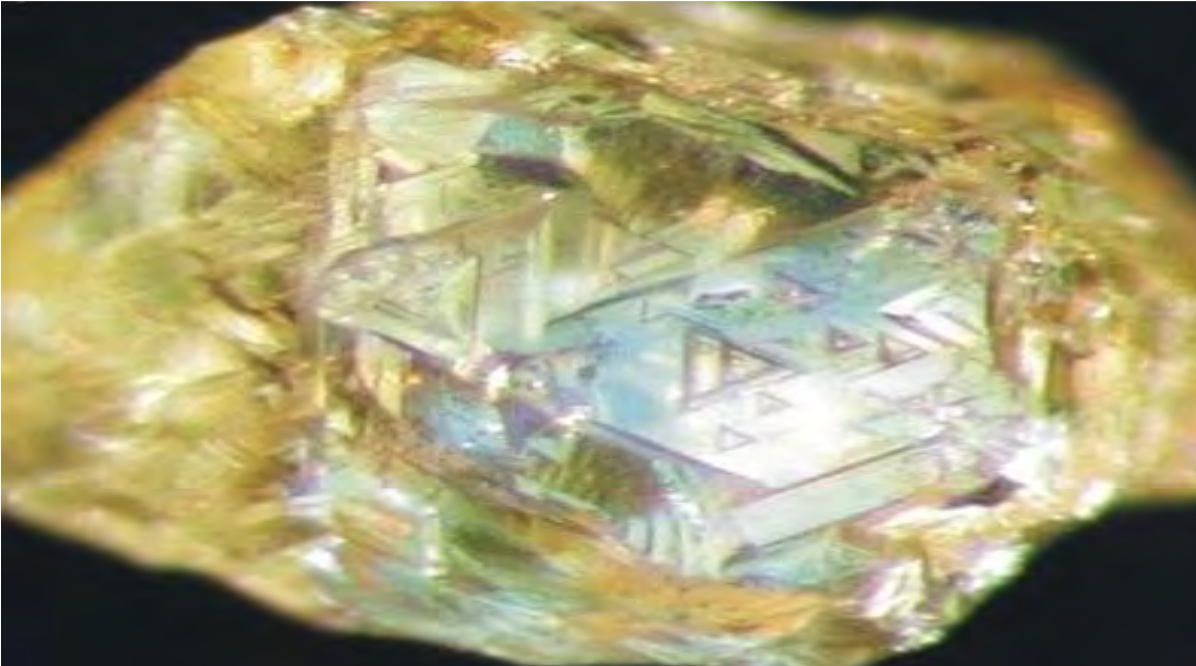


# SCOPING REPORT

Admiralty Reserve Prospecting Right Application

DMR Ref no.: NCS 30/5/1/1/2/ (1 1935) PR

April 2017




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**BRAAF**

ENVIRONMENTAL PRACTITIONERS

CLIENT NAME: ADOMAMANZI	DRAFT SCOPING REPORT	
PROJECT NAME: ADMIRALTY RESERVE	REPORT STATUS: DRAFT	OWNER: BRAAF ENVIRONMENTAL PRACTITIONERS

	<b>PROJECT INFORMATION</b>	
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TITLE :

REPORT NO. :	DATE :	REPORT STATUS :
BEP	2016/03/31	Draft

CARRIED OUT BY :

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SYNOPSIS :

Draft Scoping Report: Admiralty Reserve Prospecting Right


KEY WORDS :

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Verification	Capacity	Name	Signature	Date
By Author	Director	O J Braaf		
Checked by				
Authorised by				

Rev No	Date	Revision Details
0	2016/03/31	First Issue


CLIENT NAME: ADOMAMANZI	DRAFT SCOPING REPORT	 <b>BRAAF</b> ENVIRONMENTAL PRACTITIONERS
PROJECT NAME: ADMIRALTY RESERVE	REPORT STATUS: DRAFT	OWNER: BRAAF ENVIRONMENTAL PRACTITIONERS

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# 1 INTRODUCTION

## 1.1 Project Background

Adomamanzi Pty (Ltd) (Adomamanzi) has commenced with a process to apply for prospecting rights over a total area of approximately 230 hectares in the Northern Cape, South Africa.

The prospecting application is located approximately 54 kilometers west of Garies, and 122 kilometers southwest of Komaggas, within the Kamiesberg Local Municipality which falls under the Namaqua District Municipality.

Adomamanzi is investigating and exploring the feasibility of a diamond mine and bulk sampling across an area that covers portions of land in the Northern Cape. Prospecting activities will be undertaken over a period of 60 months and the application is for both invasive and non-invasive methods.


Braaf Environmental has been appointed to undertake the required Scoping and Environmental Impact Assessment process in terms of the National Environmental Management Act, 2014 (No. 107 of 1998), National Environmental Management: Waste Act (No. 28 of 2009) and the Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002).

Billet Trade (Pty) Ltd T/A Braaf Environmental Practitioners (Braaf) has been appointed as the independent Environmental Assessment Practitioner (EAP) responsible for undertaking the required EIA process. An Application for Environmental Authorisation (EA) and a Waste Management License (WML) for the proposed prospecting right were lodged with the Department of Mineral Resources (DMR), as the competent authority.

## 1.2 Environmental Assessment Practitioner Details

Braaf Environmental Practitioners is a specialist environmental consultancy which provides a range of environmental services to industry, including environmental impact assessments and planning to adhere to legal requirements; evaluate the project risk and employ environmental management strategies.



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The Braaf environmental team has considerable experience in undertaking environmental impact assessments and has been actively involved in undertaking environmental studies for projects related to a range of sectors, including those associated with mining.

**Lindi Hendricks** – the co-author of this report holds a Bachelor degree with Honours in Geography and has 1.5 years experience in the environmental field. Her key focus is on environmental impact assessments, public participation and environmental management plans. She is currently involved in a number of environmental applications across various sectors.

**Olivia Braaf** – the principal environmental assessment practitioner holds a Bachelor degree with Honours in Zoology and has 13 years experience in the environmental field. Her key focus is on environmental impact assessments, guidance and strategic environmental assessment, management and coordination of environmental projects, ensuring compliance to applicable legislation; compliance monitoring and implementation of environmental management solutions and risk minimisation.

The project team (and support personnel) assigned to this project has over 20 years' experience in the environmental field. Braaf is also supported by specialists in the field of natural sciences, social sciences and the economic fields. Braaf declares its independence in accordance with the NEMA EIA Regulations of 8 December 2014 (GNR 982), and has no vested interest in the proposed project.

The Curriculum Vitae of the EAP is attached as Appendix A.

### 1.3 Purpose of this Report

The main objectives of this Draft Scoping Report (DSR) are to present the following:

- A description of the proposed Project and relevant Project alternatives;
- Outline the legislative requirements pertinent to the proposed Project and associated EIA;
- Outline the potential impacts and issues associated with the proposed prospecting activity that require further investigation in the Environmental Impact Assessment Phase (EIA). This is done to further scope any issues, impacts and alternatives identified by stakeholders which should be addressed or investigated further in the EIA Phase;

- A key component of the Scoping Phase is the public participation process (PPP) which aims to ensure that all possible interested and affected parties (I&APs) are informed of the proposed activity and are provided with an opportunity to comment and identify issues;
- The outcomes associated with public participation activities carried out during the Scoping Process;
- A detailed baseline review of the characteristics receiving environment to be affected by the project and its surrounds;
- The project motivation in terms of its need and desirability; and
- Outline the methodology for further assessment of identified impacts which warrant further investigation in the EIA Phase (Plan of Study for EIA).

## 1.4 Structure of the document

This report consists of ten chapters, the contents of which are outlined below.

**Table 1-1: Structure of Draft Scoping Report**

Chapter	Contents
Chapter 1 – Introduction	Presents a brief background to the proposed Project and the purpose and structure of the Draft Scoping report
Chapter 2 – Project Description	Describes the Project Area and the proposed Project components, including an overview of ancillary infrastructure
Chapter 3 – Analysis of Alternatives	Discusses the Project alternatives that have been considered in the Scoping process
Chapter 4 – Policy, Regulatory, and Administrative Framework	Outlines the key legislative requirements applicable to the proposed project and outlines the Scoping/EIA Process.

Chapter 5 – Project Motivation	Describes the need and desirability and motivates the rationale for the proposed Project.
Chapter 6 – Public Participation Process	Provides an overview of the public participation activities undertaken as part of the Scoping Phase.
Chapter 7 – Description of Receiving Environment	Provides a detailed baseline assessment of the receiving physical, biological and socio-economic environment in the Project Area and surrounds
Chapter 8 – Potential Impacts associated with the project	Describes potential impacts associated with the proposed project.
Chapter 9 – Conclusion and Recommendations	Summarises the key findings of the Scoping Report.
Chapter 10 – Plan of Study for EIA	Outlines the methodology to be followed regarding public participation engagement during the EIA Phase, assessment methodology for specialist studies and specialist studies to be undertaken.

## 2 PROJECT DESCRIPTION

### 2.1 Location

The proposed site for prospecting is situated within the Namaqua District Municipality, within the jurisdiction of the Kamiesberg Local Municipality (see Figure 2-1). Prospecting for diamonds (alluvial) is proposed from the area which extends from the western boundary of Farm Eiland Punt Noord No. 549 to the eastern border of Concession Area 9A and will entail activities in the sea. The activities will take place on coastal public property and within the admiralty reserve and sea. The proposed site extent is approximately 230 hectares.

The coordinates of the property boundary is shown in Appendix A.

### 2.2 Description of Proposed Activity

Prospecting activities will be undertaken over a period of 60 months and the application is for both invasive and non-invasive methods. Invasive methods are activities that result in land disturbances and comprise of trenching/bulk sampling, marine based mining (using divers and suction pumps). Non-invasive methods are methods that do not cause disturbances to the land and include desktop research and include detailed geophysical surveys.

Planned prospecting is proposed to undertaken in three phases:

- Phase I: Literature Study and Marine mining phase;
- Phase II: Land based mining (Admiralty Strip);
- Phase III: Resource Estimation

The project phases will entail the activities listed in Table 2-1.

**Table 2-1: Prospecting Phases**

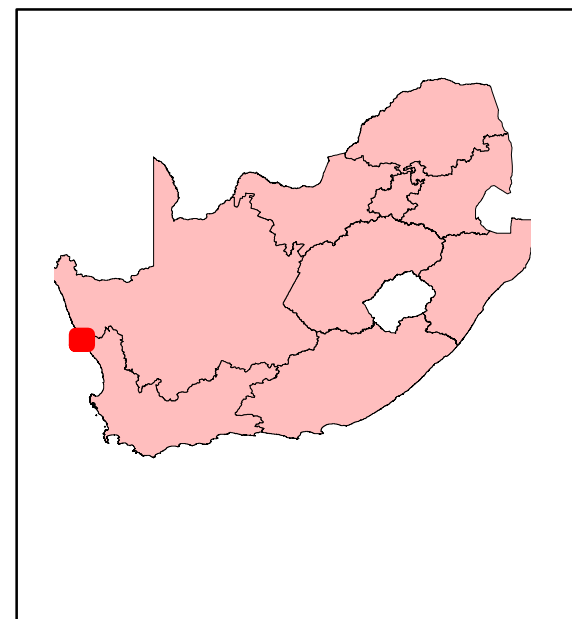
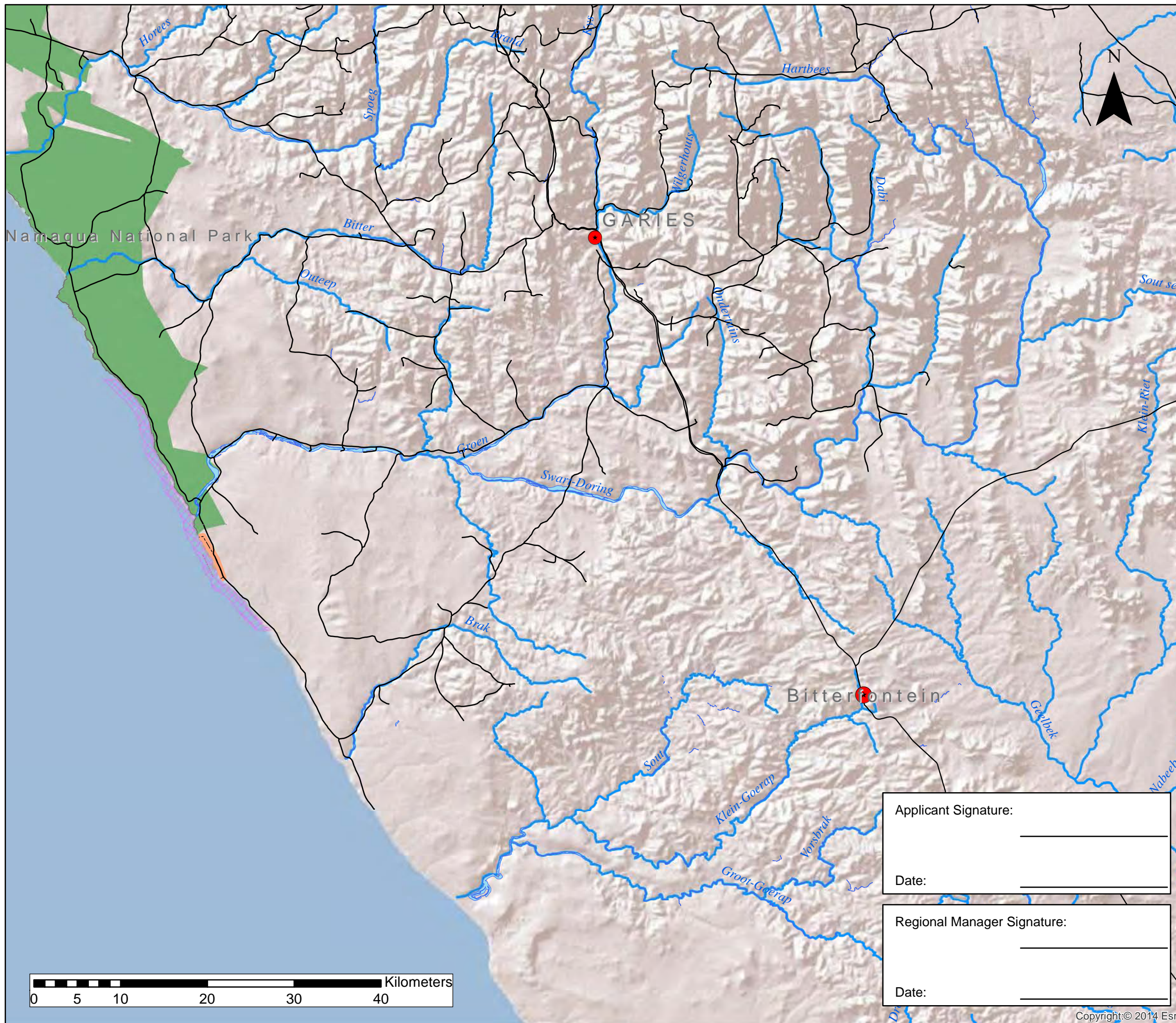
Phase	Timeframe	Description
<b>Phase 1</b>	Month 0-60	Non-invasive geological mapping and geophysical surveys and invasive activities (marine based mining)



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<b>Phase 2</b>	Month 6-60	Bulk Sampling
<b>Phase 3</b>	Month 49-60	Resource Estimation and Closure



**Legend**

- Town
- Roads
- PR Application Area

**FIGURE 1-1: LOCALITY MAP**

Prospecting Area -  
Prospecting  
boundaries will follow:  
- the western boundary  
of Farm RE/549 and eastern  
boundary of Concession  
Area 9A.

PROJECT: Eilandpunt Prospecting Right

CLIENT: Andomanzi (Pty) Ltd

PROJECT #: 2016-06

SCALE: A3

Drawn	20-03-17	OB
Checked	20-03-17	GA
Approved	20-03-17	RR

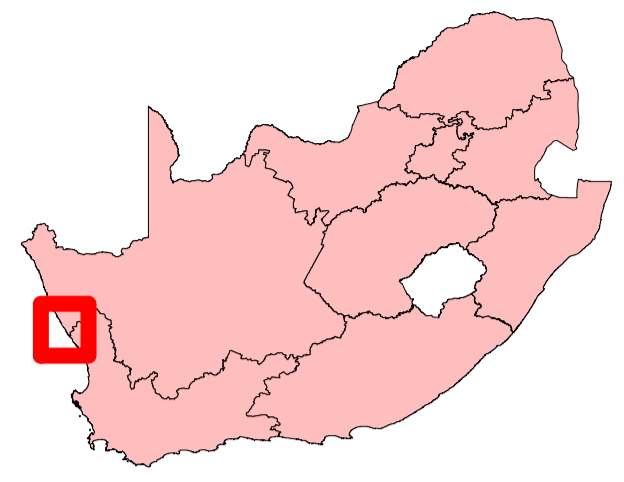
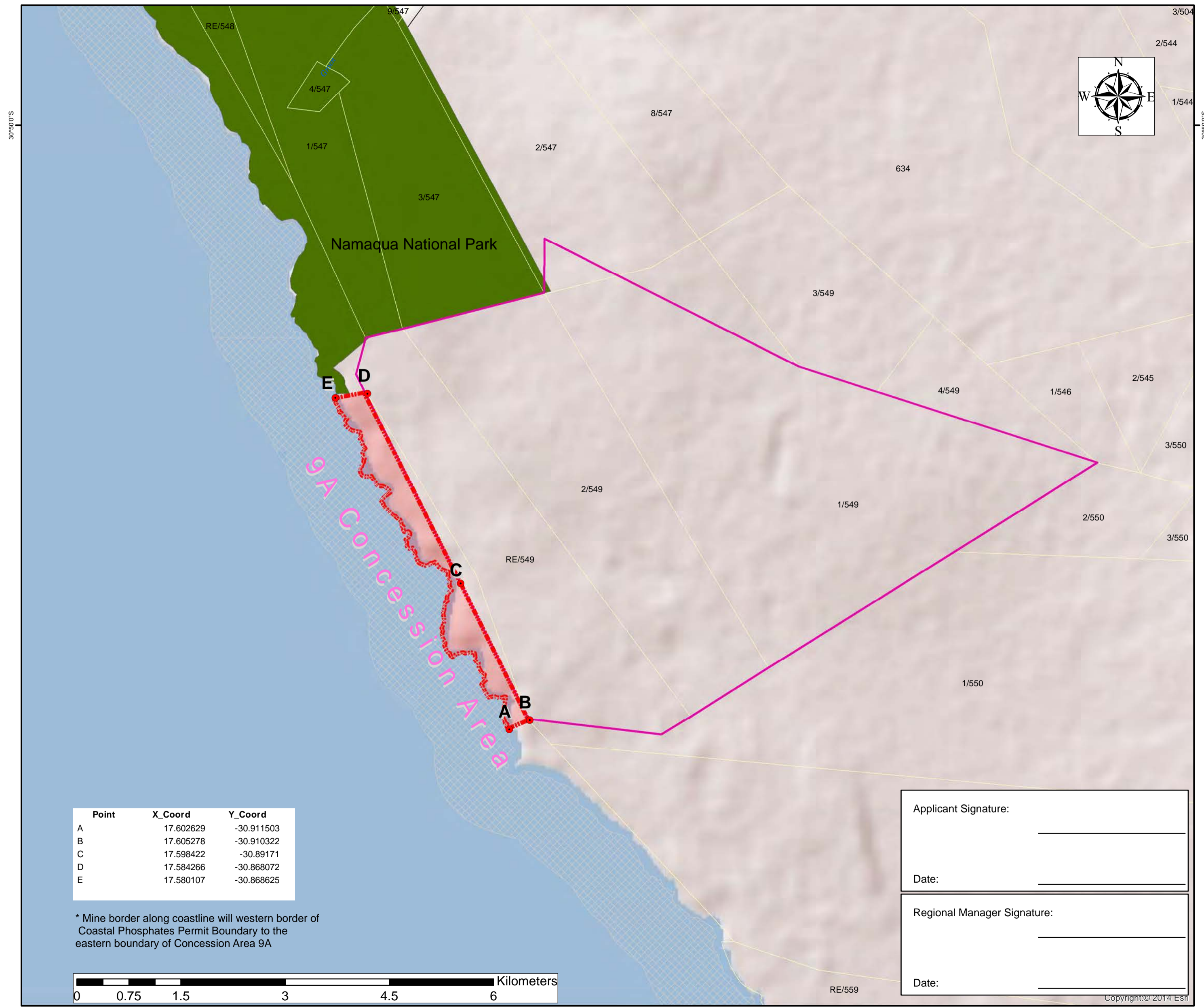
Applicant Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Regional Manager Signature: \_\_\_\_\_

Date: \_\_\_\_\_

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**Legend**

- Points
- Proposed\_PR\_Area
- 9A\_Concession\_Area
- Prospecting Application Area
- Coastal Phosphate Area
- National Park
- Road
- River

Prospecting Right along coastline will western border of Coastal Phosphates Permit Boundary to the eastern boundary of Concession Area 9A

PROJECT: Prospecting Right Application

**FIGURE 2-2 Regulation 2(2) map**

CLIENT: Adomamanzi (Pty) Ltd

OUR REF: NCADPR/03-17

SCALE:	A3	
Drawn	20/03/17	OB
Checked	20/03/17	GA
Approved	20/03/17	RR

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Projection: GCS\_WGS\_1984

Point	X_Coord	Y_Coord
A	17.602629	-30.911503
B	17.605278	-30.910322
C	17.598422	-30.89171
D	17.584266	-30.868072
E	17.580107	-30.868625

\* Mine border along coastline will western border of Coastal Phosphates Permit Boundary to the eastern boundary of Concession Area 9A




Applicant Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Regional Manager Signature: \_\_\_\_\_

Date: \_\_\_\_\_

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## 2.3 Detailed Prospecting Activities

### 2.3.1 Phase 1: Desktop study and Marine Based Mining

#### 2.3.1.1 *Phase 1a: Desktop Study*

##### **Literature Study**

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

##### **Imagery Analysis**

Aerial photographs and satellite images will be studied to ascertain additional target areas for possible gravel deposits. The aerial photographs will also be used to structurally and geologically map the area.

