimise vegetation destruction in drill, areas, and therefore a habitat for wildlife; and To eliminate poaching and the extermination of animal species within the boundaries of the study area as well as the surrounding areas.	To ensure that the species diversity and abundance is not significantly reduces.	Site Manager/ Environmentalists	Monitoring will be done at rehabilitated area on an <i>annually basis</i> to investigate species diversity and abundance.
Flora	To minimise the destruction of vegetation units; and To control invasion of exotic and invasive plant species.	To ensure that the rehabilitated areas become self-maintaining.	Site Manager/ Environmentalists	Monitoring will be done at the rehabilitated areas on a <i>twice a year basis</i> (mid-summer and mid-winter), where species diversity and vegetation cover will be investigated.
Noise	To control the incidence of unacceptable noise levels on site.	The management objective will be to reduce any level of noise, shock and lighting that may have an effect on persons or animals, both inside the plant and that which may migrate outside the plant area.	Site Manager/Foreman appointed SHE Consultant.	Quarterly reports on fall-out noise monitoring will be conducted as required by legislation. If any complaints are received from the public or state department regarding noise levels

				the levels will be monitored at prescribed monitoring points.
Surface Water	To conserve water; and To eliminate the contamination of run-off and sources of surface water.	There are no sources in the vicinity of the mine.	Site Manager/Water Supply	No monitoring will be done to monitor the quality of the surface water.
Ground Water	To minimise and prevent as far as practically possible the contamination of ground water.	No ground water is used.	Site Manager/Water Supply	No monitoring will be done to monitor the levels and quality.

l) Indicate the frequency of the submission of the performance assessment/environmental audit report

Annual Performance Assessment and Environmental Audit reports will also be conducted and submitted.

m) Environmental Awareness Plan

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

- An environmental, health and safety induction programme will be provided to all employees prior to commencing work, and they will sign acknowledgement of the induction.
- A daily “toolbox talk” will be held prior to commencing work, which will include discussions on health, safety and environmental considerations. The toolbox talks should be led by the Site Manager.

Environmental Awareness Training Programme Procedure

Natural resources are limited and not always renewable and it is the responsibility of management to ensure that all employees are trained to understand the impacts of their tasks on the environment and to reduce them wherever possible.

Environmental awareness training must be given to new employees on site and any contractors who may come onto site for a short period of time. Refresher training must be given to permanent employees on an annual basis.

The objective of this procedure is to ensure that all employees on the, including contractors, are competent to perform their duties, thereby eliminating negative impacts on their safety, health and environment.

The environmental topics to be covered in awareness training should include the following:-

- **RESOURCE MANAGEMENT**
 - a. The importance of saving water:
 - i. South Africa is a water scarce country and rivers are polluted.
 - ii. Do not throw litter into river or water drains.
 - iii. Do not dispose of oils in sewers.
 - b. Air pollution – climate change:
 - i. The use of fossil fuels is increasing the amount of greenhouse gases that are discharged to the atmosphere. Share transport or use public transport.
 - ii. Don't burn any rubbish, the smoke pollutes the air.

- iii. Plant trees, they clean the air, provide us with oxygen and remove the greenhouse gas carbon dioxide from the air.
 - c. Soil conservation:
 - i. Prevent overgrazing of farmlands, keep vegetation on the surface of the land to prevent soil erosion.
 - ii. Plant trees.
- **HAZARDOUS SUBSTANCE USE AND STORAGE**
 - a. Solvent, petrol, diesel, insecticides, chlorine, detergents, chemical fertilisers are harmful to the environment and to your health. Use them sparingly and do not let them get into the water systems. Containers must be disposed of to a licensed hazardous waste disposal facility.
 - b. Hazardous substances must be stored and used correctly.
 - c. Ensure that 16 point Material Substances Safety Data Sheets (MSDS) are available at point of store.
 - d. Compressed gas storage requirements.
 - e. Flammable substances store requirements.
- **INCIDENT AND EMERGENCY REPORTING**
 - a. The company must have an emergency/incident reporting system whereby environmental incidents can be reported and actioned to mitigate and follow up on.
- **OIL / DIESEL / PETROL SPILL CLEAN UP**
 - a. All employees who work with machines and vehicles must be instructed how to prevent and clean up an oil or diesel spill appropriately. Spill kits must be available on site, drip trays must be used when servicing vehicles.
- **CONSERVATION OF WATER**
 - a. Campaign to save water on site.
 - b. Clean water is expensive and potable water must be used carefully.
 - c. Prevent pollution of water by preventing spills and dispose of wastes properly.
- **CONSERVATION OF VEGETATION**

Plants, grasses and trees are very important to our existence on the earth, they provide food, fuel, shelter, raw materials and they clean the air. Indigenous plants are especially important for muti and the whole ecology of life. Human activities are destroying the natural forests of the earth. The natural forests are the “lungs” of the planet and unfortunately they are being cleared faster than they can be regenerated.