##### **Geological Mapping**

Any anomalous features identified from the air will be mapped in detail. The various rock types and their contacts will also be mapped.

##### **Geophysical Survey**

Geological mapping and grab sampling will also be carried out to narrow down the area for prospecting pits. This will result in defining target areas for pitting and reduce the total number of pits to be excavated.

The model for mineralization in the area of interest is that of diamondiferous palaeochannels and traps. Samples recovered from prospecting pits in the general area have shown good prospects to host economic diamond deposits.

The company's exploration program is aimed at (i) discovering previously unknown and known palaeochannels and traps (ii) evaluating the economic potential of potential gravel deposits



### 2.3.1.2 Marine Based Mining

- Preparing an area of 300 m<sup>2</sup> for a portable camp site to accommodate infrastructure associated with stockpiling, washing, screening and sorting etc.
- Diver based mining in the subtidal area, where they will operate in shallow inshore zones from a shore based unit or from a small vessel.
- Qualified divers will identify pockets (gullies and potholes) where gravel is concentrated (areas of high foraminifera abundance located in known trenches) in the subtidal area where prospecting will be undertaken.
- They will use suction gravel pumps whereby a suction-hose vacuums up alluvial gravel, which is sorted and screened at the surface. At the other end of the suction apparatus will be mounted to a tractor which supplies the power together with the sieving operation. The gravel is screened onshore to eliminate coarse gravel and classified according to size.
- The gravel is then washed, using sea water with Diggers Dream jigs to remove the diamonds.
- Ski boats fitted with the same equipment to remove the gravel (diamond bearing material) from the sea will be used in addition to shore based diver based operations.
- Gravel will be pumped to the ski boat using a suction hose where the material will be screened and classified as per the onshore regiment. Non-diamondiferous material once screened and classified is pumped back into the sea.
- The non diamond bearing material once screened is pumped back to the sea. No chemicals are added, only sea water is used.
- Due to environmental conditions apparent at the site, work is limited to be undertaken when conditions are favourable at around 5 months of the year.
- The concession area is approximately 6km in length and it is aimed that about 1km will be prospected per year.
- During winter months, rough sea conditions make it impossible to undertake work.



Figure 2-3: Picture of diver entering shallow water

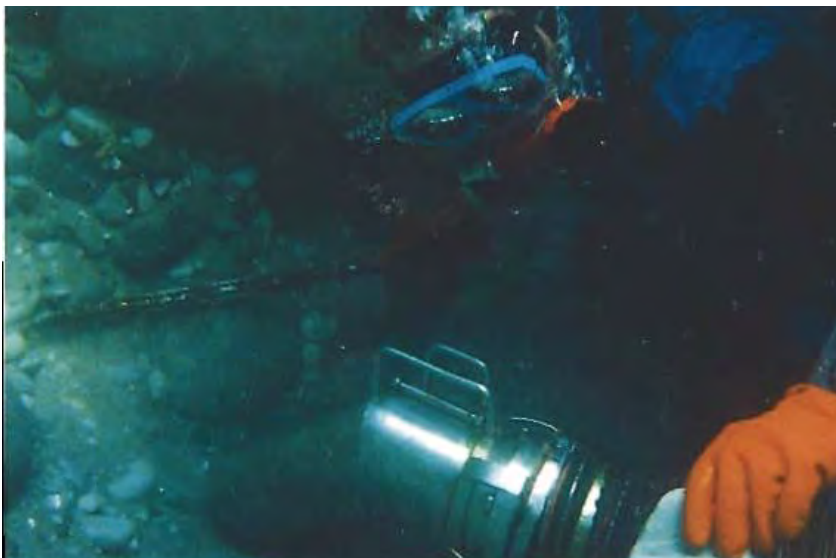


Figure 2-4: Example of a diver in a heavy-duty wetsuit recovers diamonds from, gravels in the shallow zones by means of a vacuum hose connected to on-shore suction pumps.



Figure 2-5: Ski boat with fitted suction hoses



Figure 2-6: The other end of the suction apparatus illustrated in Figure 2-4 will be mounted on a tractor (which supplies the power) that is located nearby, together with a sieving operation. The sack in the foreground contains diamond-bearing material that has been screened to eliminate the coarse gravel. This "sieved material" will be taken to a diamond-recovery plant for further processing.

### Method of data capturing

- Geologists which will be completed when diver based mining is taking placed. The logs are further used when using the ski boats and the pockets which will be suctioned in the areas where the gullies and sediment occur as well as the gravel thickness.
- The gravel is suctioned into gravel bags and labelled individually. This material is then washed with seawater to determine which areas is diamond bearing.
- The tractor pump unit is limited to pump only from a specific distance and this is when the ski boats are used. The labelled gravel bags are georeferenced (GPS) to identify where the gravel has been suctioned as well as determining the diamond content. Thereafter, the gravel is tested and processed in the jig.
- This data is then collated in a database for further processing and understanding for DMR progress reports and diamond content value which is then used to calculate the tonnage of the different areas being prospected.
- This information is then used to determine the feasibility of applying for a mining permit.
- The ski boats will be launched from one point along the shoreline likely to be in the middle of the concession area.
- One of the ski boats will equipped with first aid equipment and oxygen bottles to be used in case emergencies or diver related emergencies.

### 2.3.2 Phase 2: Bulk Sampling

- The position of the trenches will be determined by the results of the geophysical survey and will follow delineated alluvial traps and or palaeo channels. In the area where gravel has been identified trenches will be made.
- Trenching will not exceed 50m in length, 20m in width and will be dug to bedrock approximately 7m deep or so.
- Total amount of trenches will not exceed 5 at any one time. Existing trenches will first be rehabilitated before proceeding to excavating the next trench.
- The layout plans will be updated together with regular performance assessments and update of quantum of financial provision for rehabilitation as the prospecting process is progressing.
- Trenching would be done by way of mechanical means with a 30-ton excavator.

- Topsoil and overburden rocks (estimate 75% of volume) will be removed and stock piled.
- Trenches will be dug onto bedrock and all gravel will be placed on a stock pile near the plant area making use of B30 dumpers.
- The extent of the gravel stockpiles will never exceed 200m<sup>2</sup>
- Oversize material large than 75mm will be removed using a grizzly.
- The gravel would then be washed using sea water to recover diamonds making use of 10 ft rotary pans.
- The concentrate recovered from the rotary pan will go over a de-watering screen in order to remove all sand and the remaining will go over a grease table where diamonds will be recovered.
- After washing all gravel and oversize material together with sand would be used to back fill all the trenches. The sea water (remaining slurry) is returned to the sea across the intertidal zone. Care will be taken to deposit the slurry below the HWM to allow natural redistribution by wave action.
- After the trenches have been backfilled the topsoil will be replaced.
- 3D modelling based on trenching and washing results will be constructed using Micromine software.
- Resource estimations would be done.
- The cost of rehabilitating (restoration of disturbed areas by trenching) the prospecting area is included within the proposed prospecting budgets. As per the Minerals Act, the prospecting site (Access Roads and trenches) shall be rehabilitated to the satisfaction of the Regional manager.
- Trenching will consist of the following procedures:
  - Remove topsoil. Note that the upper 30cm will be treated as topsoil as it contains a seed bank.
  - Then remove the overburden and stockpile separately.
  - Extract alluvial material to a depth of 7m onwards.
  - The removed gravel will be sent through an in-field screening plant and only the concentrate will be trucked to the processing plant.
  - When bulk sampling has been completed, then the entire excavation must be backfilled with the removed material in reverse order (starting with the in-field screened gravel).

### **Trenches**

No Drilling will be undertaken as part of this operation, only trenching

- The excavated area must serve as a final depositing area for the placement of tailings during processing.

- Rocks and coarse material removed from the excavation will be dumped into the excavation simultaneously with tailings.
- No waste will be deposited into the excavations
- Once excavations have been refilled with overburden, rocks and coarse natural materials and profiled with acceptable contours and erosion control measures, the topsoil previously stored will be returned to the original depth of the area.
- The area shall be fertilized if necessary to allow vegetation to establish rapidly (using organic fertilizer). The site will be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora

### **Decommissioning phase**

- Demolition and/or removal of mobile camp site infrastructure/equipment and vehicles;
- Rehabilitation and restoration of disturbed areas.
- Adomamanzi will be using a mobile camp site for its processing activities, and therefore no infrastructure associated with the camp site will require breaking down or demolishing at closure. The surface area will be rehabilitated by maintaining the general topography of the surrounding area, ensuring that there are no remnants of the structures. Closure and rehabilitation of pits will be undertaken during the operational phase when the activities are completed in those pits.
- Post-closure monitoring will assist in determining the success of the rehabilitation and also identify whether any additional measures need to be taken to ensure the area is restored to a reasonable and acceptable condition.
- The following facilities are expected to be established on site during the construction and operation phases of the mining operation.
- Site facilities during construction:
  - Security and/workers hut;
  - Portable toilet;
  - Stockpiles;
  - Machinery storage; area
  - Temporary services (potable water stored in containers).
- Site facilities during operation:

- Open trenches;
- Ore stockpiles;
- Soil stockpiles;
- Boat/machine storage area;
- Washing and sorting plant (mobile);
- Ablution facilities;
- Potable water stored in container.

### 2.3.3 Phase 3: Resource Estimation

- The project manager monitors the programme, consolidates and processes the data and amends the programme depending on the results. This is a continuous process throughout the programme and continues even when no prospecting is done on the ground.
- Each physical phase of prospecting is followed by desktop studies involving interpretation and modelling of all data gathered. These studies will determine the manner in which the work programme is to proceed in terms of activity, quantity, resources, expenditure and duration

### 2.3.4 Associated infrastructure and activities

#### 2.3.4.1 Construction of Access Roads:

Any access road will be established in consultation with the landowner/tenant and existing roads shall be used as far as practicably possible. Should an access road be newly constructed the following will be adhered to:

- a. The route shall be selected such that a minimum number of bushes or trees are felled and existing fence lines shall be followed as far as possible.
- b. Water courses and steep gradients shall be avoided as far as is practicable.
- c. Adequate drainage and erosion protection in the form of cut-off berms or trenches shall be provided where necessary.
- d. The erection of gates in fence lines and the open or closed status of gates in new and existing positions shall be clarified in consultation with the landowner/tenant and maintained throughout the operational period.
- e. No other routes will be used by vehicles or personnel for the purpose of gaining access to the site.
- f. Access roads shall be adequately maintained so as to minimize dust, erosion or undue surface damage occurs.

- g. Access by road from Cape Town to the concession area is via the tarred N7 northwards to Springbok. At around 4km south of Garies the road to Groen River Mouth turns off to the west. By following this gravel road for some 80km the river mouth is reached, providing access to the project area by passing the lighthouse (see Figure 2-7).

The prospecting activity will not entail the establishment of any permanent infrastructure on site.

#### 2.3.4.2 Water Supply

Water used for operations will be seawater. No boreholes are proposed.

Potable water will be brought onto the site, will be sourced from Kamiesberg municipality. This water will be for drinking purposes only for employees and workers. A temporary water storage tank will be used for drinking water and general use by persons at the site.

#### 2.3.4.3 Ablution

Ablution facilities at the mine site will involve the installation of drum or tank type portable toilets.

#### 2.3.4.4 Waste


Domestic waste generated at the site will be collected into black bags and stored in a scavenger proof bin with a lid until it is transported off site by the mine operator for disposal at a licensed landfill site. No domestic waste will be burnt on site or at sea.

#### 2.3.4.5 Accommodation

No accommodation for staff and workers will be provided on site and all persons will be accommodated in nearby towns (i.e. Garies and Komaggas). Workers will be transported to and from the prospecting site on a daily basis.

Night security will be employed once equipment has been established on site.



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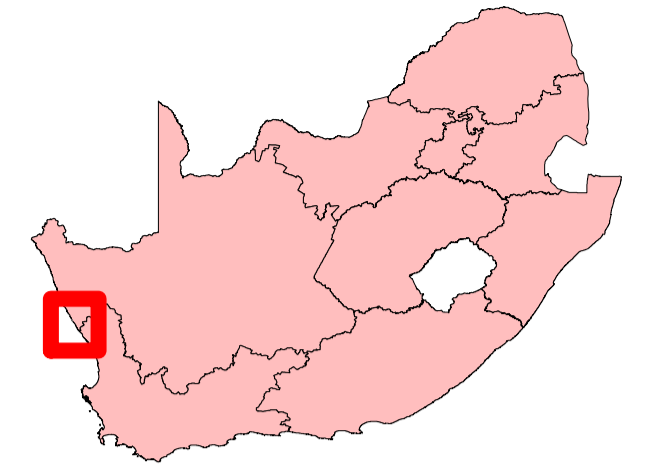
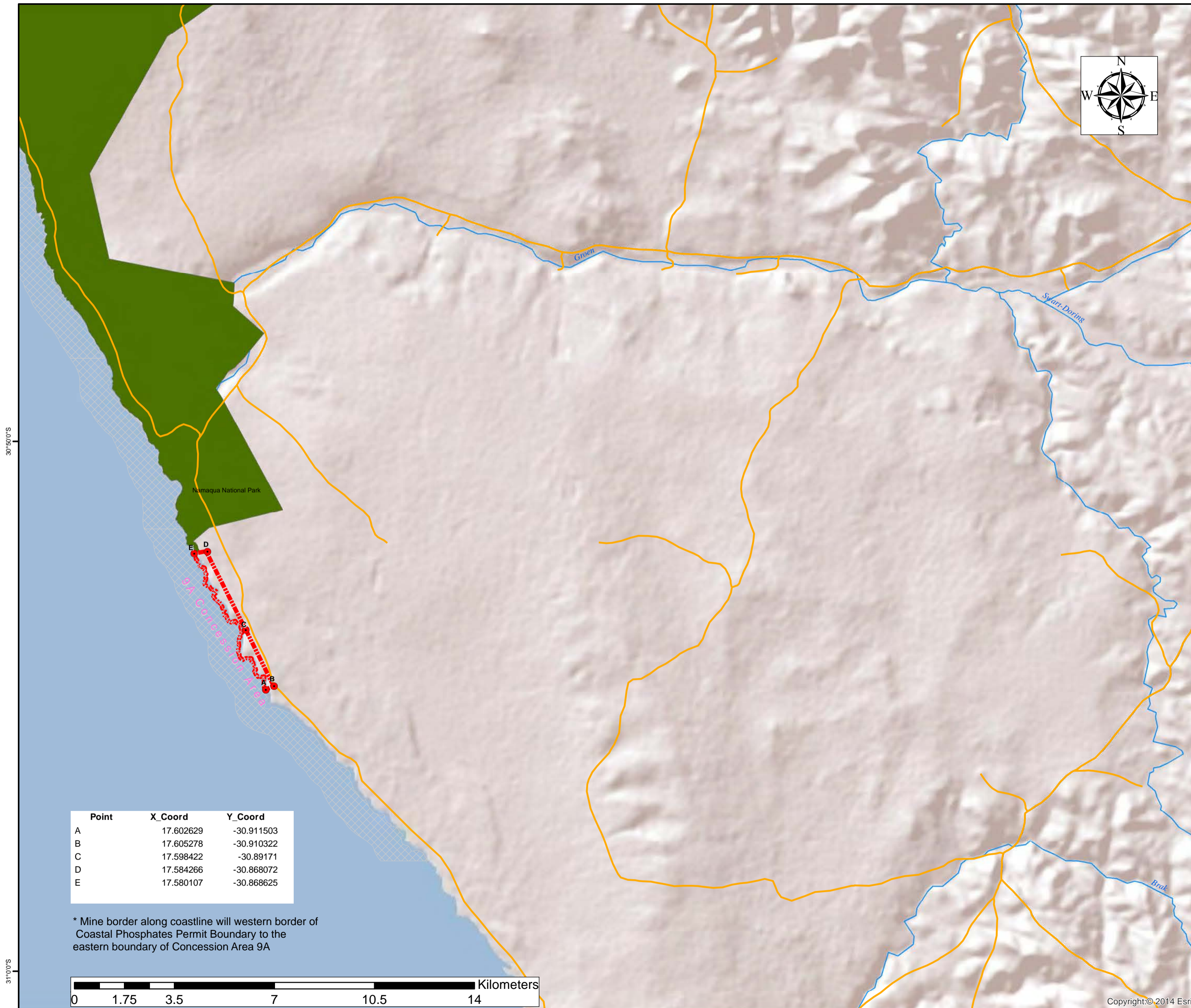
#### 2.3.4.6 Storage of Dangerous Goods

During the marine mining and bulk sampling phases, diesel, fuel, oil and lubricants will be transported to site daily.

#### 2.3.4.7 Other infrastructure

The following mobile infrastructure will form part of this mining operation:

- 1 x 10 foot Rotary Pan;
- Tractors fitted with 6 inch suction pumps, with suction pipes;
- Diesel generator;
- Jig;
- Ski boats;
- Stockpile area;
- 1 x Truck Load Backhoe (TLB);
- Loaders, and excavators;
- Water pipe
- Water tank;
- Machinery/vehicle maintenance area;
- Storage facility;
- Earth Dam.



**Legend**

- Roads
- 9A\_Concession\_Area
- Prospecting Application Area
- National Park
- Road
- River

PROJECT: Prospecting Right Application

**FIGURE 2-7: Adjacent roads**

CLIENT: Adomamanzi (Pty) Ltd

OUR REF: NCADPR/03-17

SCALE:	A3	
Drawn	20/03/17	OB
Checked	20/03/17	GA
Approved	20/03/17	RR

**BRAAF**  
ENVIRONMENTAL PRACTITIONERS  
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Email: info@braafsa.com

Projection: GCS\_WGS\_1984

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## 2.4 Description of Listed Activities

The proposed prospecting activity triggers the need for an EIA (Scoping/EIA). The application for the EIA was processed under the Regulations of 2014 in Listing Notice 1 & 2, published in Government Notice No. R. 983 & 984. Table 2-2 summarises the 2014 listed activities that have been applied for.

**Table 2-2: NEMA EIA listed activities (2014)**

Listing Notice	Activity No. and Description
1	<p>19. The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from-</p> <ul style="list-style-type: none"> <li>(i) a watercourse;</li> <li>(ii) the seashore; or</li> <li>(iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing, dredging, excavation, removal or moving-           <ul style="list-style-type: none"> <li>(a) will occur behind a development setback;</li> <li>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or</li> <li>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.</li> </ul> </li> </ul> <p>20. Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including 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).</p>
	<p>22. The decommissioning of any activity requiring -</p> <ul style="list-style-type: none"> <li>(i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); or</li> <li>(ii) a prospecting right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure.</li> </ul>
	<p>27. The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of</p>

	indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
2	19. The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including 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).
21.	Any activity including the operation of that activity associated with the primary processing of a mineral resource including winning, reduction, extraction, classifying, concentrating, crushing, screening and washing but excluding the smelting, beneficiation, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.
Category A	<b><u>The National Environmental Management: Waste Act (No.28 of 2009)</u></b> Activity 15: The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

### 3 ANALYSIS OF ALTERNATIVES

NEMA together with the 2014 EIA Regulations (2014) GN R.982, Appendix 2: Section 2 (h) (i) all alternatives are required to be considered as part of the environmental assessment process. An alternative in relation to a proposed activity refers to the different means of meeting the general purpose and requirements of the activity (as defined in GN R.982 of the EIA Regulations, 2014), which may include alternatives to:

Alternatives are defined as the different means of meeting the general purpose and requirements of the activity, which may include alternatives to the-

- (a) property on which or location where the activity is proposed to be undertaken - not applicable to this study;
- (b) type of activity to be undertaken;
- (c) design or layout of the activity -not applicable to this study;
- (d) technology to be used;

- (e) operational aspects of the activity; and  
 (f) includes the option of not implementing the activity (see Section 3.2).

### 3.1 Investigation of alternatives

**Table 3-1: Representation of alternatives and application to the project**

Alternative	Reason
<b>(a) the property on which or location where it is proposed to undertake the activity</b>	No property alternatives have been considered as the envisaged mining operations will occur in an area of existing mining operation, and also in close proximity to the access road and community in need of such a development. The proposed site is the only land/area that is available to the applicant. The prospecting area is bordered by existing mining rights to both the east (Farm Eiland Punt Noord No. 549 and Concession 9A, and the Namaqua National Park to the north.
<b>(b) the type of activity to be undertaken</b>	No alternatives to the mining of alluvial diamonds have been considered; mining of this mineral was identified as through a plethora of geological investigations and results of mining on either side of the proposed area.
<b>(c) the design or layout of the activity</b>	The site layout was determined by considering both spatial and practical mining operation aspects. The proposed layout is more of a security measure, allowing for more effective management of mined ores as and further to minimise potential environmental impacts.
<b>(d) the technology to be used in the activity</b>	No alternative technology has been considered for the proposed mining activity other than the various techniques which will include: <ul style="list-style-type: none"> <li>- Contractor divers with onshore tractor powered suction pumps and mobile screens and classifiers.;</li> <li>- Use of ski boats fitted with suction pumps, screens and classifiers;</li> <li>- Land based bulk sampling with jigs, excavators, mobile screens and</li> </ul>

	classification plant. .
<b>(e) the operational aspects of the activity</b>	The optimal operational activities have been proposed, inclusive of the site layout and mobile infrastructure, in consideration of spatial aspects, post-mining appearance, as well as reducing costs associated with stripping down built infrastructure.

### 3.2 No-Go Alternative

The No-Go alternative means the status quo will continue.

- The option of not implementing the activity has been considered, and assumes that should the proposed activity not proceed then the status quo would remain. This includes no clearing of land, no digging of trenches, no mining operations on site and no decommissioning at the end of the project life cycle. The fact that this is an area of mineral potential and that the proposed mining would lead to job creation, contribution to the GDP of the municipality and the province, and be an opportunity to improve the local socio-economic situation, therefore the option of not implementing the activity will not be pursued at this stage.

The No-Go alternative will be assessed in the EIA phase.

## **4 POLICY, REGULATORY AND ADMINISTRATIVE FRAMEWORK**

The proposed Admiralty Reserve Prospecting activity is subject to legislative and policy requirements at national, provincial and local level as well as international guidelines and conventions. This chapter presents a summary of the administrative framework governing the proposed project.

### **4.1 The Constitution of the Republic of South Africa**


In terms of Section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996) (Constitution), everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for benefit of present and future generations, through reasonable legislation and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while prompting justifiable economic and social development. The needs of the environment, as well as affected parties, should thus be integrated into overall project management in order to fulfil the requirements of Section 24 of the Constitution.

### **4.2 Overview of the “One Environmental System”**

The “One Environmental System” which came into effect on 8 December 2014, thereby replacing the environmental regulation of prospecting, mining, exploration and production and related activities from the MPRDA and transferring it to NEMA. Under this system, the Minister of Mineral Resources (or delegated authority) is the competent authority responsible for issuing Environmental Authorisations in terms of NEMA for mining and activities associated to mining. The Minister of Environmental Affairs remains the appeal authority for these authorisations.

### **4.3 Mineral and Petroleum Resources Development Act, 2002**

In terms of the MPRDA, a Prospecting Right must be obtained prior to the commencement of any mining activities. A requirement for obtaining a Prospecting Right is that an applicant must submit an application in terms to Section 22(1) of the MPRDA to the Regional Manager, and they must accept the application within 14

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days if, inter alia, no other person holds a Prospecting Right, Mining Right, Mining Permit or Retention Permit for the same mineral and land. Adomamanzi as part of the current EIA process has submitted an application for a Prospecting Right to the Department of Mineral Resources (DMR). The current host of approvals required from the competent authority will be assessed, evaluated and presented to them for decision making.

#### **4.4 National Environmental Management Act, 1998**

NEMA requires that the potential impact on the environment, socio-economic conditions, and cultural heritage of activities that require authorisation or permission by law must be considered, investigated and assessed prior to implementation, and reported to the relevant authority.

An Environmental Impact Assessment Application must be submitted to the Department of Mineral Resources as prospecting activities require a prospecting right and environmental authorisation. The establishment of a residue stockpile or residue deposit now also requires approval from the Department of Mineral Resources and as such has been included as part of this application.


The EIA Regulations (R982) promulgated in terms of the NEMA, identifies a suite of activities, which “could have a substantial detrimental effect on the environment”. The listed activities identified require an environmental authorisation from the environmental authority for mining activities and activities associated to mining, i.e. DMR, prior to commencement of the activity. The proposed prospecting activity triggers a list of activities, tabulated in Table 2-1 below.

Activities listed in terms of Listing Notice 1 (R983) and Listing Notice 3(R985) requires a Basic Assessment, while activities listed in Listing Notice 2 (R984) require a full Scoping and EIA process. The proposed project triggers activities under Listing Notice 2 (refer to Table 2-2) and therefore thus a full Scoping and EIA process must be undertaken in order for DMR to consider the application in terms of NEMA and make a decision as to whether to grant environmental authorisation or not.

##### **4.4.1 Approach to the Scoping Study**

The environmental impacts associated with the proposed project require investigation in compliance with the EIA Regulations (2014) published in Government



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Notice No R.982 and No R.984 and read with Section 24 (5) of the National Environmental Management Act [NEMA] (Act No 107 of 1998) as amended and National Environmental Management: Air Quality Act, 2004 (No. 39 of 2004) (NEM:AQA).

An application for an Environmental Authorisation and Waste Management License (WML) has been lodged with the DMR as the competent authority. A Scoping and EIA study is therefore being undertaken in support of these applications. The EIA is being undertaken simultaneously allowing the DMR to make an informed decision regarding the EA and WML, respectively. The EIA will comprise the two following stages:

- Phase 1 – Scoping Study (SS) including and Plan of Study for EIA; and
- Phase 2 – Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPr).

The **Scoping Study** will provide a description of the receiving environment and identifies and describes how the environment may be affected by the proposed project. The identification of potential issues is further developed in consultation with I&APs through a public participation process. The Scoping Study will identify alternatives and mitigation options to be evaluated and investigated during the EIA phase of the project. Following review of the Scoping Report (Draft), this phase concludes with the submission of a Final Scoping Report and Plan of Study for EIA to the DMR.

The **EIA Phase** entails the detailed assessment of those potentially significant impacts (both social and biophysical) identified in the Scoping Phase. During this phase detailed specialist investigations will be undertaken and presented in the EIA report which will be made available for public review. Following completion of the public review period of the EIA Report (and associated public participation component), this phase concludes with the submission of a Final EIA Report and an Environmental Management Programme (EMPr) to the DMR for review and decision-making.

#### **4.5 National Environmental Management: Waste Act, 2008**

The NEM:WA aims to (amongst other things) regulate waste management in order to protect health and the environment by providing reasonable measures for the

prevention of pollution and ecological degradation and for securing ecologically sustainable development. The Act makes provision for the listing of waste management activities that have, or are likely to have, a detrimental effect on the environment and may not be undertaken without a Waste Management Licence (WML) issued by the competent authority. Listed waste management activities which meet certain thresholds (as listed) are subject to a process of impact assessment and licensing. Activities listed in Category A require a Basic Assessment, while activities listed in Category B require a Scoping and EIA process. The proposed project triggers the need for a WML in terms of GN. No. R633, Category A - Activity 15.


This relates to *“The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).”*

#### **4.6 The National Heritage Resources Act (Act No. 25 of 1999)**

The protection and management of South Africa's heritage resources are controlled by the NHRA. The enforcing authority for this act is the SAHRA. In terms of the Act, historically important features such as graves, trees, archaeology and fossil beds are protected. Similarly, culturally significant symbols, spaces and landscapes are also afforded protection. In terms of Section 38 of the National Heritage Resources Act, SAHRA can call for a Heritage Impact Assessment I(HIA) where certain categories of development are proposed. The Act also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required. Should a permit be required for the damage or removal of specific heritage resources, Adomamanzi will submit a separate application for these activities to the SAHRA for approval, should these resources be potentially damaged or removed. The activities identified in the Act as requiring a notification of SAHRA include:

##### Section 38

- (1) (c): Any development or other activity which will change the character of a site
- i. exceeding 5 000 m<sup>2</sup> in extent ; or
  - ii. involving three or more existing erven or subdivisions thereof ; or
  - iii. involving three or more erven or divisions thereof which have been consolidated within the past 5 years; or

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iv. the costs of which will exceed a sum in terms of regulations by SAHRA or a provincial heritage resource authority

The proposed project is located  $\pm$  54 km west of Garies, in an area which is not within a proclaimed biophysical sensitive area (Critical Biodiversity Area etc). The proposed project footprint area is relatively small and to a certain degree has been transformed by some mining activities, and there is no known formal heritage or sites of cultural interest in the direct footprint area, as there are existing mining right to both the east and west of the proposed application area.

#### **4.7 Mine Health and Safety Act (Act No. 29 of 1996)**

The Mine Health and Safety Act (Act No. 29 of 1996) (MHSA) as amended in 2008 aims to provide for protection of the health and safety of all employees and other personnel at the mines of South Africa. The main objectives of the act and subsequent amendments are:

- Protection of the health and safety of all persons at the mines;
- Require employers and employees to identify hazards and eliminate, control and minimize the risks relating to health and safety at the mines;
- Give effect to the public international law obligations of the Republic that concern health and safety at all mines;
- Provide for employee participation in matters of health and safety through health and safety representatives and the health and safety committees at the mines;
- Provide for effective monitoring of health and safety conditions at the mines;
- Provide for enforcement of health and safety measures at the mines;
- Provide for investigations and inquiries to improve health and safety at mines; and
- To promote:
  - A culture of health and safety in the mining industry;
  - Training in health and safety in the mining industry; and
  - Co-operation and consultation on health and safety between the State, employers, employees and their representatives.

The proposed project will need to ensure that this Act and subsequent amendment regulations are adhered to on site by employees, contractors, sub-contractors and visiting personnel.

## 4.8 OTHER LEGISLATION CONSIDERED IN THE PREPARATION OF THE SCOPING REPORT

In accordance with the EIA Regulations 2014, all legislation and guidelines that have been considered in the preparation of the Scoping Report must be documented. Table 2-2 below provides a summary of the applicable legislative context and policy.

APPLICABLE LEGISLATION AND APPLICABILITY TO THE PROJECT GUIDELINES	
<p><b>NEMA PUBLIC PARTICIPATION GUIDELINE</b></p> <p>The Department of Environmental Affairs (DEA) published a Public Participation Guideline in the EIA Process Guideline (2010) as part of the Integrated Environmental Management Guideline series. It provides guidance on the procedure and the provisions of the public participation process in terms of NEMA and the EIA Regulations, as well as other relevant legislation.</p>	<p>Refer to Section 6 which outlines the Public Participation activities for the project.</p>
<p><b>NEMA NEEDS AND DESIRABILITY GUIDELINE</b></p> <p>The Department of Environmental Affairs published a Guideline on Need and Desirability in 2010 as part of the Integrated Environmental Management Guideline Series 9. The guideline has to be read together with the NEMA and the EIA Regulations.</p>	<p>Refer to Section 5.</p>
<p><b>MUNICIPAL IDP AND SDF</b></p> <p>The Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) of the Local and District municipalities have been reviewed and relevant details are</p>	<p>Refer to Section 5</p>

presented in Section

**MINING AND BIODIVERSITY GUIDELINES**

The South African National Biodiversity Institute (SANBI) and partners produced a Mining and Biodiversity Guideline (2013) to provide practical guidance to the mining sector on how to address biodiversity issues in the South African context. This guideline provides a tool to facilitate the sustainable development of South Africa's mineral resources in a way that enables regulators, industry and practitioners to minimise the impact of mining on the country's biodiversity and ecosystem services.

The Guideline distinguishes between four categories of biodiversity priority areas in relation to their importance from a biodiversity and ecosystem service point of view as well as the implications for mining in these areas. These include areas designated as: 1) Legally Protected, 2) Highest Biodiversity Importance, 3) High Biodiversity Importance, and 4) Moderate Biodiversity Importance. The 'Highest Biodiversity Importance' category is based on the mapped extent of Critically Endangered and Endangered ecosystems, Critical Biodiversity Areas (CBAs), river and wetland Freshwater Ecosystem Priority Areas (FEPAs) with a 1 km buffer and Ramsar

The proposed application area is located between two areas with existing mining rights on which mining has and is taking place. It has not been designated as a Critical Biodiversity Area but portions thereof is located in a category b and c. Concession area 9a is located in a category b area.

sites.	
<b>EIA Regulations 2014 (GN No. R982) and Listing Notice 2 (GN No. R984)</b>	Refer to Section 2.3.4.2. The Scoping Report has been compiled in accordance with Appendix 2 of the EIA Regulations 2014. Bulk Sampling (removal and disposal of minerals) is an activity listed in Listing Notice 2 and therefore requires a Scoping and EIA process to inform the environmental authorisation.
<b>Financial Provision Regulations, 2015 (GN R No 1147)</b>	These regulations set the requirements for financial provision as contemplated in the Act for the costs associated with the undertaking of management, rehabilitation and remediation of environmental impacts of prospecting, exploration, mining or production operations through the lifespan of such operations and latent or residual environmental impacts that may become known in the future. This will be considered in the EIA and EMPR.
<b>Regulations Regarding the Planning and Management of Residue Stockpiles and Residue Deposits, 2015 (GN R 632).</b>	The establishment of a residue stockpile (tailings) on the land based mining section will be triggered as part of the bulk sampling and processing activities. This will be further addressed as appropriated in the EIA.
<b>National Environmental Management Air Quality Act, 2004 (No. 57 of 2003) (NEMAQA).</b>	The NEMAQA regulates all aspects of air quality, including prevention of pollution, providing for national norms and standards and including a requirement for an Atmospheric Emissions Licence for listed activities, which result in atmospheric emissions and have or may have a significant detrimental effect on the environment. In terms of Section 22 no person may conduct a listed activity without an Atmospheric Emission Licence. The applicant has not, at this stage proposed any activities that trigger the need for an Atmospheric Emission Licence.
<b>National Water Act, 1998 (No. 36 of 1989) (NWA)</b>	NWA provides a legal framework for the effective and sustainable management of water resources in South Africa. It serves to protect, use, develop, conserve, manage and control water resources as a whole, promoting the integrated management of water resources with the participation of all stakeholders. This Act also provides national norms and standards, and the requirement for authorisation of uses listed in Section 21. The applicant has not, at this stage

	proposed any activities that trigger the need for a Water Use Licence, as sea water will be used.
<b>Regulations on use of water for mining and related activities aimed at the protection of water resources (GN R704)</b>	These Regulations, promulgated under the NWA, were made in respect of the use of water for mining and related activities, and are aimed at the protection of water resources. Regulation 4 (b) sets out that no person in charge of an activity may “carry on any underground or opencast mining, prospecting or any other operation or activity under or within the 1:50 year flood-line or within a horizontal distance of 100 metres from any watercourse or estuary, whichever is the greatest. The applicant has not, at this stage proposed any activities to which the Regulations apply.
<b>National Environmental Management: Protected Areas Act, 2003 (No. 57 of 2003) (NEMPAA)</b>	NEMPAA provides for protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. Section 48 of this Act restricts certain activities (incl. exploration) within protected areas. The prospecting application area excludes all areas protected in terms of NEMPAA.
<b>National Environmental Management Biodiversity Act (NEMBA) 10 of 2004.</b>	The objectives of NEMBA are to provide for the management and conservation of biological diversity within South Africa. NEMBA does not place any obligations on the proposed prospecting activity. Threatened ecosystems and species of conservation concern, as listed by NEMBA, have been given consideration in the Scoping Report. As the area lies south of the Namaqua National Park a buffer will be implemented. .
<b>Coastal Discharge Permit</b>	A Coastal Waters Discharge Permit may be required from the Department of Environmental Affairs in terms of the NEM: Integrated Coastal Management Act 24 of 2008 for the discharge of effluent to the sea. However, it will have to be determined if the discharge of the sea water used in the screening and classification process will trigger this activity, as no chemicals are added to the process. Confirmation in this regard will be obtained from DEA.

## 5 PROJECT NEED AND DESIRABILITY

For years, mining has been the driving force behind South Africa's economy and continues to make a valuable contribution to the country's economy. This economy is built on gold and diamond mining, with gold accounting for over a third of the country's exports. South Africa's diamond mining industry was recognised as one of the largest in the world in the year 2009. It is predicted that mining will still play an important role to the economy, most notably through foreign exchange earnings and employment provision. It is also one of the primary sectors that provide employment opportunities for unskilled and semi-skilled people.

The South African mining industry has its origin in small-scale mining activities, with these operations offering much needed employment opportunities and entrepreneurship, as well as contributing to the mineral sector and local economy. Small-scale mining impact on employment is especially observed in the rural areas where there are limited opportunities; providing significant livelihood for rural communities and a means of alleviating poverty.

The proposed project is for a small-scale mining operation near the Garies area, located in the Kamiesberg Local Municipality. The municipality is faced with challenges of high unemployment levels and poverty, making economic development one of the municipality's main priorities and general public needs. Economic sectors identified as important in the Kamiesberg municipality include agriculture, mining and tourism, with these sectors making a significant contribution to the local economy, thus necessitating the need to prioritise and support these sectors.

### 5.1 National Policy and Planning Context

#### 5.1.1 Minerals and Mining Policy for South Africa (October 1998)

A key intent of the Minerals and Mining Policy of South Africa states that Government will: "promote exploration and investment leading to increased mining output and employment" (Minerals and Mining Policy of South Africa, 1998). The Policy states further that:



- “The South African mining industry, one of the country’s few world-class industries, has the capacity to continue to generate wealth and employment opportunities on a large scale.
- Mining is an international business and South Africa has to compete against developed and developing countries to attract both foreign and local investment. Many mining projects in South Africa have tended to be unusually large and long term, requiring massive capital and entailing a high degree of risk.
- South Africa has an exceptional minerals endowment, and in several major commodities has the potential to supply far more than the world markets can consume.” In the more recently published Department of Minerals Resources Strategic Plan 2014 – 2019, the foreword by the Minister of Mineral Resources notes that the Department “will continue to promote mineral value addition to strengthen the interface between extractive industries and national socio-economic developmental objectives”.

According to 2012 statistics released by the Chamber of Mines, mining in South Africa created 524 632 jobs directly with another 841 260 jobs were created in the industries that either supply goods and services to the mining sector, or use mining products for downstream value addition, or which are related to the spending multipliers from mining and mining employees in the economy. In addition to direct and indirect jobs created, it must be noted that the social multiplier of mining is very significant for South Africa, who has a dependency ratio of about 10.

## 5.2 Regional Policy and Planning Context

### 5.2.1 Northern Cape Provincial Spatial Development Framework 2012 (PSDF)

The Northern Cape Provincial Spatial Development Framework 2012 (PSDF) notes that “the greatest value from marine and coastal resources is generated through the mining and fishing sectors” and that the “Northern Cape has an abundance of diamond deposits both onshore and in marine deposits. This has led to the development of a large diamond mining sector, which has become the dominant activity of the coastal zone”.

This project aims to undertake the mining of economically viable diamond deposits that occur on the continental shelf off the coast of the Northern Cape. Thus, deriving

value from the identified offshore mineral resources and contributing to the existing diamond mining sector in the Northern Cape.

Furthermore, the skills and human resource development associated with industrial development, direct, indirect and induced revenue streams will be tangible in the area.

### 5.2.2 Namakwa District Municipality Draft Revised Integrated Development Plan (2015-2016) (IDP)

The Namakwa IDP states one of its focus areas being, 'Optimal utilization of Natural Resources in a sectoral manner'. The goal of this focus area according to the IDP is, Mineral Beneficiation Plant, Promotion of small mining activities.

According to the IDP, Kamiesberg is in dire need for economic development. There are huge gaps in the economic active population (male and female, although the latter is not so severe) which suggests migration out of the municipal area.

### 5.2.3 Kamiesberg Integrated Development Plan (2015-2016) (IDP)

The Kamiesberg Integrated Development Plan (2015-2016) indicates that the local economy has been growing positively for the last 15 years but the growth has slowed down from 9.4% in 2005. The growth spurts in the economy are primarily due to the tourism industry and construction sector developments such as the construction sector and the tourism industry are seasonal and susceptible to economic changes such as the Rand/Dollar Exchange, political unrest, global recession etc. This places Kamiesberg Local Municipality at risk and requires a stronger effort to diversify the economy.

## 5.3 Expenditure


Construction phase – This will entail the access roads, if any new roads/alignments would be required and subsequent establishment of prospecting equipment on site.

Operational phase (Prospecting Phase = Phase 2 and 3) – approximately 15 persons from the local area will be employed in this phase. About 10 of these persons to comply to the BEE specifications as set out the DMR.



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Mine closure – Mine closure (prospecting) will inject money into the regional and local economy largely through use of contractors in dismantling surface infrastructure and finalizing the rehabilitation process of any trenches.

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## 6 PUBLIC PARTICIPATION PROCESS

Public consultation is an important component of any project, in that it provides an opportunity for local stakeholders to engage with Project proponents. Through public consultation communities receive information about the Project and help to inform the Proponent on the key issues most relevant to stakeholders. The EIA Regulations (2014) emphasizes the importance and requirements for a public participation process and have been revised to contain comprehensive guidelines to involve the public in the EIA study.


The primary aims of the public participation process include:

- Meaningful and timeous participation of Interested and Affected Parties (I&APs);
- Identification of issues and concerns of key stakeholders and I&APs with regards to the proposed development, i.e. focus on important issues;
- Promotion of transparency and an understanding of the proposed project and its potential environmental (social and biophysical) impacts;
- Accountability for information used for decision-making;
- Serving as a structure for liaison and communication with I&APs;
- Assisting in identifying potential environmental (social and biophysical) impacts associated with the proposed project; and
- Inclusivity (the needs, interests and values of I&APs must be considered in the decision-making process).