 - a. EIA's are to be done before virgin bush can be cleared.

- b. Vegetation cover reduces water and topsoil loss from the ground, do not clear vegetation unnecessarily.
- c. Indigenous trees provide shade, attract wild birds.
- d. Do not chop down indigenous trees without good reason.
- e. Implement a tree planting programme.
- f. Remove alien invasive trees in your area such as Prosopis, Syringa and Pepper trees, cactus plants.

- **WASTE MANAGEMENT**

- a. Employees must be instructed on how to tell the difference between hazardous waste and general waste.
- b. They must know how to separate hazardous and general waste and where to dispose of these wastes in the correct way.
- c. Examples of hazardous waste which must be recycled or sent to Waste Tech for disposal:
 - i. Oil, diesel, batteries, acids, paint, thinners, electronic waste.
 - ii. Pesticides, jik, Handy Andy.
 - iii. Old oil, old oil filters, old paint is hazardous and must not be disposed of to a general land fill. Oilkol of the Rose Foundation will collect old oil.
 - iv. Mercury in fluorescent light bulbs is hazardous, fluorescent lights must be handled with great care so as not to break the glass and release the mercury vapour into the air which you breathe.
- d. Examples of general wastes which can go to the municipal landfill.
 - i. Wood, paper, plastic, glass, old PPE.
- e. Recycle, Reuse, Reduce, Recover wherever possible.

- **CONCLUSION**

The management of Messina Diamonds (Pty) Ltd. will utilize the Environmental Awareness Plan to assure that all employees and contractors are aware of the environment and know how to manage it correctly.

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

Air quality:

- To control the incidence of unacceptable levels of dust pollution on site.

Surface water:

- To conserve water; and
- To eliminate the contamination of run-off and sources of surface water.

Ground water:

- To minimise and prevent as far as practically possible the contamination of ground water.

Natural flora:

- To minimise the destruction of vegetation units; and
- To control invasion by exotic and invasive plant species.

Fauna:

- To minimise vegetation destruction in drill areas, and therefore a habitat for wildlife; and
- To eliminate poaching and the extermination of animal species within the boundaries of the study area, as well as in the surrounding areas.

Noise:

- To control the incidence of unacceptable noise levels on site.

Aesthetics:

- To minimise aesthetic disturbance; and
- To reduce the visual impact of the proposed prospecting operation through a process of on-going rehabilitation and reclamation.

Soils:

- To prevent soil pollution;
- To limit soil compaction;
- To curb soil erosion; and
- To reinstate a growth medium able to sustain plant life.

Land capability:

- To minimise the reduction of land capability.

Sensitive landscapes:

- To protect sensitive landscapes from potential negative impacts.

Surface environment - waste management:

- To ensure that the discarding of any waste material produced as a result of the proposed mining operation, including rubble, litter, garbage, rubbish or discards of any description, whether solid or liquid, takes place only at a site or sites demarcated for such purposes.
- To prevent waste material from being dumped within the borders or the vicinity of the prospecting area.

n) Specific information required by the Competent Authority

(Among others, confirm that the financial provision will be reviewed annually)

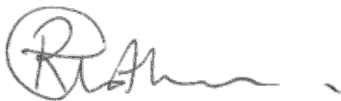
The purpose of submission of information in this section is to inform the relevant government department of the impacts and the progress being made with respect to the mitigation of the impacts occurring from the current operation.

- ✓ Quarterly reports on fall-out and nuisance dust and noise monitoring will be conducted as required by legislation. The results of these studies will be compiled into annual reports and forwarded to the Principle Inspector of Mine Health and Safety, Department of Mineral Resources, Kimberley.
- ✓ The fauna and flora will be monitored on an annual basis when the Performance Assessment Report is compiled.
- ✓ Annual performance Assessment and financial quantum reports will also be conducted.