In order to ensure effective public participation the process will entail undertaking the items listed in Section 6.1 to 6.8.

### 6.1 Identification of Interested and Affected Parties

I&APs were identified primarily through an existing database and previous experience of other projects in the area. Letters were sent to key stakeholders and other I&APs on the existing database, informing them of the application process and indicating how they could become involved in the project, the availability of the Scoping Report and associated comment period. The contact details of all

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identified I&APs are on the project database, which is included in Appendix C.1. This database will be updated on an on-going basis throughout the EIA process.

## 6.2 Compilation and review of Scoping Report

This Scoping Report has been prepared in compliance with Appendix 2 of the EIA Regulations 2014 which will be released for a 30 day public review period. The report will be placed at the local library (Public Library) and on the project website [www.braafsa.com](http://www.braafsa.com) (Documents for Comment –Admiralty Reserve).

The Scoping Report will be made available to key organs of state and other state departments for comment as part of the public participation process.

## 6.3 Advertisements

Advertisements announcing the proposed project, the availability of the Scoping Report, the Public Meeting and the I&AP registration / comment period will be placed in the following regional and local newspapers in Afrikaans (see Appendix C.3):


- Local newspaper: Die Plattelander (on 7 April 2017);
- Local newspaper: Ons Kontrei (14 April 2017)

## 6.4 Site Notices

A2 - sized notices will be placed at strategic places such as the community hall, and municipality, libraries etc.

## 6.5 Distribution of Background Information Document of the Scoping Report

A Background Information Document (BID) was distributed for a 30-day registration and comment period from 5 April 2017 to 9 May 2017 (see Appendix C.2 for letter and BID). The purpose of the letter and BID was to inform I&APs about the proposed project and to invite I&APs to register on the project database and provide comment on the Scoping Report. To simplify the registration process, a Registration and Comment Form was distributed with the BID.

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## 6.6 Public Meeting

A Public Meeting will be held on 13 April 2017 at the Komaggas Community Hall from 16:00 to 18:00. I&APs will be informed of the meeting via adverts in newspapers.

Further meetings may be scheduled in the Kamiesberg LM area, of which I&APs will be informed.

## 6.7 One-on-one meetings and discussions

Meetings will be held with surrounding landowners, organs of state and other key state departments to present and discuss any issues they may have related to the proposed project. These meetings will take place throughout the process.

Additional meetings may be scheduled during the scoping process of which I&APs will be informed.

## 6.8 Finalisation of the Scoping Phase

The following steps are envisaged for the remainder of the Scoping Phase:

- After closure of the comment period, the Scoping Report will be updated to incorporate the comments received. All comments received during the review of this Scoping Report will be compiled and responded in the Comments and Responses Report; and
- The updated (Final) Scoping Report will be submitted to DMR for review and acceptance.
- Registered I&APs on the project database will be informed that the updated Scoping Report has been submitted to DMR and a copy of the report will be made available on the Braaf website for information purposes.

If the DMR accepts the Scoping Report, the project will proceed onto the EIA Phase.

## 7 DESCRIPTION OF RECEIVING ENVIRONMENT

### 7.1 Biophysical Environment

#### 7.1.1 Climate

The Northern Cape lies on the arid side of the spectrum of the South African climatic environment. The Western Cape has a Mediterranean climate, which is strongly influenced by the cold Benguela Current and coastal winds.

The climate of the proposed region is semi-arid with long dry summers (October to April), and rainfall occurring in the winter months (May to September). Rainfall occurs in winter and varies from about 40 mm to about 200 mm/year from north to south (Alexander Bay to Eland Bay). It receives the lowest rainfall (0mm) in January and the highest (20mm) in July (saexplorer, 2014).

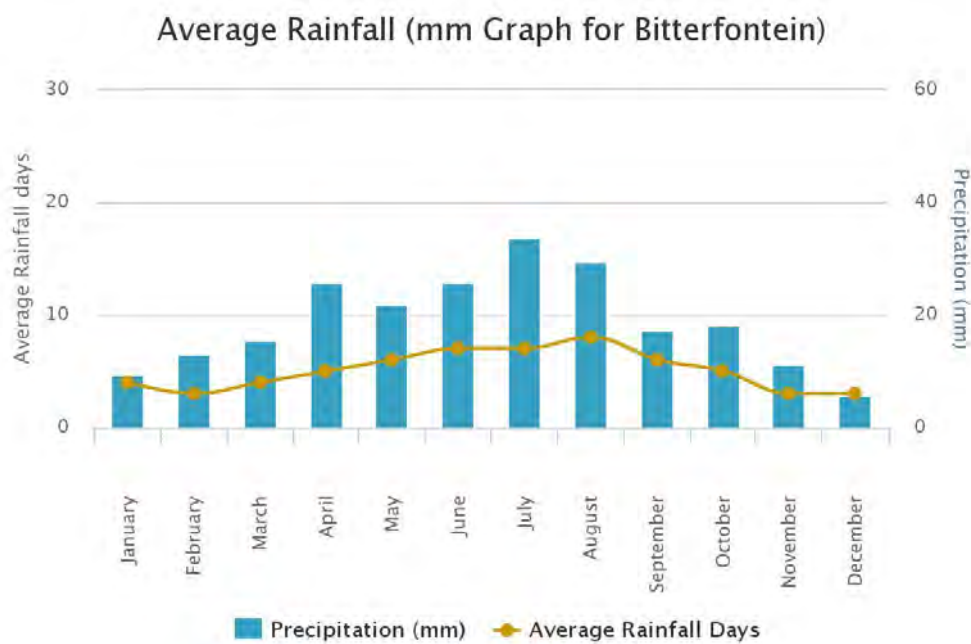


Figure 7-1: The data for the above chart is taken from years 2000 to 2012 (worldweatheronline, 2016).

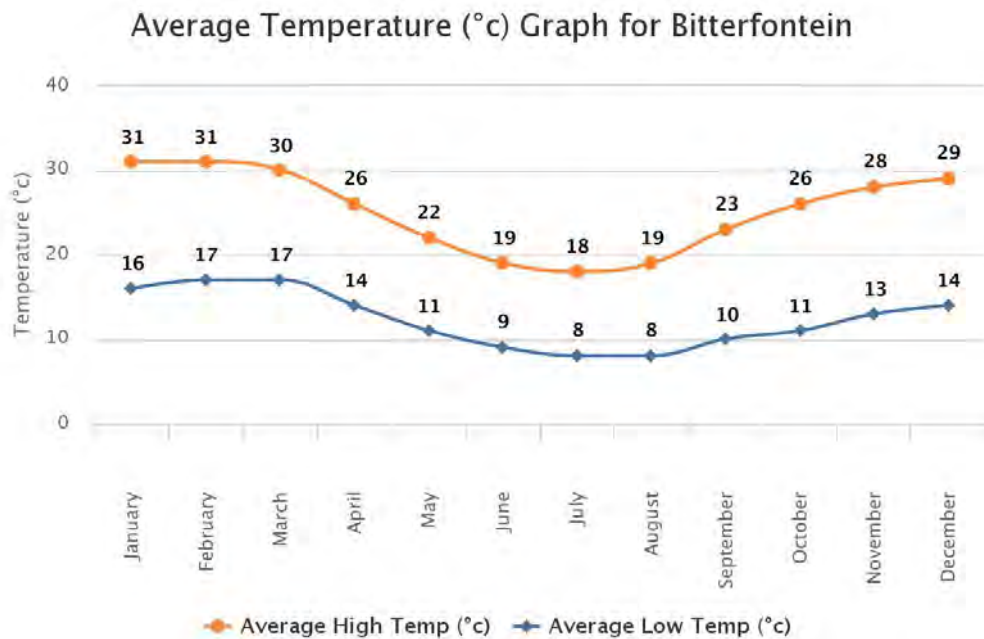


Figure 2: The data for the above chart is taken from years 2000 to 2012 (worldweatheronline, 2016).

The average midday temperatures for area ranges from 18°C in July to 30°C in February. The region is the coldest during July (saexplorer, 2014). During summer, temperatures increase to reach maximum in the afternoon and decreases to reach a minimum just before sunrise. During winter, temperatures increase to reach maximum in the afternoon and decreases to reach a minimum in the morning.

The oceanic fog that blankets much of Namaqualand is a phenomenon that occurs on average about 123 days per year.

### 7.1.2 Topography

The topography of the coastal plains adjacent to Farm Eiland Punt Noord No. 549 is varied. The coastline is west of Farm Eiland Punt Noord is characterised exposed rocky headlands, alternating with isolated fine grained sandy beaches. Estuarine environments are limited to around the mouth of the Groen River.

The prospecting area consists of coast plains, under a kilometer in width at an elevation rising to 19m eastward.



### 7.1.3 Geology

The geology of the riverbed and inland catchment area is predominated by granites of the Namaqualand Natal Metamorphic complex. Along the coast, these bedrock granites are overlain by unconsolidated sands with fluvial and terrestrial gravels, shells, limestone and calcrete cappings.

The Groen River, as is the case with other Namaqualand rivers, has been incised into granite bedrock and can be seen as a small water course running down a wide shallow valley. The valley is filled with alluvium and rounded granite boulders. Granite outcrops can be seen in places in the valley and also along virtually the whole of the adjacent coastline.

Rocks of the Namaqualand Metamorphic Complex are the only basement rock types found within 50 km inland from the shore of the concession area, between latitudes 30°S and 31°S. A thick blanket of aeolian sand covers most of the coastal plain.

These gneissic bedrock types of the Namaqualand Metamorphic Complex underlie the entire concession area. The regional gneisses differentiate locally into schists, small pegmatites and minor ultramafic intrusives. The Kamieskroon Gneiss is found around the Groen River Mouth.

These rock types have a high tendency to form potholes and gullies, due to compositional and grain size differentiates within the metamorphic unit. It also contains crevices, cracks, schistose lineaments within granitic bedrock and other entrapment features.

Regional lineaments consist of tectonic joint systems, gneissic fabric, schistose foliation and minor intrusive dykes in all possible orientations, predominantly north-westward. Bedrock morphology is the key concentration factor, and controls all major aspects of sediment deposition in the marine environment.

The basal conglomerate carries the highest diamond grade, followed by the compact gravel, while the unconsolidated gravel carries least.

Tectonic movements and the melting of polar ice during warm climates, cause the level of the oceans to rise and fall repeatedly over geologic time. The result of sea

level variation has been to distribute diamonds across the vertical range 120m above to 150m below present sea level, and to concentrate the diamonds in gravel terraces at the specific elevations of sea-level still stands. For the Groen River Mouth area and the Admiralty Strip, these levels are found from high to low within a 2-5m range from the following elevations: +120m, +80m, +50m, +30m, +20m, +10m, -1m, -8m, -13m, -22m, -29m, -32m, -36m, -42m, -47m, -60m & -130m.

Findings resulting from work done along the entire west coast indicate that those stretches of coast, which carry diamonds on one of the palaeo-shoreline levels, almost without exception also carries diamonds on most of the other levels (Creo Design, 2016).

This implies that, where a diamond source is present in the form of a river-mouth, like the Groen River or Spoeg River (and their palaeo-distributaries), the diamonds get vertically displaced and reconcentrated on all the available terrace levels by marine action over geological time, due to the numerous changes in sea level as on Eilandpunt North where diamondiferous gravels occur up to 3km inland to the east. This is a highly significant result, because it enables correlation between emerged and submerged gravel terraces in terms of diamond potential. Thus, a positive correlation between submerged diamondiferous deposits of the neighbouring terraces 200m from shore alongside the highly productive Namagroen Concession 9a, and the emerged terraces at this concession, may be drawn.

#### 7.1.4 Surface Water and Groundwater

The project is situated in Water Management (WMA) Area 14 – Lower Orange<sup>1</sup> - and straddles the quaternary catchment F50G (DWAf 2004). The natural mean annual runoff of all the coastal catchments in the WMA stretching about 285km from Strandfontein in the south to Alexander Bay at the mouth of the Orange River in the north, is estimated at 24 million cubic metres (Mm<sup>3</sup>). All rivers in the area are ephemeral / episodic, and flow only sporadically in response to high rainfall events, mostly on their upper catchments, remote from the coast, where annual rainfall can exceed 100mm. For this reason available reliable yield from surface water sources in all the coastal catchments is estimated to be zero, while reliable yield from

---

<sup>1</sup> Since the First Edition of the NWRS was published the number of WMAs has been reduced from 19 to 9 to reduce the number of management institutions that need to be created. The entire Orange River catchment is now WMA 6.

groundwater from the catchments is estimated to be a total of 3 Mm<sup>3</sup>/a. Approximately 6 Mm<sup>3</sup>/a of water is transferred into the area from the Orange River to meet the urban / domestic requirements in the Springbok area (DWA 2004).

#### 7.1.4.1 Surface water

The Groen River lies north of the prospecting area where it is separated from directly abutting the river by the Namaqua National Park through which the river flows as seen in Figure 7-2. The Groen River Estuary terminates into the ocean about 2.5km from the application area. The Groen River as is the case with other rivers in Namaqualand, comprise relatively small river channels meandering in wide, shallow, alluvium-filled valleys that have been incised over time into the granite bedrock (Heydorn & Grindley, 1981a). The episodic nature of the flow in the rivers is confirmed by records from a hydrological gauging station (F5H001) on the Swartdoring River, a tributary of the Groenrivier, at Bruintjieshoogte. The gauge is a rated concrete weir close to the N7 highway about 32km south of the town of Garies. A brief analysis over the period from April 1967 to March 2014 for which peak flow data is recorded indicates that there was no flow in the river for 445 months (84%). Peak flow rates exceeded 1m<sup>3</sup>/sec in 28 months, 10m<sup>3</sup>/sec in 13 months, and 20m<sup>3</sup>/sec in 5 months. The two maximum recorded flow rates during the 57 years of the gauging station's operation were 46m<sup>3</sup>/sec (June 1967) and 45m<sup>3</sup>/sec (August 1974). The ephemeral nature of the Groen River means that surface water resources are not used to any significant extent in the area, either for domestic use or stock watering. The river flow is not sufficient to be considered as a reliable source of water for mining operations.

#### 7.1.4.2 Hydrocensus

Groundwater use is almost exclusively for livestock watering, with minor use for domestic purposes such as washing and cleaning. The high salinity of the groundwater makes it unsuitable for human consumption, and all drinking water is obtained from rainwater harvesting from the roofs of the farmsteads. All existing boreholes in the area were equipped with wind pumps, which pump water to storage dams. From the dams, water is generally distributed to livestock watering points by gravity flow.

#### 7.1.4.3 Description of hydrogeology

The hydrogeological description is excerpted from Cesnet (2014). The hydrogeology of the project area consists of an unconsolidated primary aquifer overlying a

fractured secondary aquifer: The upper aquifer consists of surface aeolian sands, and basal grits and conglomerates, generally unconsolidated and relatively permeable, with relatively high silt content - clays constitute 21% of the overall volume, with local values up to 35%. Beneath the upper weathered profile the bedrock consists of predominantly fractured gneisses and granites, which are high grade metamorphic rocks of the Namaqua-Natal Mobile Belt and which are generally massive and highly deformed. There is a thick layer of weathered bedrock material with elevated proportions of kaolinite clay between the upper aeolian sands aquifer and the lower fractured bedrock aquifer. This relatively impermeable layer probably may act as an aquitard, which restricts water flow between the two aquifers and, importantly, influences the volume and rate of seepage from backfilling operations to the water table.

#### 7.1.4.4 Groundwater levels

Groundwater generally flows towards the coast and there is usually little connection between surface water flows and the groundwater aquifer, mainly due to low quantities of surface water. There are therefore not many aquifer dependent ecosystems in the District and it is likely that groundwater contamination does not pose a major risk to floral and faunal communities (Chidley et al., 2010, Higgs et al., 2010).

#### 7.1.4.5 Groundwater Quality

Groundwater quality in the Lower Orange WMA ranges from good to unacceptable, the latter due to contamination by total dissolved solids, nitrates and fluorides caused by pollution from agriculture, lack of sanitation and algal blooms. Areas of high nitrate concentration have been measured at Garies and the surrounding areas.

### 7.1.5 Flora

#### 7.1.5.1 Regional botanical context

National Vegetation Maps ((SANBI, 2012) indicate that the area is characterised by Namaqualand Seashore Vegetation (see Figure 7-2). This vegetation is distributed along the Northern Cape coastline, in a very narrow strip above the high water

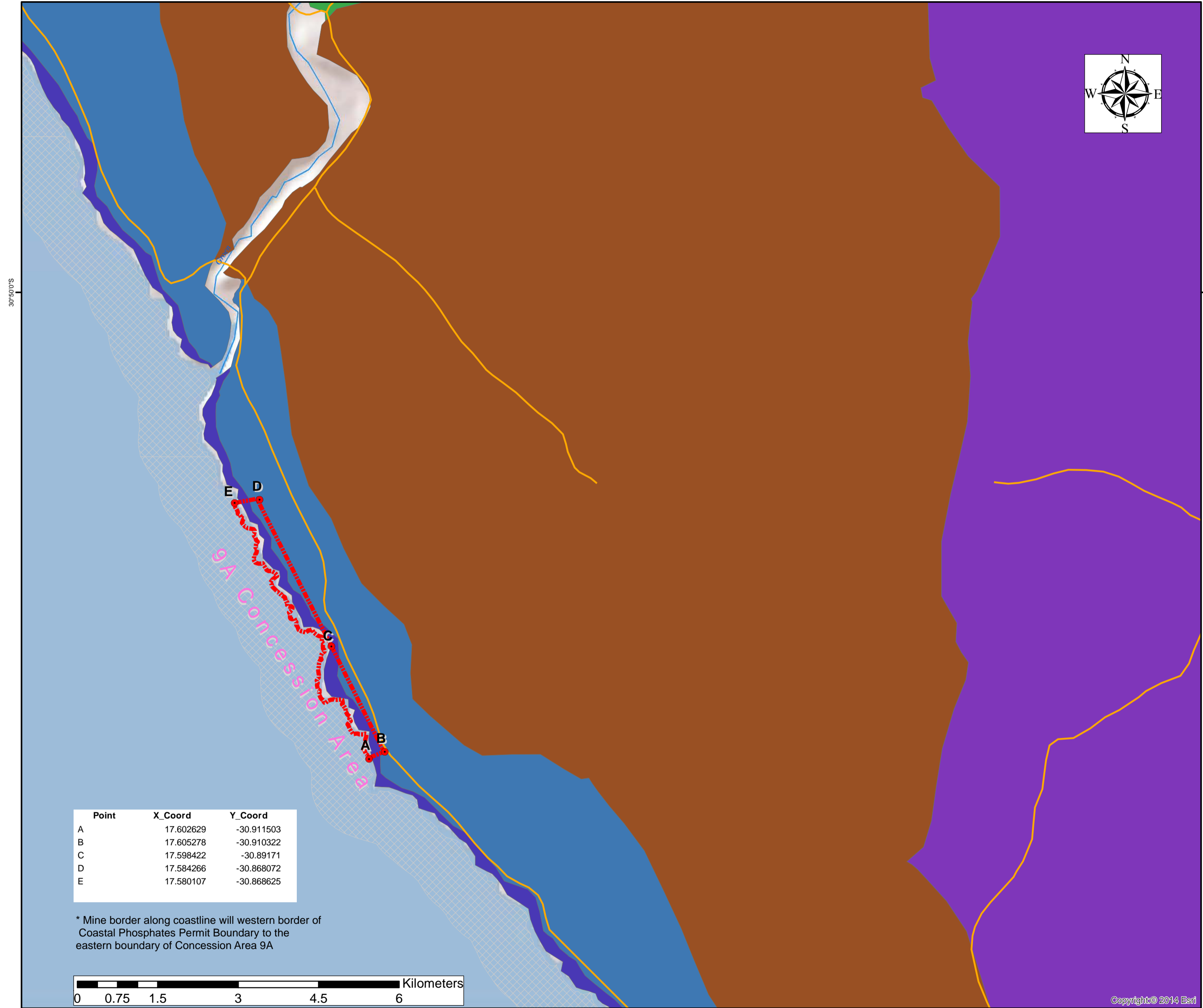
mark, from Holgat River to Olifants River. It is typically found on alkaline coastal dunes, and is typically a sparse vegetation community of partly succulent hummock-forming and spreading dwarf shrubs, grasses and herbs. Namaqualand Seashore Vegetation is classified as Least Threatened with a conservation target of 26%. As of 2004 none was statutorily conserved, but the Namaqua National Park has recently incorporated a significant but unknown area of this vegetation type. About 5% has been transformed through diamond mining (Mucina & Rutherford 2006). This widespread vegetation type occurs between the high water mark and the Namaqualand Coastal Duneveld, along the coast between Island Point and Khnyp Point. The project site is characterised by sparsely spread shrubs and grasses and as such the site does not contain any threatened vegetation in terms of section 52 of NEMA.

#### 7.1.5.2 Critical biodiversity areas

The site is outside of the urban edge and falls within the coastal public property (Admiralty Reserve) and the surf zone. The state currently holds common law mineral rights to the Admiralty Strip south of the Groen River Mouth.

According to the 2009 Namakwa District Critical Biodiversity maps, the application area is identified as an Ecological Support Area and not a Critical Biodiversity Area (refer to Figure 7-2).

The project may entail clearing portions of Namaqualand Seashore vegetation which is not listed as a critically endangered vegetation type in terms of the NSBA, 2011 but will endeavour to keep the footprint as small as possible.

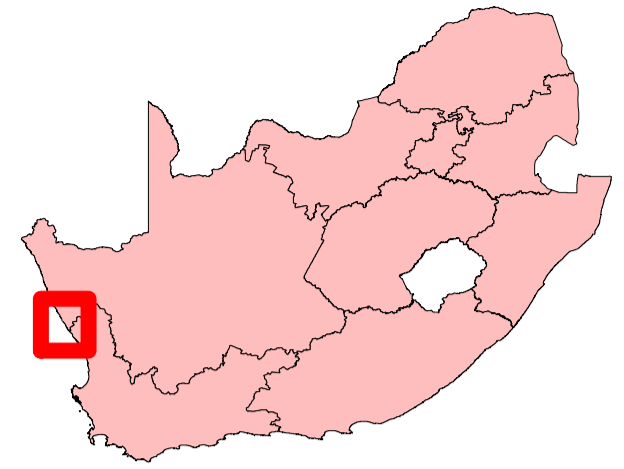


Point	X_Coord	Y_Coord
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B	17.605278	-30.910322
C	17.598422	-30.89171
D	17.584266	-30.868072
E	17.580107	-30.868625

\* Mine border along coastline will western border of Coastal Phosphates Permit Boundary to the eastern boundary of Concession Area 9A



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**Legend**

- Roads
- Prospecting Application Area
- Namaqualand Arid Grassland
- Namaqualand Blomveld
- Namaqualand Coastal Duneveld
- Namaqualand Granite Renosterveld
- Namaqualand Inland Duneveld
- Namaqualand Klipkoppe Shrubland
- Namaqualand Riviere
- Namaqualand Salt Pans
- Namaqualand Seashore Vegetation
- Namaqualand Strandveld
- 9A\_Concession\_Area
- Road
- River

PROJECT: Prospecting Right Application

**FIGURE 7-2: Vegetation Map**

CLIENT: Adomamanzi (Pty) Ltd

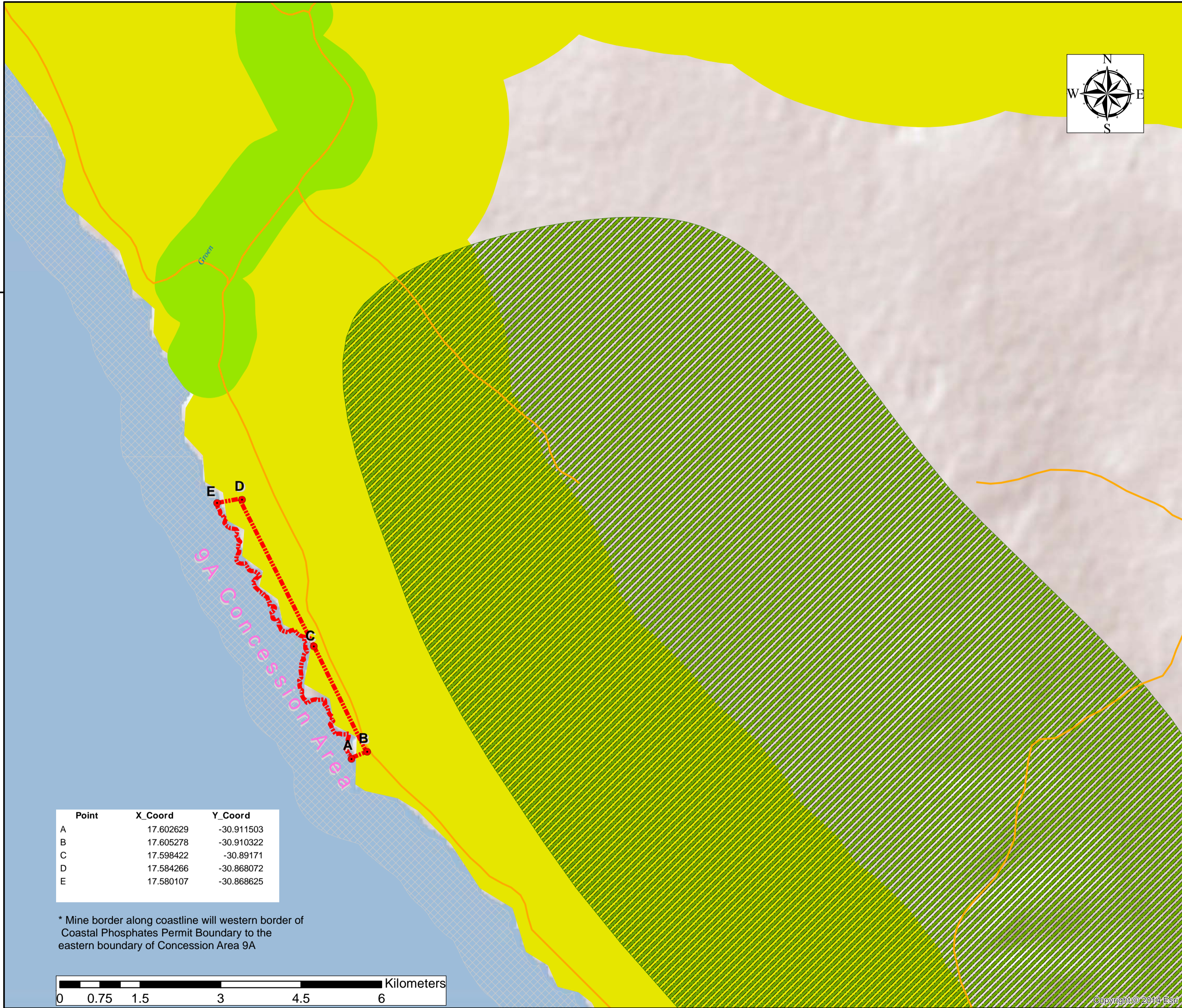
OUR REF: NCADPR/03-17

SCALE:	A3	
Drawn	20/03/17	OB
Checked	20/03/17	GA
Approved	20/03/17	RR

**BRAAF**  
ENVIRONMENTAL PRACTITIONERS

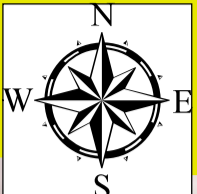
P O Box 692  
Kuils River  
7579  
Tel: 0860 111 382  
Fax: 086 658 7676  
Email: info@braafsa.com

Projection: GCS\_WGS\_1984



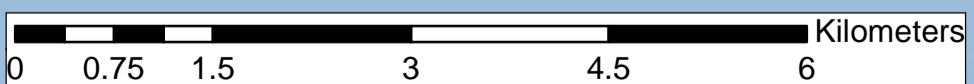
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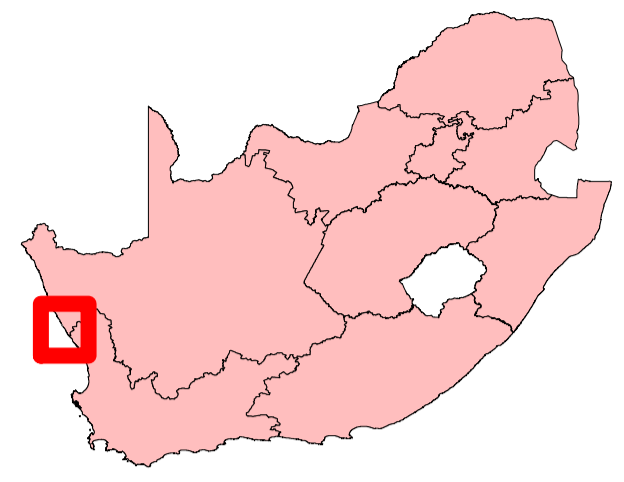


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\* Mine border along coastline will western border of Coastal Phosphates Permit Boundary to the eastern boundary of Concession Area 9A



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**Legend**

- Roads
- Prospecting Application Area
- CBA\_TYPE**
- Ecological Support Area
- T1
- T2
- 9A\_Concession\_Area
- Road
- River

PROJECT: Prospecting Right Application

**FIGURE 7-3: Critical Biodiversity Areas (Terrestrial)**

CLIENT: Adomamanzi (Pty) Ltd

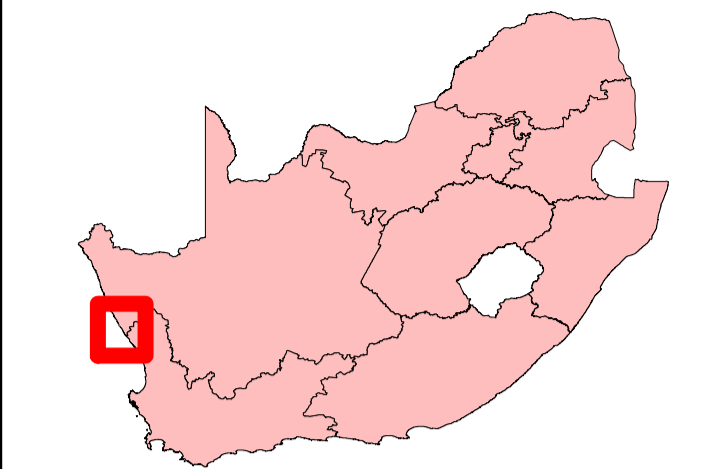
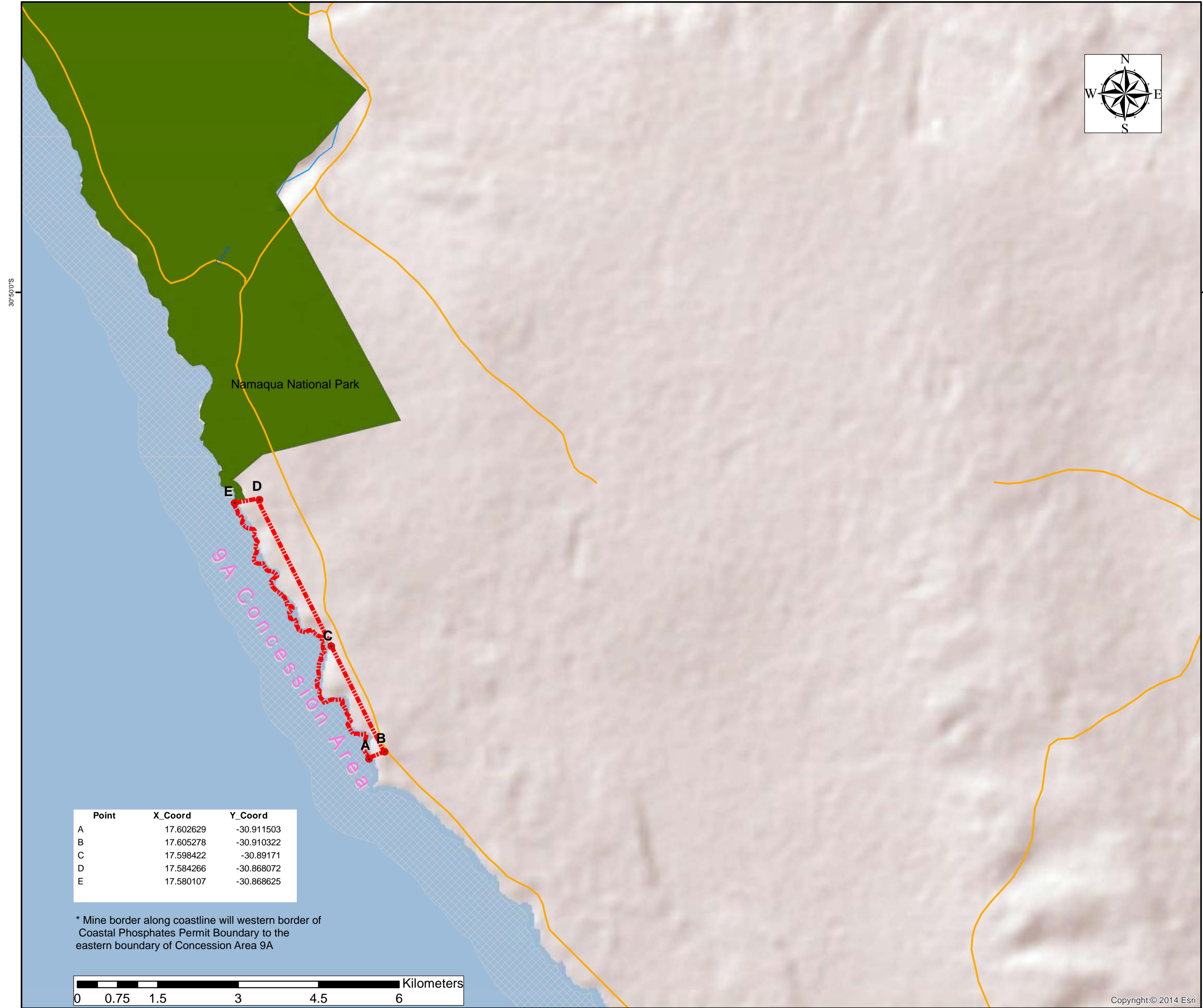
OUR REF: NCADPR/03-17

SCALE:	A3	
Drawn	20/03/17	OB
Checked	20/03/17	GA
Approved	20/03/17	RR


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Kuils River  
7579  
Tel: 0860 111 382  
Fax: 086 658 7676  
Email: info@braafsa.com

Projection: GCS\_WGS\_1984



**Legend**

-  Roads
-  Prospecting Application Area
-  9A\_Concession\_Area
-  National Park
-  Road
-  River

PROJECT: Prospecting Right Application

**FIGURE 7-4: National Parks**

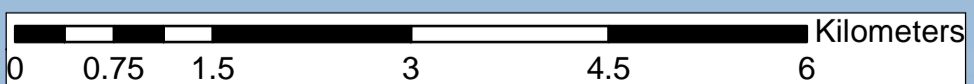
CLIENT: Adomamanzi (Pty) Ltd

OUR REF: NCADPR/03-17

SCALE:	A3	
Drawn	20/03/17	OB
Checked	20/03/17	GA
Approved	20/03/17	RR

Point	X_Coord	Y_Coord
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Projection: GCS\_WGS\_1984



## 7.2 Conservation Areas

The Namaqua National Park is situated north of the application area and is administered by South African National Parks (SANParks). The Park was proclaimed in 2001 for the purposes of conserving succulent plants within the Succulent Karoo biome and has recently been expanded to include the coastal area between the Groen and Spoeg Rivers. The Park covers approximately 141 000 ha and stretches from Kamieskroon in the northeast to the Groen River mouth in the southeast (see Figure 7-4). The KLM SDF proposes that the Namaqua National Park is extended eastwards to include the Skilpad Wildflower Reserve and further east along the N7 boundary. It is also proposed that the Park is extended to the north of Koingnaas to encompass a section of an existing alluvial mining area. These proposals are in accordance with the Draft Management Plan for the Namaqua National Park (2010) (Higgs et al., 2010).

A buffer which ranges between 20-50+ m will be implemented between the proposed prospecting area and the park.

## 7.3 Physical Oceanography

### 7.3.1 Currents

The west coast of southern Africa is strongly influenced by the north-westerly flowing Benguela current, forcing moderate to strong equatorward winds which are characteristic of the region. Significant pole ward flow of subthermocline water, however, also occurs both on the continental shelf and at the shelf break. The north-westerly flowing surface currents appear to be topographically steered and currently velocity varies with increased speeds in areas of steep topography and reduced velocities in areas of regular topography. In addition, to this there is a southward flow during period of barotropic reversals as well as in winter.

### 7.3.2 Waves and Tides

Atypical of the west coast, the coastline opposite the prospecting area has strong wave action, except where there are extensive kelp beds. Largest waves originate from the south to southwest sectors and may reach between 4-7 m, generated by mid latitude cyclones. There isn't a strong seasonal variation in the wave regime except for slight increases in swell from the west southwest to westerly direction in

winter. Minimal swell originates from the west-north-west to south-easterly direction sector. On occasion, prevailing south-westerly winds can reach gale force velocities in excess of 70km/h, producing swells up to a maximum of 10m. Average breaking wave height is approximately 2.5m, which allows diver-based mining activities around 15% of the time.

### 7.3.3 Marine habitat

#### 7.3.3.1 Sandy shores

Although the coastline of the study area is dominated by rocky shores, some isolated pockets of sandy beaches occur. Longer sandy beaches occur midway along the sites coastal front. Sandy beaches are dynamic coastal environments and the composition of faunal communities is largely dependent on the beach morphodynamics, i.e. the interaction of wave energy, beach slope and sand particle size.

Benthic biota of soft bottom substrates constitutes invertebrates that live on, or burrow within, the sediments, and are generally divided into megafauna (>10 cm), macrofauna (animals >1 mm) and meiofauna (<1 mm). The macrofaunal communities of sandy beaches are generally ubiquitous throughout the west coast region, being particular only to substratum type, wave exposure and/or depth zone (Pulfrich and Steffani, 2014).

#### 7.3.3.2 Rocky Substrate Habitat and Biota

Biological communities of rocky intertidal and subtidal reefs throughout the west coast region are determined by wave exposure, turbulence and/or depth zone. West coast rocky intertidal shores can be divided into five zones on the basis of their characteristic biological communities, viz. the Littorina, Upper Balanoid, Lower Balanoid, Cochlear/Argenvillei and the Infratidal Zones. These biological zones correspond roughly to tidal levels and tolerance to physical stresses, and communities are determined by biological interactions such as herbivory, competition and predation.

The uppermost part of the shore (the Supralittoral fringe) has more in common with the terrestrial environment and is characterised by low species diversity. The Tiny Periwinkle (*Afrolittorina knysnaensis*) and the Red Alga (*Porphyra capensis*) are the most common macroscopic species.

The Upper mid-littoral zone is characterised by the Limpet (*Scutellastra granularis*), the Gastropods (*Oxystele variegata*, *Nucella dubia*, and *Helcion pectunculus*), low densities of the Barnacles (*Tetraclita serrata*, *Octomeris angulosa* and *Chthalamus dentatus*) and green Algae (*Ulva spp*).

Toward the lower shore, within the Lower Mid-littoral and Lower Balanoid zones, biological communities are determined by exposure to wave action. On sheltered and moderately exposed shores, a diversity of algae abounds with a variable representation of green, brown and red algae.

The Gastropods (*Cymbula granatina* and *Burnupena spp*) are also common, as is the reef building Polychaete (*Gunnarea capensis*), and the small Cushion Starfish (*Patiriella exigua*). On more exposed shores, almost all of the primary space is likely to be occupied by the dominant invasive Mussel (*Mytilus galloprovincialis*). The invasive Acorn Barnacle (*Balanus glandula*) is also likely to be abundant in the mid zones of semi-exposed shores.

Along the Sublittoral fringe, the large kelp-trapping Limpet (*Scutellastra argenvillei*) dominates forming dense, almost monospecific stands, while *C. granatina*, the dominant grazer on more sheltered shores, also reaches extremely high densities. On more exposed shores *M. galloprovincialis* dominates, while the invasive Mussel (*Mytilus galloprovincialis*) is also likely to occur. In addition to the mussel and limpets, the anemone *Aulactinia reynaudi*, numerous whelk species and the sea urchin *Parechinus angulosus* also occur.

From the Sublittoral fringe to a depth of between 5 and 10 m, the benthos is largely dominated by algae, in particular two species of kelp (*Ecklonia maxima* and *Laminaria*). Kelp beds absorb and dissipate high wave energy and provide important partially-sheltered habitats for a high diversity of marine flora and fauna in kelp-forest communities. They also provide habitat for diverse understorey algae, which provide food and shelter for predators, grazers and filter-feeders. Key predators include the commercially important West Coast Rock Lobster (*Jasus lalandii*) and a number of fish species also occur. Kelp beds support recruitment and complex trophic food webs of numerous species, including commercially important Rock Lobster stocks and are considered a medium sensitivity habitat (Pulfrich and Steffani, 2014).

#### 7.3.4 The ocean (water body)

The study area is located in the southern Benguela ecosystem and pelagic communities are typical of those of the region. These communities can typically be divided into plankton, fish, and marine mammals (seals, dolphins and whales).

Plankton range from single-celled bacteria to jellyfish, and include bacterioplankton, phytoplankton, zooplankton, and ichthyoplankton. Phytoplankton includes diatoms, dinoflagellates, coccolithophorids and microflagellates. Zooplankton is characterised by pelagic crustaceans (e.g. copepods, cumaceans, hyperiid amphipods, chaetognaths, mysids, euphausiids), invertebrate larvae (e.g. bivalve, polychaete, etc.), pelagic cnidarians, and ichthyoplankton.

A number of fish species occur within the Benguela ecosystem, including small pelagic fish species, demersal fish and line fish species. Several fish species are found in kelp beds off the west coast, and many are caught in gill-nets over rocky reef areas between the Orange River and Cape Columbine. The surf-zone and outer turbulent zone habitats of sandy beaches are considered to be important fish nursery habitats and surf zone fish communities at the west coast have relatively high biomass but low species diversity.