2) UNDERTAKING

The EAP herewith confirms

- a) the correctness of the information provided in the reports;
- b) the inclusion of comments and inputs from stakeholders and I&APs;
- c) the inclusion of inputs and recommendations from the specialist reports where relevant; and
- d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.



Signature of the environmental assessment practitioner:

Wadala Mining and Consulting (Pty) Ltd

Name of company:

09 December 2016

Date:

-END-

APPENDIX 1**CURRICULUM VITAE – RH OOSTHUIZEN****PERSONAL DETAILS**

FULL NAMES AND SURNAME : **Roelina Henriëtte Oosthuizen**

DATE OF BIRTH : 18 April 1970

I.D. NO : 700418 0037 08 2

MARITAL STATUS : Married

CITIZENSHIP : **Republic of South Africa**

RESIDENTIAL ADDRESS : Farm Oberon
Kimberley

POSTAL ADDRESS : P.O. Box 110823
Hadisonpark
Kimberley
8306

E-MAIL ADDRESS : roosthuizen950@gmail .com

CEL NO : 084 208 9088

DRIVER'S LICENCE : EB

LANGUAGES : Afrikaans (home language)
English

QUALIFICATIONS

2000	UNIVERSITY OF THE ORANGE FREE STATE
	Qualification: Master in Environmental Management.
1991	NORTH WEST UNIVERSITY
	Qualification: B – Comm: Industrial psychology.
1988	BRITSHIGH SCHOOL (BRITS)
	Qualification: Matric

COURSES and Conferences ATTENDED

I 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.

August 1994	Junior Managers (Public Service Training Institute)
November 1994	Mineral Laws Administration (Public Service Training Institute)
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 4 th Annual (ITC)
March 2013	1st Enviro Mining-Ensuring Environmental Compliance and reporting
March 2014	4 th Annual Enviro Mining Conference
March 2015	5 th Annual Enviro Mining Conference

CAREER HISTORY

Wadala Mining and Consulting (Pty) Ltd:

ADDRESS : **Farm Oberon**
Kimberley
8301

PERIOD OF EMPLOYMENT : 01 August 2013 - Part time

POSITION HELD : **Mineral Law Administration and Environmental
Manager**

Diacor Closed Corporation:

ADDRESS : **6 Mullin Street**
Hadisonpark
Kimberley
8306

PERIOD OF EMPLOYMENT : 01 October 2013 – Present and part time
consultancy work

POSITION HELD **Mineral Law Administration and Environmental
Manager**

Mentor Trading and Investments 52 (Pty) Ltd:

ADDRESS : 2 Kekewich Drive
Monridge Office Park no 6
Monument Heights
Kimberley
8301

PERIOD OF EMPLOYMENT : 01 October 2012 – 01 October 2013

POSITION HELD **Mineral Law Administration and Environmental
Manager**

Rockwell Diamonds Inc:

ADDRESS : PO Box 251
BARKLY-WES
8375

PERIOD OF EMPLOYMENT : 01 March 2005 – 30 September 2012

POSITION HELD **Mineral Law Administration and Environmental
Manager**

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, investigate, audit and resolve environmental problems in conjunction with the Department of Water and Sanitation, 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.

- Evaluate Mining Rights and Prospecting Right 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.
- Calculate and verify financial provision for outstanding rehabilitation.

DEPT OF MINERALS & ENERGY:

ADDRESS : 43 Chapel Street
Standard Bank Building
KIMBERLEY

PERIOD OF EMPLOYMENT : 01 April 1997 to 01 March 2005

POSITION HELD **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.

DEPT. OF MINERALS AND ENERGY:

POSITION HELD : Assistant Mineral Laws Officer – Senior Mineral Laws Officer

PERIOD OF EMPLOYMENT : 01 November 1993 – March 1997

ADVISORY COMMISSION ON LAND ALLOCATION

POSITION HELD : Assistant Administrative Officer

PERIOD OF EMPLOYMENT : 10 February 1992 – October 1993

Experience Projects Completed

I am a dedicated professional Mineral Law Administration and Environmental Manager with 23 years extensive experience in the managing and mitigating of specifically mining related impacts. I started my career in 1993 in the Department of Minerals and Energy where I have done Environmental inspections with site visits on all mines in the Northern Cape. I have done Environmental Audits on operational and closed mining sites in collaboration with other Departments. I have also specifically looked at pollution control measures on mining sites and the effectiveness of these measures. I have evaluated submitted EIA /EMP documents and have worked closely with all other Departments and stakeholders to make sure that all environmental aspects have been dealt with adequately in submitted documents. I left the Department for the Private Sector in 2005. I have since worked for a Canadian Group of Companies in the Private Sector, started a consultancy where I provide various mining companies with professional advice and guidance on Mineral Law and Environmental Issues. I 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.