Forty-nine pelagic seabird species feed on the pelagic fish stocks associated with the Benguela ecosystem. Fourteen of these species breed in southern Africa, including Cape Gannet (*Morus capensis*), African Penguin (*Spheniscus demersus*), four Cormorant species, White Pelican, three Gull species and four Tern species. Breeding areas are distributed along the west coast and islands are particularly important breeding habitat. Species that may migrate through the project area include: Cape Gannets, Kelp Gulls (*Larus dominicanus*), African Penguins, African Black Oystercatcher (*Haematopus moquini*), Bank Cormorant (*Phalacrocorax neglectus*), Cape Cormorant (*Phalacrocorax capensis*) Crowned Cormorant (*Phalacrocorax coronatus*), and Hartlaub's Gull (*Larus hartlaubii*). The Black Oystercatcher is considered Near Threatened, while the Bank Cormorant is considered Endangered. Black Oystercatchers are susceptible to disturbance from offroad vehicles.

A number of marine mammals are associated with the Benguela ecosystem, including between 28 and 31 species of cetaceans (whales and dolphins) and four species of seals (of which the Cape Fur Seal, *Arctocephalus pusillus* is the most common). The Cape Fur Seal is the only seal species that is resident along the west coast of Africa. It occurs at numerous breeding and non-breeding sites on the mainland and on nearshore islands and reefs. There are three Cape fur seal breeding colonies within the broader study area: at Kleinzee (incorporating Robeiland), at Bucchu Twins near Alexander Bay and at Elephant Rocks near the Olifants River mouth. Non-breeding colonies occur at Strandfontein Point (~5 km north of the Groen River mouth) and on Bird Island at Lamberts Bay.

All have important conservation value since they are largely undisturbed at present. Dusky dolphin (*Lagenorhynchus obscurus*) and Heaviside's dolphin (*Cephalorhynchus heavisidii*) are resident within the Benguela ecosystem coastal waters. Whale species that may be sighted in the area include Southern Right whale (*Balaena glacialis*), Humpback whale (*Megaptera novaeangliae*), and Killer whale (*Orcinus orca*), along with Antarctic Minke (*Balaenoptera acutorostrata*) and Bryde's whale (*B. brydei*). Whales occurring in the nearshore regions of the project area will largely be transitory (Pulfrich and Steffani, 2014).

#### 7.3.5 Sea level rise

The effects of climate change, and particularly sea-level rise, should be taken into account when planning infrastructure that is located close to the shoreline. The Intergovernmental Panel on Climate Change in 2007 predicted that global average sea levels would rise, in response to climate change, by between 0.18 and 0.59 m by the year 2100. Subsequent to these estimates, scientists are in agreement that these figures may be an underestimation and that sea level rise is accelerating. It is suggested that a sea level rise of between 0.5 m and 2.0 m by the year 2100 is appropriate for the southern African coastline (WSP, 2012a). The proposed project does not entail the establishment of any permanent infrastructure and thus due to its temporary nature the project does not have to consider sea-level rise into the layout of the plant.

## 7.4 Social Environment

#### 7.4.1 Socioeconomic Profile

The Kamiesberg Local Municipality's (KLM) population is estimated at 10,188 people (representing 0.9% of the province's population). The largest section of the population is coloured, whereas in terms of gender, the male-to-female ratio is 1:0.9.

The working-age population (within the age brackets of 15 and 64 years) is the largest for the entire area. In fact, the largest population group (41.26%) is between 30 and 64 years of age. A sizeable section of the population can also be considered as youthful members between the ages of 15 and 29.

The largest section of the KLM's population is not economically active. **Wards 2** (are within which prospecting is to occur) and 4 of have the highest not economically active residents (78.1% and 71.1% respectively). The labour force (the population within the working-age group) for the KLM is estimated at 3,216 people (or 31.6% of the municipality's population). The formal unemployment rate (calculated as a percentage of the labour force) of the KLM can be calculated at 30.6% for the KLM. The official unemployment rates for wards 1 and 4 are the highest at around 37.1% and 41.7%.

Community services, trade and agriculture are the largest employment sectors. Although the mining sector has been one of the most prominent sectors in the area (contributing 52.0% to the NDM's GPD), the significance of this industry and the employment provided have been declining in recent years as several mining companies (such as De Beers and Trans Hex diamond mines) have closed in past few years. The bulk of the households receive between R4,801- R38,200 per year. Very few households receive more than R307,601 per year (or R25,633 per month).

#### 7.4.2 Land Use

The proposed site is largely surrounded by vacant, undeveloped agricultural land. The land to the east of the application has existing mining rights held by Coastal Phosphates and the sea concession area, Concession 9A to the west, the Namaqua National Park forms the northern boundary. The application area can be accessed from the N7, then from a gravel road along the Groen River towards the Groen River Lighthouse from where the area is accessed.

#### 7.4.3 Noise

There is a mine located in close proximity to the application area. The main activities in the area are mining, agriculture. The general area around the site is rural, and noise levels are expected to be in the range of between 45 dBA and 35 dBA during daytime and night-time respectively. The only areas with higher noise levels are expected to be in the immediate vicinity of the existing main roads of N7.

#### 7.4.4 Air Quality

Presently, there is a mine closeted in close proximity to the application area but there are no other heavy industries in the general area of the site. The main activities contributing toward negative impacts in the region would be as a result of mining and the existing road network, the N7.

#### 7.4.5 Visual

Topography of the proposed site is characterised by coastal plains and rocky exposed shores. Between the application area and farms to the east the land is very undulating with a steady increase in elevation eastward.

There are no residential areas near the mining area and no farm residences on the adjacent farms (primarily adjacent to the mine area). The closest residential area is the town of Garies about 54 km to the south. Sensitive viewer locations would be views from coast.

#### 7.4.6 Road Network

The Prospective Mine Access Road and Security Entrance are located off the N7 via gravel road to the site.

## 8 POTENTIAL IMPACTS ASSOCIATED WITH THE PROJECT

This Scoping Study) aims to identify the potential positive and negative impacts (both biophysical and social) associated with the proposed project. These impacts are only “potential” identified for construction and operation at this early stage of the project, and may include the impacts listed in Table 8-1 and Table 8-2, amongst others. However, all of these potential impacts will be assessed and adequately managed and mitigated.

### 8.1 Construction Phase


Environmental issues associated with construction and decommissioning activities:

- Impacts on vegetation;
- Impacts on marine flora and fauna;
- Impacts on ambient noise levels in the area;
- Impacts on vegetation;
- Impacts on heritage resources;
- Impacts on the social aspects of the affected communities within and around the study area.

**Table 8-1: Potential impacts related to the Construction Phase**

Environmental Feature	Potential Impact
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>• Vehicles moving on haul roads</li> <li>• Excavating</li> <li>• Vehicles moving on N7 and Access Mine Roads</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>• Noise generation during the construction phase at the proposed site.</li> </ul>
<b>Socio-economic</b>	<ul style="list-style-type: none"> <li>• Creation of employment opportunities and growth of local economy</li> <li>• Training and up skilling of local community (labour sending towns- Garies/Komaggas etc).</li> </ul>



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## 8.2 Operation Phase

**Table 8-2: Potential impacts related to the Operation Phase**

Environmental Feature	Potential Impact
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>• Vehicles moving on haul roads</li> <li>• Vehicles moving on N7 and Mine Road</li> <li>• Gaseous atmospheric emissions from fuel combustion</li> <li>• Dust generation</li> <li>• Increase in Green House Gases</li> </ul>
<b>Visual</b>	<ul style="list-style-type: none"> <li>• Aesthetics to the existing mine infrastructure in general, but specifically for a number of key receptors.</li> </ul>
<b>Groundwater</b>	<ul style="list-style-type: none"> <li>• Related to the groundwater of the tailings storage facility and backfill due to saline seepage from backfill.</li> </ul>
<b>Heritage</b>	<ul style="list-style-type: none"> <li>• Unearthing of artefacts, fossils during trenching</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>• Increased noise levels due to operational related activities</li> </ul>
<b>Health and Safety</b>	<ul style="list-style-type: none"> <li>• Risks related to fire hazards due to improper workplace safety, health and safety practices of labourers</li> </ul>
<b>Socio-economic</b>	<ul style="list-style-type: none"> <li>• Creation of employment opportunities and growth of local and national economy</li> <li>• Training and up skilling of local community (labour sending towns- Garies and Hopefield)</li> </ul>

## 8.3 Decommissioning Phase

Decommissioning impacts are inherently temporary in duration. Impacts relating to decommissioning and rehabilitation activities (demolition, landscaping, compaction etc.) will be addressed within the EIA phase and in the EMPr. There are however, a few key aspects which will have to be addressed:

- Any fuel still in the pipes must be gathered in drums for removal.
- Upon completion a survey must be undertaken of the area to ensure that no spillages of fuel occurred. Spilled fuel must be gathered in drums and removed to a hazardous landfill site.
- The remaining fuel if not able to be reused as part of the mining operation (including the tank) must be removed without spillage.

## 9 CONCLUSION AND RECOMMENDATIONS

This Scoping Study has been undertaken in accordance with the Environmental Impact Assessment Regulations (2014) published in Government Notices R.982 of 8 December 2014 read with Section 44, of the National Environmental Management Act, 1998 (No 107 of 1998). This was achieved through an evaluation of the proposed project through consideration of existing information and previous studies undertaken in the nearby area.

Based on the Scoping Study undertaken, it can be concluded that the project may have the following potential environmental impacts but that there are no fatal flaws associated with the project. The potential environmental impacts include:

- Increase potential noise impacts from the prospecting operation (trenching) to adjacent sensitive receptors. Due to the setting of the activity, the overall noise impacts will be negligible and hence management methods would be recommended for implementation.
- Impacts
- There is the potential for impacts to water quality as a result of potential saline seepage through the use of seawater in the processing operation. This impact will be further assessed in the EIA phase but is unlikely if the necessary mitigation is implemented.
- Impacts on the social environment are expected during both the construction, operational and decommissioning phases. Both positive and negative impacts are anticipated to occur. The most important potential social benefits associated with the operational phase. Additional employment and associated indirect economic benefits could improve the quality of life of the local community. No further studies to assess this impact are therefore foreseen.

No environmental fatal flaws have been identified with the proposed prospecting activity and it is therefore recommended that the project evaluation continues to the EIA Phase, allowing detailed assessment of potential impacts is outlined in the Plan of Study for EIA (Chapter 10).

## 10 PLAN OF STUDY FOR EIA

This section outlines the proposed process for the next phase of the EIA. Its purpose is to ensure that the EIA phase satisfies the requirements of the NEMA and the 2014 EIA Regulations, Appendix 2: Section 2(i). Accordingly, it outlines the anticipated process and products for the EIA phase which aims to adequately assess and address all potentially significant environmental issues in order to provide the Department of Mineral Resources (DMR) with sufficient information to make an informed decision regarding the proposed project.

### 10.1 Description of Tasks to be undertaken during the EIA Phase


Upon acceptance of the Scoping Report by the Department of Mineral Resources (DMR), specialist studies will be undertaken at the commencement of the EIA Phase. Once the specialist studies have been completed they will be incorporated into an Environmental Impact Assessment Report (EIAR). These tasks are discussed in more detail below.

### 10.2 Aim of the EIA Phase

The EIA Phase to be undertaken will aim to:

- Provide an overall description of the social and biophysical environment affected by the prospecting activities.
- Assess potentially significant impacts (direct, indirect and cumulative, where required) on the study area associated with the prospecting activities.
- Identify and recommend appropriate mitigation measures for potentially significant environmental impacts.
- Complete an EMPr which outlines the proposed mitigation measures;
- Undertake an public involvement process to ensure that issues and concerns raised by I&AP are recorded and addressed.

The EIA Phase will address potential environmental impacts and benefits associated with each life-cycle stage of the development including construction, operation and decommissioning phases with the aim to provide the competent environmental authorities with sufficient information to make an informed decision regarding the proposed project.

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The detailed alternatives will be assessed through detailed specialist studies and will include consideration of the 'no-go' alternative.

### 10.3 Competent Authority Consultation

DMR will be consulted at the following stages during the EIA Phase:

- The DMR will be notified of the release of the EIAR for comment; and
- The updated EIAR with the comments received from I&APs, will be submitted to DMR for consideration and decision-making.

### 10.4 Impacts requiring further investigation

Through the Scoping Study, the following issues were concluded to have impacts of low significance and can be addressed as part of the EMPr:

- Noise and Air Quality Impacts;
- Botanical impacts;
- Groundwater impacts.

As such no further specialist studies in this regard are required; however mitigation measures are to be included in the EMPr forming part of the EIA Phase of the process.

The following specialist assessments will be conducted in the EIA Phase:

- Marine Environmental Impact Assessment;
- Possibly a Heritage investigation if required.

### 10.5 Impact Assessment Methodology

The methodology utilised to assess the significance of potential impacts is discussed in detail below. The significance rating formula is as follows:

1. Significance = Consequence x Probability

Where

2. Consequence = Type of Impact x (Intensity + Spatial Scale + Duration)

And

3. Probability = Likelihood of an Impact Occurring

The formula for calculating Consequence is as follows:

Apply formula for calculating Type of Impact (Nature) = +1 (Positive Impact) or -1 (Negative Impact)

The weight assigned to the various parameters for positive and negative social and heritage impacts is provided for in the formula and is presented in Table 10-1. The probability consequence matrix for social and heritage impacts is displayed in Table 10-2, with the impact significance rating described in Table 10-3.

**Table 10-1: Impact Assessment Parameter Ratings**

Rating	Intensity		Spatial scale	Duration	Probability
	<i>Negative Impacts (Type of Impact = -1)</i>	<i>Positive Impacts (Type of Impact = +1)</i>			
7	Very significant impact on the environment. Irreparable and irreplaceable damage to highly valued species, habitat or ecosystem. Persistent severe damage. Irreparable and irreplaceable damage to highly valued items of great cultural significance or complete breakdown of social order.	Noticeable, on-going social and environmental benefits which have improved the livelihoods and living standards of the local community in general and the environmental features.	International - The effect will occur across international borders	Permanent: No Mitigation The impact will remain long after the life of the Project. The impacts are irreversible.	Certain/Definite. There are sound scientific reasons to expect that the impact will definitely occur.
6	Significant impact on highly valued species, habitat or ecosystem. Significant management and rehabilitation measures required	Great improvement to livelihoods and living standards of a large percentage of population, as well as significant increase in the quality of the	National Will affect the entire country	Beyond Project Life The impact will remain for some time after the life of a Project.	Almost certain/Highly probable It is most likely that the impact will occur.

	to prevent irreplaceable impacts. Irreparable damage to highly valued items of cultural significance or breakdown of social order.	receiving environment.			
5	Very serious, long-term environmental impairment of ecosystem function that may take several years to rehabilitate. Very serious widespread social impacts. Irreparable damage to highly valued items.	On-going and widespread positive benefits to local communities which improves livelihoods, as well as a positive improvement to the receiving environment.	Province/Region Will affect the entire province or region.	Project Life The impact will cease after the operational life span of the Project.	Likely The impact may occur
4	Serious medium term environmental effects. Environmental damage can be reversed in less than a year. On-going serious social issues. Significant damage to structures / items of cultural significance.	Average to intense social benefits to some people. Average to intense environmental enhancements.	Municipal Area Will affect the whole municipal area.	Long term 6-15 years to reverse impacts.	Probable Has occurred here or elsewhere and could therefore occur.
3	Moderate, short-term effects but not affecting ecosystem functions. Rehabilitation	Average, on-going positive benefits, not widespread but felt by some.	Local Extending across the site and to nearby settlements.	Medium term 1-5 years to reverse impacts	Unlikely Has not happened yet but could happen once in the lifetime

	<p>requires intervention of external specialists and can be done in less than a month.</p> <p>On-going social issues. Damage to items of cultural significance.</p>				<p>of the Project, therefore there is a possibility that the impact will occur.</p>
2	<p>Minor effects on biological or physical environment. Environmental damage can be rehabilitated internally with/without help of external consultants.</p> <p>Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.</p>	<p>Low positive impacts experienced by very few of population.</p>	<p>Limited Limited to the site and its immediate surroundings</p>	<p>Short term Less than 1 year to completely reverse the impact.</p>	<p>Rare/improbable Conceivable, but only in extreme circumstances and/ or has not happened during lifetime of the Project but has happened elsewhere. The possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate mitigation measures.</p>
1	<p>Limited damage to minimal area of low significance that will have no impact on the environment. No irreplaceable loss of a significant aspect to the environment.</p> <p>Minimal social</p>	<p>Some low-level social and environmental benefits felt by very few of the population.</p>	<p>Very limited Limited to specific isolated parts of the site.</p>	<p>Immediate Less than 1 month to completely reverse the impact.</p>	<p>Highly unlikely/None Expected never to happen.</p>

	impacts, low-level repairable damage to commonplace structures.			
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**Table 10-2: Probability Consequence Matrix for Impacts**


		Significance																																					
		7	6	5	4	3	2	1	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21										
Probability	7	-147	-140	-133	-126	-119	-112	-105	-98	-91	-84	-77	-70	-63	-56	-49	-42	-35	-28	-21	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140	147
	6	-126	-120	-114	-108	-102	-96	-90	-84	-78	-72	-66	-60	-54	-48	-42	-36	-30	-24	-18	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126
	5	-105	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105
	4	-84	-80	-76	-72	-68	-64	-60	-56	-52	-48	-44	-40	-36	-32	-28	-24	-20	-16	-12	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84
	3	-63	-60	-57	-54	-51	-48	-45	-42	-39	-36	-33	-30	-27	-24	-21	-18	-15	-12	-9	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63
	2	-42	-40	-38	-36	-34	-32	-30	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
	1	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		Consequence																																					

**Table 10-3: Significance Threshold Limits**

Score	Description	Rating
109 to 147	A very favourable impact which may be sufficient by itself to justify implementation of the Project. The impact may result in permanent positive change.	Major (positive)
73 to 108	A favourable impact which may help to justify the implementation of the Project. These impacts would be considered by society as constituting a major and usually a long-term positive change to the (natural and/or social) environment.	Moderate (positive)
36 to 72	A significant positive impact. However, by itself this impact is insufficient to justify the implementation of the Project. These impacts will usually result in positive medium to long-term effect on the social and/or natural environment.	Minor (positive)
3 to 35	A small positive impact. This impact will result in medium to short term effects on the social and/or natural environment.	Negligible (positive)
-3 to -35	An acceptable negative impact for which mitigation is desirable	Negligible (negative)



	but not essential. By itself this impact is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in negative medium to short term effects on the social and/or natural environment. The impacts are reversible and will not result in the loss of irreplaceable aspects.	
-36 to -72	A significant negative impact which requires mitigation. By itself this impact is insufficient avoid the implementation of the Project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in negative medium to long-term effect on the social and/or natural environment.	Minor (negative)
-73 to -108	A significant negative impact which may prevent the implementation of the Project. These impacts would be considered by society as constituting a major and usually a long-term change to the (natural and/or social) environment and result in severe effects. The impacts may result in the irreversible damage to irreplaceable environmental or social aspects should mitigation measures not be implemented.	Moderate (negative)
-109 to -147	A very serious negative impact which may be sufficient by itself to prevent implementation of the Project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects. The impacts will be irreplaceable and irreversible should adequate mitigation and management measures not be successfully implemented.	Major (negative)

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The cumulative impacts of a project will also be considered. These refer to the impact of an activity that may become significant when added to the existing activities currently taking place within the surrounding environment.

## 10.6 Public Participation Process

A public participation process will be undertaken by Braaf during the EIA Phase. Consultation with key stakeholders and I&APs will be ongoing throughout the EIA Phase. During the entire consultation process, stakeholders and I&APs will be encouraged to identify issues of concern or highlight positive aspects of the prospecting activity, and to comment on the findings of the EIA Phase. Various opportunities will be provided for stakeholders and I&APs to be involved in the EIA Phase of the process, as follows:

- Focus group or public meetings (key stakeholders and I&APs will be notified of these meetings)
- One-on-one meetings (e.g. with surrounding landowners).
- Written, faxed or e-mail correspondence.
- Telephonic consultation sessions (consultation with various parties from the EIA project team).

The EIA Report will be compiled in accordance with Appendix 3: Section 3 of the 2014 EIA Regulations and will present the findings of the specialist studies undertaken. The Draft EIA Report will be made available for a 30-day review period prior to finalisation and submission to the DMR for decision-making. In order to provide an overview of the findings of the EIA process and facilitate comments, a public meeting may be held during this public review period.

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## 12 EAP 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
- c) any information provided to interested and affected parties and any responses; by the EAP to comments or inputs made by interested or affected parties.

**Appendix A      CV**

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**ABBRIDGED CURRICULUM VITAE  
OLIVIA BRAAF**

**Name of Firm:** Braaf Environmental Practitioners

**Name:** Olivia Jacqueline Braaf

**Profession:** Environmental Practitioner

**Contact nr:** +27(0) 860 111 382 (Tel)

+27 (0) 866 587 676 (Fax)

**E-mail:** [olivia@braafsa.com](mailto:olivia@braafsa.com)

**MEMBERSHIP IN PROFESSIONAL SOCIETIES:**

- Registered member of the South African affiliate of International Association for Impact Assessment (IAIAsa) Western Cape Branch

**KEY QUALIFICATIONS:**

Olivia has a BSc - Majoring in Zoology and Botany in 2000 and in 2001 completed her BSc Honours (Marine Zoology) at the University of the Western Cape. She also completed a course in Seaweed Mariculture for Community Development from the International Ocean Institute, South Africa in 1999 and an ISO 14001 Auditing Course with the SABS.

She has been active in the environmental field for a number of years, mainly focusing on Environmental Impact Assessments. Prior to establishing her own environmental consultancy she was employed as a Senior Environmental Practitioner in Cape Town. Here she gained first hand knowledge and experience in Environmental Impact Assessments, Environmental Management Plans, Public Participation Programmes, Environmental Policy and Planning Research, Environmental Feasibility Studies, Environmental Management Systems (ISO 14001). Olivia has attended numerous workshops which include the CSIR 2007 Strategic Environmental Assessment Workshops amongst others. Olivia has project managed numerous multi-disciplinary teams both local and international across a range of fields within the environmental sector.

**KEY PERFORMANCE AREAS**

- Environmental Planning and Policy Development
- Plan, develop and implement Stakeholder Engagement Programmes and Social Accords
- Conduct and manage social research and surveys
- Project data management
- Liaise and communicate with interested and affected parties
- Public participation and information sharing
- Identify, assess and recommend mitigation measures for social impacts
- Lead and direct specific tasks to team members
- Coordinate and manage support staff
- Client liaison and team management
- Report writing
- Organize and facilitate workshops
- Conduct and undertake Environmental Impact Assessments
- Conduct and undertake Environmental Management Plans
- Environmental Site Management

**TRACK RECORD:**

- Environmental planning component of the Agricultural Land Evaluation for the City of Cape as an informant to the New Spatial Development Framework for the City of Cape Town (2006)

- Environmental planning component of the Langerberg-Kraaifontein Spatial Development Framework for the City of Cape Town: Oostenberg Municipality
- The Rapid Review of Polo Fields and Golf Courses in the Western Cape for the Provincial Department of Environmental Affairs and Development Planning.
- Environmental Impact Assessment for **Miska Fairyland Resort and Residential Villa Development**, Seychelles.
- Environmental Impact Assessment for the proposed establishment of a Granite Quarry at Montagne Posée, Seychelles.
- Environmental Impact Assessment for the proposed Residential-Marina and Commercial Development of **Eden Island** adjacent to the mainland Mahé, Seychelles.
- Environmental Components for the **Berg Water Dam**, Franschoek
- Redevelopment of **Glencairn Station**, Glencairn
- Commercial-retail and residential development in **Palmyra Road**, Claremont
- Environmental Impact Assessment for:
  - Mont Clair Residential Development for social housing, Mitchell's Plain
  - Proposed mixed residential development of Mooiplaas and Blindfontein, Piketberg
  - Residential development of the Remainder of Portion 62 of the Farm Haasendal, No. 222, Kuils River
  - Proposed mixed use integrated residential development in Piketberg.
  - Proposed Development of Ruytershove Farm, Bottelary, Stellenbosch to accommodate residential, tourism, retail and commercial use.
  - Koeël Bay Lodge Development for Halcyon Hotels, Hout Bay in collaboration with SANParks.
  - Berg Water Housing Development, TCTA.
  - The Change in dam wall and supplementary scheme and Access Roads for the Berg Water Project, Franschoek.
  - The Noordhoek Sewerage Upgrade, Noordhoek.
  - SANKWA Private Nature Reserve Development in L'Agulhas which included a proposed desalination plant.
  - Nomzamo Central Community Area, Somerset West.
  - A Game Farm, Tourist and Conference Facilities at Knorhoek, Sir Lowry's Pass.
  - Proposed rezoning and development of residential units and private nature reserve on Erven 569, 575 & 588, Napier.
  - Vlakkeland Cemetery, Wellington.
  - Proposed Helderberg Coastal Sewer from the Lourens River Pump Station to the Macassar Waste Water Treatment Works, Somerset West.
- Basic Assessments for:
  - **Paarl 2010 Waterfront Development** along the Berg River, Paarl
  - Proposed mixed use development on Erf 4880, which includes rainwater harvesting, wind energy technologies and solar heating components, Kleinmond
  - Proposed development of Farm 527/45, Paarl.
  - Proposed development of Erven 1649 and 1657, Grabouw.
  - Proposed apartments on Erven 215-219 & 617, Gansbaai.
  - A 12 storey residential apartment complex, Beach Road, Strand.
  - Erf 34 Cemetery, Wellington.
  - Lafarge Concrete Batching Plant, Melkbosstrand.
  - Shoprite-Checkers, Gordon's Bay.
  - Proposed winery on Hemel en Aarde Farm (Hamilton Russell Vineyards), Hermanus
  - Proposed agri-industrial development on Farm 750/2 Klapmuts
  - Proposed development of Farm 241/23, Kuils River
  - Proposed development of farm Groenland no 214/12, Brackenfell
  - Proposed development of Farm 311/27, Kraaifontein.
  - Proposed development of Farm 311 Portions 22 and 138, Kraaifontein.
  - Proposed development of Erf 30879, Kraaifontein.
  - Proposed establishment of two lattice masts and associated infrastructure at SENTECH's Constantiaberg telecommunications base station.
  - Proposed residential development of Farm 527 Portions 57 and 58, Paarl.

- Proposed residential development of Erf 4805, Paarl.
  - Proposed residential development of Erf 389, Eerste River.
  - Proposed residential development of Farm 348, (watershed of the Breë and Breede River) Wolseley.
  - Proposed industrial park on Erf 14121, Bellville Industria.
  - Proposed residential development on Erf 2230, Wellington.
  - Proposed residential development of Erf 309, Brackenfell.
  - Proposed metal scrap yard for SA Metal, Blackheath.
  - Proposed resort development on Erf 15280, Paarl.
  - Proposed residential development of Erven 1278, 1446, 1457, Mitchells Plain.
  - Proposed residential development of Erf 22, Mandalay.
  - Proposed residential development of Erf 11679, Kraaifontein.
  - Proposed development of Erf 23322, Mitchells Plain.
  - Proposed development of Erf 26661 Mitchells Plain.
  - Proposed retirement-residential development in Porterville.
  - Proposed University of the Western Cape Station Parking Precinct, UWC. Erf 8006, Wellington.
  - Welcome Estate Land Reformation, Athlone.
- Scoping Studies for:
    - Environmental Assessment for Portions 51 and 52 of Farm 918 Gustrouw, Somerset West.
    - Environmental Assessment for Portion 53 of Farm 918 Gustrouw, Somerset West.
    - Environmental Assessment for Portion 29 of Farm 918 Gustrouw, Somerset West.
    - Environmental Assessment for various Telecommunications Base Stations in the Western Cape.
    - The co-location of a Metropolitan Radio Trunk System, a Radio System for SAPS, Transtel and the City Of Cape Town (CoCT).
    - Cemeteries in Swellendam.
    - Klip-North Cemetery, Grassy Park – City of Cape Town.
    - Approximately 25 MTN cellular base stations within the Western Cape.
    - The rezoning of Portions 51, 52, 53 and 29 of Farm 918 Gustrouw, Somerset West.
    - Approximately 24 Regularisation MTN cellular masts sites where application under the Environment Conservation Act was not submitted to DEA&DP.
- Public Participation Process for:
    - The Bontebok National Park and Agulhas National Park, SANParks.
    - The Proposed Majestic and New Kings Hotel Site Redevelopment Project: Heritage Impact Assessment: Stage 2
- Public Engagement Strategy for the proposed development of Kurland, The Craggs (Plettenberg Bay area).
- Environmental Management Plan for:
    - Proposed Residential-Marina and Commercial Development of Eden Island adjacent to the mainland Mahé, Seychelles
    - Miska Fairyland Resort and Residential Villa Development, Seychelles.
    - Proposed Scrap Yard and Warehousing in Blackheath Industria
    - Proposed Conference facilities and a boutique hotel, Paarl
    - Rosedon Place, Landsdowne
    - Erf 389 residential development, Eerste River
    - Mixed Use development which includes rainwater harvesting and wind energy technologies and solar heating components, Kleinmond
    - A residential development, Riverton Mews & Norwood Gardens, Ruyterswacht.
    - Vaalfontein Cemetery, Somerset West.
    - Metro-South East Cemetery, Eerste River.
    - Khayelitsha Cemetery, Khayelitsha.
    - A 12 storey apartment complex, Beach Road, Strand.
    - Proposed development of Farm 527/45, Paarl.
    - Erf 34 Cemetery, Wellington.



- Proposed development of Farm 241/23, Kuils River
  - Proposed development of Farm 311/27, Kraaifontein.
  - Proposed development of Erf 30879, Kraaifontein.
  - Proposed establishment of two lattice masts and associated infrastructure at SENTECH's Constantiaberg telecommunications base station.
  - Proposed development of farm Groenland no 214/12, Brackenfell
- Mineral and Petroleum Resources Development Act, 2002, Applications - Environmental Management Programme –Permit; Mining Right Applications; Renewal of Mining Rights; Mine Closures; Performance Assessments; Mining Work Programmes
    - Remainder of Farm 996, Blue Downs
    - Farm 996/1, Blue Downs
    - Erf 1905, Blue Downs
    - Farm 508/12 (1), Delft
    - Farm 508/12 (2), Delft
    - Erf 989, Mfuleni
    - Erf 1896, Blue Downs
    - Erf 21066 (1), Blue Downs
    - Erf 21066 (2), Blue Downs
    - Farm 640/110, Macassar
    - Farm 640, Stellenbosch
    - Farm No. 77, Cape RD
    - Farm 81, Cape RD
    - Farm 101, Cape RD
- Environmental Amendment Applications
    - Farm 241/23, Kuils River – Communicare
    - Erf 15280, Paarl – Valley Ministries
- Feasibility Studies
    - Erf 309, Brackenfell, Mamhold Properties
    - Erf 169, Raithby – Ken Forrester Vineyards
    - Farm 72/108, Waterval, Theewaterskloof Dam
- Environmental exemptions for:
    - A pesticide warehouse in Caledon.
    - A number of cemeteries for Drakenstein Municipality.
    - Extension of accommodation units on a game farm, The Vale, Beaufort West.
- Environmental Protection Plan: For the wreck removal of the Safmarine Agulhas that ran aground in the Port of East London, which included the extension and reinforcement of the breakwater and construction of a slipway.
  - Project management and co-ordination of environmental processes for a number of cemeteries within Cape Town and Swellendam.
  - Environmental Scan for the proposed relocation and establishment of Betafence at an existing industrial warehouse within the old Berg River textile industrial park, Paarl.

**LINDI HENDRICKS**

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**Personal Information**

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I obtained the Bachelor of Arts degree (BA) from Rhodes University in 2013, and I have recently written my final Bachelor of Science Honours exam in Geography at the University of South Africa, results pending mid-February 2016. I have to date also managed to gain six months professional experience in my field of study during the years 2014 and 2015.

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**Employment History**

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Name: Ilizwe Environmental

Dates: October 2015- January 2016

Position held: Junior Environmental Assistant Consultant

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Name: Indwe Environmental Consulting cc

Dates: September 2014- December 2014

Position held: Intern

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## Education

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2014/2015: Currently registered for a Bachelor of Science Honours Degree at University of South Africa (UNISA) completed January 2016.

2013: Obtained Bachelor of Arts Degree at Rhodes University majoring in Geography and Environmental Science.

2008: Matriculated at Clarendon School for Girls East London

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## Skills

**Administrative Skills-** basic filing, sorting, writing letters, compiling and sending faxes, answering the phone, and assembling reports.

**GIS Skills (Basic)** - Completed the prescribed hours for the GIS module during the undergraduate degree at Rhodes University. Also obtained some practical experience with an open source GIS during the internship.

**Marketing-** Assisted in writing proposals, preparing tenders, and quotes

**Project related work:** literature search and review, data capture, application forms, report writing, and public participation process.

**MS Office Suite-** Proficient in the MS Office suite.

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## Community Service

Volunteered at the SPCA in Grahamstown during my undergraduate study (2009-2013).

Received the SPCA service award in Matric (2008)

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## Languages

English

Afrikaans

Xhosa

## **Appendix B      Coordinates of Application Area**

<b>Point</b>	<b>Longitude</b>	<b>Latitude</b>
1	17.602504	-30.911405
2	17.602260	-30.911145
3	17.602325	-30.910863
4	17.602089	-30.910692
5	17.601990	-30.910371
6	17.601858	-30.910094
7	17.601658	-30.909840
8	17.601991	-30.909385
9	17.602115	-30.909345
10	17.601980	-30.908839
11	17.601999	-30.908269
12	17.602131	-30.907829
13	17.602177	-30.907449
14	17.602157	-30.907317
15	17.601975	-30.907275
16	17.601848	-30.907403
17	17.601036	-30.907413
18	17.600759	-30.907281
19	17.600487	-30.907268
20	17.599954	-30.907373
21	17.599579	-30.906790
22	17.599378	-30.906470
23	17.599227	-30.906075
24	17.599024	-30.905703
25	17.599372	-30.905290
26	17.599555	-30.905167
27	17.599314	-30.904820
28	17.599419	-30.904426
29	17.598974	-30.904079
30	17.598871	-30.903811
31	17.598685	-30.903622
32	17.598701	-30.903199
33	17.598645	-30.902990
34	17.598548	-30.902804
35	17.598384	-30.902770
36	17.598084	-30.902377
37	17.598233	-30.902183
38	17.598138	-30.901625
39	17.598000	-30.901556
40	17.596917	-30.901633
41	17.596697	-30.901549
42	17.596235	-30.901599
43	17.595752	-30.901783
44	17.595337	-30.902125
45	17.595179	-30.902112
46	17.595011	-30.901915
47	17.594923	-30.901635
48	17.594661	-30.901500
49	17.594486	-30.901210

<b>Point</b>	<b>Longitude</b>	<b>Latitude</b>
50	17.594244	-30.900657
51	17.594330	-30.900342
52	17.594271	-30.900156
53	17.594330	-30.900027
54	17.594014	-30.899805
55	17.593957	-30.899434
56	17.593894	-30.899174
57	17.594020	-30.898767
58	17.593952	-30.898632
59	17.593856	-30.898386
60	17.594001	-30.898080
61	17.594136	-30.897958
62	17.594187	-30.897859
63	17.594170	-30.897638
64	17.594229	-30.897378
65	17.594172	-30.897253
66	17.594082	-30.896512
67	17.594192	-30.896018
68	17.594242	-30.895509
69	17.594379	-30.895031
70	17.594648	-30.894866
71	17.594544	-30.894676
72	17.594561	-30.894249
73	17.594752	-30.893838
74	17.595166	-30.893505
75	17.595142	-30.893249
76	17.594895	-30.893053
77	17.594873	-30.892530
78	17.595011	-30.892200
79	17.594684	-30.891875
80	17.594736	-30.891074
81	17.594201	-30.890925
82	17.593945	-30.890813
83	17.593368	-30.890356
84	17.593112	-30.889892
85	17.593011	-30.889819
86	17.592765	-30.889962
87	17.592421	-30.889987
88	17.592331	-30.890120
89	17.591973	-30.890315
90	17.591296	-30.890123
91	17.590823	-30.889893
92	17.590714	-30.889535
93	17.590540	-30.889199
94	17.590419	-30.889076
95	17.590414	-30.888799
96	17.590442	-30.888570
97	17.590269	-30.888367
98	17.590205	-30.888150

<b>Point</b>	<b>Longitude</b>	<b>Latitude</b>
99	17.590119	-30.887996
100	17.589725	-30.888094
101	17.589471	-30.888020
102	17.589382	-30.887815
103	17.589380	-30.887343
104	17.589211	-30.886947
105	17.589571	-30.886669
106	17.589693	-30.886548
107	17.589772	-30.886313
108	17.589793	-30.886177
109	17.589779	-30.886127
110	17.589608	-30.885942
111	17.589539	-30.885912
112	17.589300	-30.886000
113	17.589007	-30.885946
114	17.588903	-30.885735
115	17.588942	-30.885393
116	17.588919	-30.885258
117	17.588712	-30.885184
118	17.588502	-30.884409
119	17.588035	-30.884146
120	17.587912	-30.883926
121	17.587741	-30.883922
122	17.587283	-30.883488
123	17.586453	-30.882690
124	17.586367	-30.882512
125	17.586347	-30.882347
126	17.586077	-30.881932
127	17.586414	-30.881471
128	17.586664	-30.881250
129	17.586884	-30.881101
130	17.587026	-30.880962
131	17.587211	-30.880872
132	17.587173	-30.880726
133	17.587028	-30.880528
134	17.586841	-30.880337
135	17.586376	-30.880072
136	17.586200	-30.880034
137	17.585805	-30.880026
138	17.585482	-30.879876
139	17.585150	-30.879321
140	17.584923	-30.879023
141	17.584792	-30.878726
142	17.584390	-30.878792
143	17.584102	-30.878792
144	17.583551	-30.878618
145	17.583358	-30.878267
146	17.583277	-30.877912
147	17.583395	-30.877582

<b>Point</b>	<b>Longitude</b>	<b>Latitude</b>
148	17.583539	-30.877426
149	17.583597	-30.877178
150	17.583758	-30.877005
151	17.583786	-30.876884
152	17.583776	-30.876674
153	17.583880	-30.876416
154	17.583869	-30.876346
155	17.583594	-30.876098
156	17.583710	-30.875440
157	17.583975	-30.875135
158	17.583691	-30.874829
159	17.583545	-30.874324
160	17.583354	-30.874161
161	17.583273	-30.873813
162	17.583422	-30.873637
163	17.583460	-30.873283
164	17.583275	-30.873036
165	17.582933	-30.872957
166	17.582678	-30.872914
167	17.582337	-30.872877
168	17.581867	-30.872608
169	17.581539	-30.872256
170	17.581307	-30.871958
171	17.581493	-30.871446
172	17.581642	-30.871288
173	17.581674	-30.871170
174	17.581397	-30.871173
175	17.581206	-30.871105
176	17.581126	-30.870900
177	17.580924	-30.870538
178	17.580641	-30.870433
179	17.580587	-30.870002
180	17.580189	-30.869370
181	17.580150	-30.869130
182	17.579998	-30.868933
183	17.580013	-30.868755
184	17.580107	-30.868625
185	17.584138	-30.867859
186	17.598404	-30.891660
187	17.605117	-30.910320
188	17.602504	-30.911405



## **Appendix C      Public Participation**

## **Appendix C1 I&AP Database**

Name	Organisation
	SAHRA
Mduduzi Cebekhulu	Department of Water and Sanitation
	Coastal Phosphates
	De Beers Consolidated Mines (Pty) Ltd
The Municipal Manager	Kamiesberg Municipality
Integrated Development	Department of Environment, Nature and Conservation
Christiaan Fortuin	Namaqua District Municipality
Angela Isaks	SANParks
Ward 2 Councillor	Kamiesberg Municipality
Property Management	Department of Roads and Public Works
The Director	Kambrolandskap Koöperatief Ltd
Mulalo Tshikotshi	DEA: Oceans and Coasts

## **Appendix C2    Background Information Document**

# OPENBARE RAADPLEGING EN OMGEWINGS-INVLOED BEPALING VIR 'N DIAMANT PROSPEKTEERREG AANSOEK EN INFRASTRUKTURELE AKTIWITEITE OP DIE OOSTEKLIKE GRENS VAN KONSESSIE 9(A) SOWEL AS DIE SEE EN DIE WESTELIKE GRENS VAN RESTANT PLAAS EILAND PUNT NOORD NR. 549, LANDDROSDISTRIK NAMAKWALAND NOORD-KAAP STREEK

DMR Verw.nr: NCS 30/5/1/1/2/ (11935) PR

## AGTERGROND INLIGTINGSDOKUMENT (AID) EN UITNODIGING VIR KOMMENTAAR APRIL 2017

### Inleiding

Braaf Environmental Practitioners (Braaf) is deur Adomamanzi (Edms) (Bpk) ["Adomamanzi"], aangestel as die onafhanklike praktisyn in omgewingbepaling om die prosesse ten opsigte van omgewingsmagtiging en verwante belanghebbende-skakeling te onderneem. 'n Geïntegreerde proses sal gevolg word om aan die bepalings van die Wet op Nasionale Omgewingsbestuur (NEMA) (Wet 107 van 1998); Regulasies oor Omgewingsimpakbepaling, 2014 (GNR 982 – 985); Wet op Nasionale Omgewingsbestuur: Afval, (NEM:WA), 2008 (Wet 59 van 2008); en Wet op Minerale en Petroleum Hulpbronne Ontwikkeling (Wet 28 van 2002) te voldoen.

### Doel van hierdie dokument

Die doel van hierdie skrywe is om u te voorsien van inligting oor die beoogde prospekterings aktiwiteit en sluit die volgende in:

- Inleiding
- Besikbaarheid van Omvangbepalingsverslag vir openbare kommentaar;
- Hoe belanghebbendes aan hierdie proses kan deelneem;
- Uitnodiging om as 'n Belangstellende en Geaffekteerde Party te registreer; en
- Volgende stappe in die omgewingsmagtigingsproses.
- U word uitgenooi om kommentaar te lewer of verdere inligting aan te vra deur met die belanghebbendeskakelkantoor in verbinding te tree – besonderhede verskyn onder aan hierdie skrywe.