2005

Environmental Management Plan with an application for a Prospecting Right for diamonds on Portion 9 and 14 of the farm Lanyon Vale 376, Hay in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in August 2007 with the Prospecting Right

Client: HC van Wyk Diamonds Ltd

Environmental Management Plan with an application for a Prospecting Right for diamonds on Remainder of Portion 18 (a portion of Portion 10) of the farm Lanyon Vale 376, Hay in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in August 2007 with the Prospecting Right

Client: HC van Wyk Diamonds Ltd

Environmental Management Plan with an application for a Prospecting Right for diamonds on Remainder of Portion 1, Portion 2 (a Portion of Portion 1), Portion 3 and Portion 5 of the farm Zweet Fontein nr 76 and Remainder of Portion 1 and portion 3 of the farm Blaaubosch Drift nr 78, Herbert in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in August 2007 with the Prospecting Right

Client: HC van Wyk Diamonds Ltd

2006

Environmental Management Plan with an application for a Prospecting Right for Tin in Kakamas South Settlement, Kakamas in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in June 2011 with the Prospecting Right

Client: Douglas Mining and Exploration (Pty) Ltd

2007

Environmental Management Plan with an application for a Prospecting Right for diamonds on the Remaining Extent, Portion 1 and Portion 2 of Diamond Valley 29, Hopetown in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in April 2008 with the Prospecting Right

Client: HC van Wyk Diamonds Ltd

2008

Environmental Management Plan with an application for a Prospecting Right for diamonds on Portion 12, 13, 16, 24 & 25 Saxendrift 20 in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in June 2008 with the Prospecting Right

Client : HC van Wyk Diamonds Ltd

Environmental Management Plan with an application for a Prospecting Right for diamonds on Erf 1 Windsorton, Barkly-Wes in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in February 2009 with the Prospecting Right

Client: HC van Wyk Diamonds Ltd

2009

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT CONVERSION IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) for Wouterspan Mine (The Farm Lanyon Vale 376, Hay)

EIA/EMP approved on 25/01/2010

Client: HC van Wyk Diamonds Ltd

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT CONVERSION IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) for GW Ziegler on Remainder, Remainder of portion 1 (Amantia) and portion 2 (a portion of portion 1) of the farm Rietputs no. 15 and portion 1 (Spenceskop) of the farm Waterval no.14 in the district of Kimberley

EIA/EMP approved with conversion of the Mining Right

Client: GW Ziegler

2010

Basic Assessment Application

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

PROPOSED EXTENTION OF A ROOF OVER AN EXCISTING 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

Falls within general notes under activities that requires basic assessment

Positive Record of Decision (ROD) Granted.

Client: Dr. Petrus van der Walt Vermeulen

REVISION OF ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT CONVERSIONS IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) for HC VAN WYK DIAMONDS LTD (204 MRC) ON REMAINING EXTENT OF HOLPAN 161, BARKLY-WES

AND KLIPDAM DIAMOND MINING CO (003MRC) ON REMAINING EXTENT OF KLIPDAM 157, BARKLY-WES

Client: HC van Wyk Diamonds Ltd and Klipdam Diamond Mining Company Ltd

2011

APPLICATION FOR A LICENCE REGARDING PROTECTED TREES [SECTION 15(1) OF THE NATIONAL FORESTS ACT, 1998, AS AMENDED] on PORTION 1 (PAARDE PAN) OF THE FARM ANNEX SAXES DRIFT 21, HOPETOWN, NORTHERN CAPE for 14 Shephards tree (Boscia albitunca)

Licence issued on 24 September 2011

Client : Saxendrift Mine Pty Ltd

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT CONVERSION IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) on Portion 2 of the farm Good Hope 286, Barkly-Wes

EIA/EMP approved February 2013 by the Regional Manager

Client: Diacor CC

APPLICATION FOR CLOSURE CERTIFICATE [in terms of sections 43(3) of the Minerals and Petroleum Resources Development Act, 2002 (Act No 28 of 2002)] AND A CLOSURE PLAN FOR MINING ACTIVITIES PERFORMED BY HC VAN WYK DIAMONDS LTD ON THE REMAINING EXTENT OF PORTION 1 (WILLOWBANK), PORTION 2 (A PORTION OF PORTION 1) (WILLOWBANK), PORTION 3 (A PORTION OF PORTION 1) (WILLOWBANK) OF KHOSOPSKRAAL 227 AND PORTION 5 (ROSCOMMON) AND PORTION 2 (BORDON) OF HARRISDALE 226 AND FARM 362, BARKLY-WES

CLOSURE WAS GRANTED IN JULY 2010

Client: HC VAN WYK DIAMONDS LTD

2012

APPLICATION FOR A LICENCE REGARDING PROTECTED TREES [SECTION 15(1) OF THE NATIONAL FORESTS ACT, 1998, AS AMENDED] on PORTION 1 OF THE FARM BRAKFRONTEIN 276, HOPETOWN NORTHERN CAPE for 4Shephards tree (Boscia albitunca)

Licence NCU 2831112 issued in November 2012

Client: Jasper Mining Pty Ltd

2013

APPLICATION FOR A LICENCE REGARDING PROTECTED TREES [SECTION 15(1) OF THE NATIONAL FORESTS ACT, 1998, AS AMENDED] ON REMAINDER OF THE FARM NIEWEJAARSKRAAL NO 40, PRIESKA, NORTHERN CAPE. 30 SHEPPHARD'S TREES

Licence NCU 4290214 issued in February 2014

Client: Saxendrift Mine (Pty) Ltd (Niewejaarskraal Mine)

AMENDMENT OF ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR A SECTION 11 APPLICATION OF A MINING RIGHT CONVERSION IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) on The Farm Riets Drift no. 18, district

Client: Bo-Karoo Diamond Mining (Pty) Ltd to be ceded to Bondeo 140 CC.

2014

Application for a Water Users Licence Application in terms of Section 27 of the National Water Act no 36 of 1998 on the Farm Engelde Wilgeboomfontein 22, Prieska

Application still under review

Client: Thunderflex 78 (Pty) Ltd

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT CONVERSION IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) on Portion 1 of the farm Brakfontein 276 district of Hopetown

EIA/EMP approved April 2015 by the Regional Manager

Client: Jasper Mining (Pty) Ltd

Environmental Management Plan with an application for a Prospecting Right for diamonds on REMAINING EXTENT OF THE FARM MARKSDRIFT 3, HOPETOWN in terms of Section 16(4) and Regulation 52 of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

EMPlan was approved in April 2015 with the Prospecting Right

Client: BONDEO 140 CC

2015

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A PROSPECTING RIGHT IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) on Portion 1 of the farm Speculatie 217 district of Boshof

EIA/EMP has been accepted by the Regional Manager Free State Region

Client: Thaba Thafita Diamond Prospecting CC

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PROGRAMME SUBMITTED FOR AN APPLICATION FOR A PROSPECTING RIGHT IN TERMS OF SECTION 39 & OF REGULATION 50 & 51 OF THE MPRDA, 2002 (ACT NO. 28 OF 2002) on a Portion of Erf 1318, Galeshewe , and a Portion of the Remainder Erf 5336, Kimberley

EIA/EMP still under review by the Regional Manager Northern Cape Region

Client: Mystic Pearl 157 (Pty) Ltd

2016

ANNUAL REHABILITATION PLAN for Associated Manganese Mines of South Africa Ltd

Glosam Prospecting Area

February 2016

REFERENCES

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E-mail address: betsiemilne@gmail.com

DIE UNIVERSITEIT
VAN DIE ORANJE-
VRYSTAAT



THE UNIVERSITY
OF THE ORANGE
FREE STATE

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

Magister in Omgewingsbestuur
Master in Environmental Management

TOEGEKEN IS AAN
HAS BEEN CONFERRED UPON

ROELINA HENRIËTTE OOSTHUIZEN

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



A-J Boothe

.....
VISEKANSELIER/VICE-CHANCELLOR

G. van Wyk

.....
DEKAAN/DEAN

[Signature]

.....
REGISTRATEUR/REGISTRAR

BLOEMFONTEIN
2000-09-16