### Ligging

Die aansoek area vorm die oosteklike grens van Konsessie 9(a) en sluit 'n gedeelte van die see tot teen aan die westelike grens van Restant Plaas Eiland Punt Noord Nr. 549. Dit is ongeveer 2.4km suid van die Groenriviermond en is toeganklik vanaf die N7 noordwaarts na Springbok vanaf 'n grondpad wat ongeveer 4km suid van Garies na Groenriviermond aanskakel na die weste. Deur hierdie grondpad vir 80km te volg na die riviermond kan die projek gebied bereik word waar dit verby die vuurtoring loop (Figuur 1). Die voorgestelde aansoek behels ongeveer 230 hektaar in totaal.

### Projek-oorsig

Daar word beoog dat die eksplorasië- / prospekterprogram die volgende sal insluit: geofisiese opnames, mynbou in die see, grootmaat monsterneming, analitiese ontleding (indringende) en geologiese modellering en hulpbron skatting (nie-indringende) oor 'n oor 'n 5 jaar tydperk. Daar is tye gedurende die projek waar die fases sal oorvleuel.

**Fase 1 (0-60 maande)** - sal bestaan uit nie-indringende en indringende werk wat geologiese en geofisiese opnames en mynbou die see behels. In hierdie fase sal Adomamanzi gebruik maak van gekwalifiseerde duikers wat met trekkers werk wat toegerus is met suig pompe wat gruis uit die see pomp, sowel as die gebruik van ski bote wat dieselfde toerusting het (suig pompe). 'n 6 duim suig pomp sal die gruis opsuig, waar dit op land gesorteer en gekeur sal word. Die suig pomp sal aan die trekker gekoppel wees wat die krag voorsien saam met die sorteeringsoperasie. Die gruis word aanlandig gekeur om growwe gruis uit te skakel waarna dit geklassifiseer word volgens grootte. Die gruis word dan gewas met Diggers Dream jigs om die diamante te verwyder.

Ski bote wat toegerus is met dieselfde toerusting om die gruis (diamant draende materiaal) uit die see te verwyder sal bykomend tot landgebaseerde duikersbedrywighede gebruik word. Gruis word van die skiboot gepomp met 'n suigpyp waarna die materiaal gekeur en dan geklassifiseer word in lyn met die aanlandige metodes.

Nie-diamantdraende materiaal word na keuring en klassifisering terug gepomp in die see. Geen chemiese stowwe word bygevoeg, net seewater gebruik word.

**Fase 2 (6-60 maande)** sal bestaan uit indringende – Die posisie van die loopgrawe sal bepaal word deur die resultate van die geofisiese opname en sal afgebakende alluviale valle en of paleo kanale volg. Loopgrawe sal nie langer as 50m in lengte en 20m wyd wees nie en sal tot die klipbank ongeveer 7m diep wees.

Die aantal loopgrawe sal nie meer as 5 op enige gegewe tyd wees nie. Bestaande slote sal eers gerehabiliteer word voordat die volgende sloot gegrawe word. Loopgrawe sal gedoen word met 'n 30 ton masjiengraaf. Bogrond en bolae sal verwyder en opgehoop word. Loopgrawe sal tot grondlaag gegrawe word en al die gruis sal opgehoop word naby die verwerkings aanleg. Materiaal groter as 75mm sal verwyder word met 'n "grizzly" skerm. Die oorskot materiaal sal dan met water gewas word in 'n "Porrel Plan", waar die konsentraat ontwater en verwyder word om die sand te verwyder. Die oorblywende materiaal sal dan oor 'n "grease tafel" beweeg waar die diamante verhaal word. Nadat die gruis gewas is sal dit saam met die oorskotmateriaal (overburden) en sand gebruik word om die loopgrawe op te vul. Na opvulling van die loopgrawe sal die verwyderde bogrond (topsoil) terrug geplaas word.

**Fase 3 [Hulpbron skatting]:** 3D Modellering gebaseer op loopgrawe en porreplan resultate sal gebruik word om hulpbron skatting te doen.

Toegangspaaie sal in konsultasie met grondeienaars gevestig word, en waar prakties sal bestaande paaie so ver moontlik gebruik word. Die projek area is tans toeganklik vanaf 'n grondpad wat ongeveer 4km suid van Garies na Groenriviermond aanskakel na die weste. Deur hierdie grondpad vir 80km te volg na die riviermond kan die projek gebied bereik word waar dit verby die vuurtoring loop.

### Wetgewende Raamwerk

Die prospekteringsaktiwiteit benodig goedkeuring in terme van die volgende wette:

Wet	Toepassing op projek
Wet op Minerale en Petroleum Hulpbronne Ontwikkeling (Wet 28 van 2002)	In terme van Regulasie 16 van die MPH0 moet aansoek doen vir 'n prospekterings reg vir die opsetlike soek na minerale deur middel van enige metode, a) wat die oppervlak of die ondergrond van die aarde of enige gedeelte van die aarde wat onder die see of onder water is versteur.
Wet op Nasionale Omgewingsbestuur (NEMA) (Wet 107 van 1998): Regulasies oor Omgewingsimpakbepaling, 2014 (GNR 982 – 985)	Die projek behels aktiwiteite in terme van die Regulasies oor Omgewings-impakbepaling, 2014 (GNR 982 – 985) wat omgewings goedkeuring benodig voordat dit kan begin. Hierdie aktiwiteite is soos volgs: <b>Gelysde kennisgewing No. 1</b> – Aktiwiteite: 19, 20, 22, 27; <b>Gelysde kennisgewing No. 2</b> – Aktiwiteite: 19 & 21
Wet op Nasionale Omgewingsbestuur: Afval, (NEM:WA), 2008 (Wet 59 van 2008)	Vanaf 25 Julie 2015, benodig alle myn oorskothope of restante deposito's 'n afvalbestuurslisensie (GN. No. R.633 – Kategorie A, Aktiwiteit No. 15).

### Besikbaarheid van Omvangbepalingsverslag vir openbare kommentaar

Soos bepaal in die NEMA-regulasies 2014, is die Omvangbepalingsverslag vanaf Woensdag, 5 April 2017 to 9 Mei 2017 vir openbare kommentaar beskikbaar by die Komaggas Biblioteek/Gemeenskapsaal en op die Braaf webwerf – [www.braafsa.com](http://www.braafsa.com) (Documents for Comment – Admiralty Reserve). Die Omvangbepalingsverslag beskryf die beoogde projek en die prosesse van omgewingsmagtiging en gepaardgaande belanghebbende-skakeling. Alle B&GP'e word aangemoedig om kommentaar op die verslag te lewer en vroe of knelpunte te opper.

U kommentaar en voorstelle oor enige aspek van die beoogde projek, insluitend die tegniese en belanghebbende-skakelprosesse, sal help om die tegniese studies te fokus, bydra tot die proses van omgewingsimpakbepaling en uiteindelik die owerhede ondersteun in hul besluitneming ten opsigte van die magtiging van die beoogde projek. Die bevoegde owerheid vir hierdie projek is die Departement van Minerale Hulpbronne (DMH).

Indien u met die omgewingskonsultant in aanraking wil kom, kontak asseblief vir Olivia Braaf op die kontakbesonderhede onder. Skriftelike indiening vir en/of teenkantings rakende die projek kan ingedien word deur die aangehegde registrasie en kommentaar blad te voltooi en aan Olivia Braaf te stuur by 9 Mei 2017.

## Die sperdatum vir die indiening van kommentaar is

**9 Mei 2017**

**Publieke vergadering:** U word hiermee uitgenooi om 'n Informatie sessie en Publieke Ope Dag by te woon waar die projek bekend gestel gaan word en u die geleentheid sal hê om vrae te stel en u opinie te lig rakende die projek. Die Publieke Ope Dag sal op die 13 April 2017 by die Komaggas Gemeenskapsaal vanaf 16:00 (nm) tot 18:00 (nm) plaasvind.

### Potensiële omgewingsimpakte

Die volgende voorlopige omgewingskwessies is geïdentifiseer en sal gedurende die Prospekterreg aansoekproses ondersoek word:

- Die impak van die aktiwiteite en ge-assosieerde infrastruktuur op die fisiese omgewing;
- Vestiging van uitsluiting sones;
- Verlies van die gevoel van plek deur die omliggende eienaars;
- Besoedeling van grond as gevolg van stortings of lekkasies;
- Impak op seewiere en seelewe;
- Verlies van Biodiversiteit.

Prospekterwerk is normaalweg klein en versteuring van die omgewing/ander mynbou-aktiwiteite en visbedryf is minimaal. Dit is ook 'n vereiste dat die versteurde areas gerehabiliteer word na hul oorspronklike toestand.

### Volgende stappe in die omgewingsmagtigingsproses.

Na afloop van die omvangbepalingsfase, sal 'n Omgewingsimpakbepalingsverslag en Omgewings-bestuursplan (OBP) vir openbare kommentaar beskikbaar gestel word. Belanghebbendes sal in kennis gestel word van die beskikbaarheid van hierdie verslag, datums van enige vergaderings en waar die verslag beskikbaar sal wees vir insae en aangebied en bespreek sal word. Verwys asseblief na die besonderhede oor die omgewingsmagtigingsproses hieronder

### Kontak besonderhede van die Konsultant:

Indien u enige vrae het, verdere inligting benodig, 'n knelpunt wil opper of voorstelle wil maak, tree asseblief in verbinding met Braaf se belanghebbende-skakelspan by:

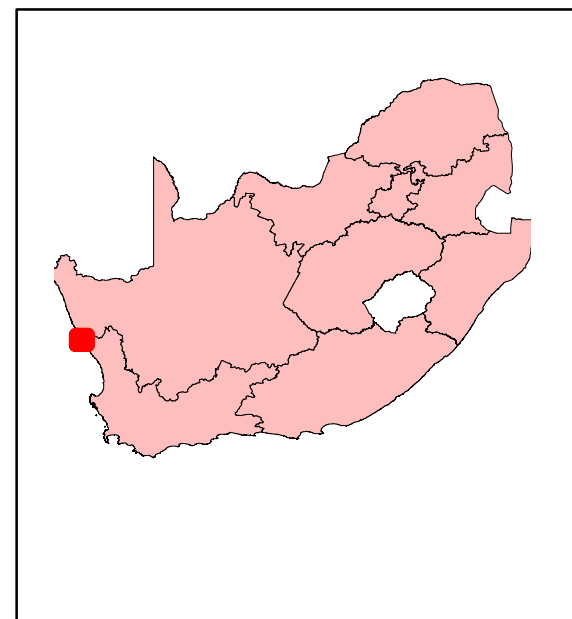
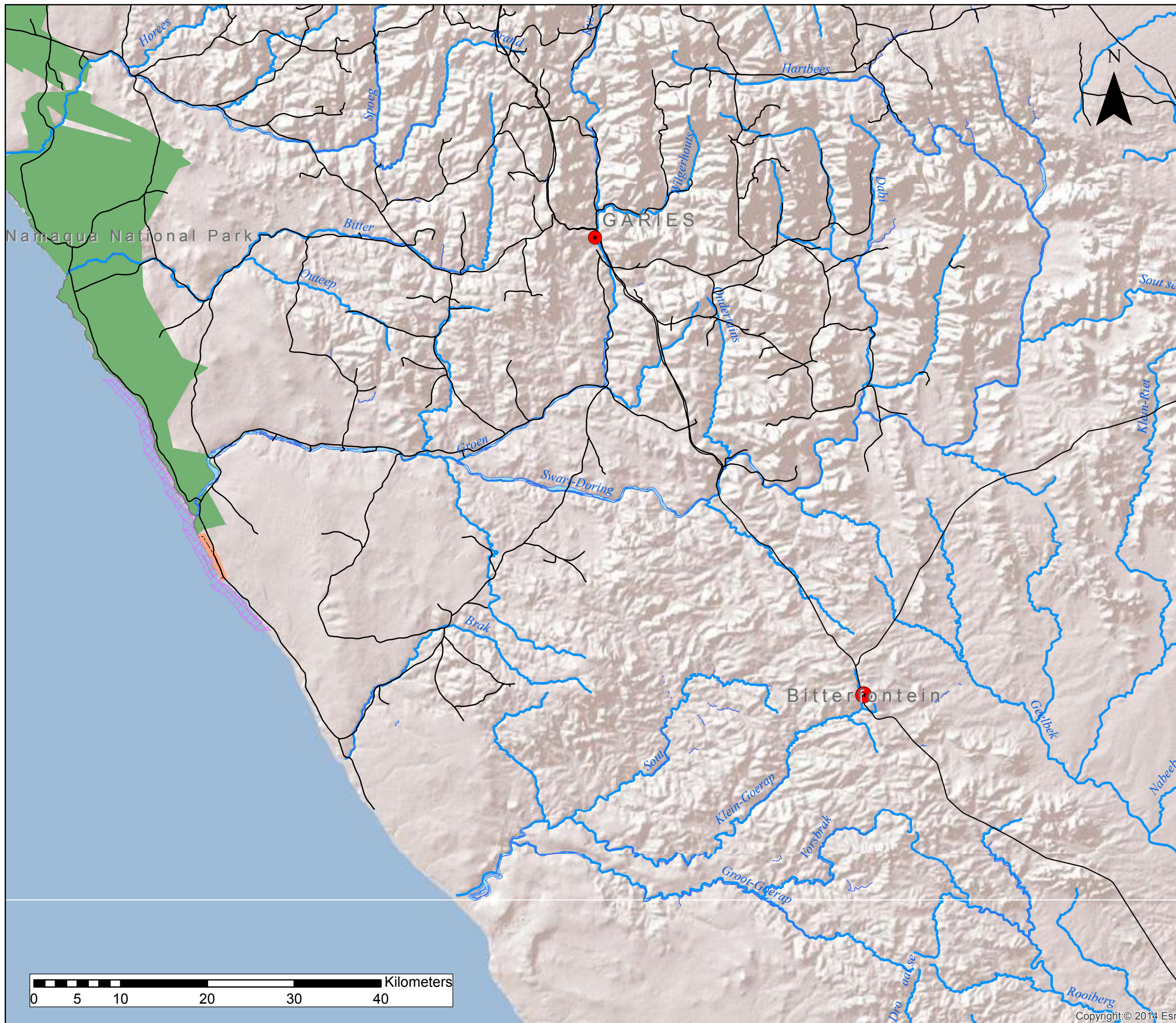
**Kontakbesonderhede** - Aandag: Olivia Braaf

Braaf Environmental Practitioners

Posbus 692, Kuilsrivier, 7579, Telefoon: 0860 111 382,

Faks: 086 658 7676, E-pos: [info@braafsa.com](mailto:info@braafsa.com)

Hierdie brief is ook op versoek in Engels beskikbaar. Dankie vir u deelname aan hierdie omgewingsmagtigingsproses en ons sien uit na u kommentaar.



**Legend**

- Town
- Roads
- - - - PR Application Area

**FIGUUR 1: LI GGING KAART**

Prospecting Area -  
Prospecting boundaries will follow:  
- the western boundary of Farm RE/549 and eastern boundary of Concession Area 9A.

PROJECT: Eilandpunt Prospecting Right

CLIENT: Andomanzi (Pty) Ltd

PROJECT #: 2016-06

SCALE: A3

Drawn	20-03-17	OB
Checked	20-03-17	GA
Approved	20-03-17	RR



P O Box 692  
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7579  
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Email: info@braafsa.com

## REGISTRASIE- EN KOMMENTAARBLAD

'N DIAMANT PROSPEKTEERREG AANSOEK EN INFRASTRUKTURELE  
AKTIVITEITE OP DIE OOSTEKLIEKE GRENS VAN KONSESSIE 9(A)  
SOWEL AS DIE SEE EN DIE WESTELIKE GRENS VAN RESTANT  
PLAAS EILAND PUNT NOORD NR. 549, LANDDROSDISTRIK  
NAMAKWALAND NOORD-KAAP STREEK

DMR Verw.nr: NCS 30/5/1/1/2/ (11935) PR



# BRAAF

ENVIRONMENTAL PRACTITIONERS

Aandag: Olivia Braaf  
Pos: Posbus 692, Kuilsrivier, 7579  
Tel: 0860 111 382  
Faks: 086 658 7676  
Epos: [info@braafsa.com](mailto:info@braafsa.com)  
Webtuiste: [www.braafsa.com](http://www.braafsa.com)

**Vul asseblief die onderstaande vorm in indien u enige vrae, kommentaar of voorstelle oor die voorgestelde projek het.  
Stuur asb. u kommentaar terug teen 9 Mei 2017**

Registreer my asb. <b>formeel as 'n belanghebende en geaffekteerde party (B&amp;GP)</b> en voorsien my van verdered inligting en kennisgewings gedurende die aansoek proses.				JA	NEE	
Ek verkies om my kennisgewings op die volgende manier te ontvang:			Epos	Pos	Faks	SMS

**Vul asb. u korrekte kontakbesonderhede vir die projek databasis hieronder in:**

Titel en Naam			
Organisasie			
Telefoon /Selfoon		Faks Nr.	
Epos			
Posadres			

**Kommentaar:**


**Registreer asb. die volgende addisionele persone vir hierdie projek:**

Naam	Organisasie/epos

Naam: \_\_\_\_\_

Handtekening: \_\_\_\_\_

Datum: \_\_\_\_\_

DANKIE VIR U WAARDEVOLLE BYDRAE



**Appendix C3 Advertisements and Site Notices (Proof to be provided in FSR)**

## KENNISGEWING VAN OMGEWINGS-INVLOED BEPALING

Voorgestelde aansoek om Prospekterregte en infrastrukturele aktiwiteite op die oosteklike grens van Konsessie 9(a) sowel as die see en die westelike grens van Restant Plaas Eiland Punt Noord Nr. 549, Landdrostdistrik Namakwaland Noord-Kaap Streek.

**DMR Verw.nr: NCS 30/5/1/1/2/ (1 1935) PR**

*Uitnodiging om as 'n Belanghebbende en geaffekteerde party te registreer.  
Beskikbaarheid van die Konsep Omvangbepalingsverslag vir kommentaar.*

**Aansoeker:** Adomamanzi (Edms) (Bpk) ['Adomamanzi'] beoog om prospekterings aktiwiteite (vir diamante) te onderneem wat indringende en nie-indringende werk oor 'n 5 jaar tydperk behels. See aktiwiteite sluit in die gebruik van duikers wat met trekkers werk wat toegerus is met suig pompe wat gruis uit die see pomp, sowel as die gebruik van ski bote wat dieselfde toerusting het (suig pompe). Op die land gedeelte sal grootmaat monsterneming met die gebruik van laaigrawe asook excavators gedoen word.

**Ligging:** Die aansoek area vorm die oosteklike grens van Konsessie 9(a) en sluit 'n gedeelte van die see tot teen aan die westelike grens van Restant Plaas Eiland Punt Noord Nr. 549. Dit is ongeveer 2.4km suid van die Groenriviermond en is toeganklik vanaf die N7 noordwaarts na Springbok vanaf 'n grondpad wat ongeveer 4km suid van Garies na Groenriviermond aanskakel na die weste. Deur hierdie grondpad vir 80km te volg na die riviermond kan die projek gebied bereik word waar dit verby die vuurtoring loop.

**Wet:** 'n Bestekopname / Omgewingsinvloed bepaling proses in terme van die Omgewings-Invloed Bepaling (OIB) Regulasies (Desember 2014) afgekondig kragtens die Nasionale Wet op Omgewingsbestuur (Wet 107 van 1998) soos gewysig sal gevolg word. OIB Aktiwiteite GK. Nr. R983: 19, 20, 22, & 27 en Aktiwiteite GK. Nr. R984: 19 & 21 is van toepassing. Kennis geskied ook kragtens die Nasionale Wet op Omgewingsbestuur: Afval, (NEM:WA), 2008 (Wet 59 van 2008) vir 'n aansoek vir 'n afvalbestuurslisensie (Kategorie A: Aktiwiteit 15). Kennis geskied ook kragtens die Wet op Minerale en Petroleum Hulpbronne Ontwikkeling (Wet 28 van 2002) vir die aansoek van 'n prospekterreg. Braaf Environmental Practitioners (Braaf), onafhanklike Omgewings-Invloed Bepaling Konsultante, is aangestel om hierdie Omgewing-Invloed Bepaling (OIB) en Publieke Deelname Proses uit te voer.

**Publieke deelname:** Belanghebbende en Geaffekteerde Partye (B&GPe) word uitgenooi om deel te neem aan die publieke deelname proses deur kommentaar te lewer op die Konsep Omvangbepalingsverslag wat vanaf 5 April 2017 beskikbaar is by die Komaggas Publieke Biblioteek, Nywerheidstraat vir 'n tydperk van 30 dae en op die projek webtuiste: [www.braafsa.com](http://www.braafsa.com) (Documents for Comment – Admiralty Reserve) sal wees. Skriftelike indiening vir en/of teenkantings rakende die OIB en Afvalbestuurslisensie aansoeke kan ingedien word binne 'n periode van 30 dae wat op 9 May 2017 sluit.

U word hiermee uitgenooi om 'n Informasie sessie en Publieke Ope Dag by te woon waar die projek bekend gestel gaan word en u die geleentheid sal hê om vrae te stel en u opinie te lig rakende die projek. Die Publieke Ope Dag sal op die 13 April 2017 by die Komaggas Gemeenskapsaal vanaf 16:00 (nm) tot 18:00 (nm) plaasvind.

### **Braaf Environmental Practitioners**

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## **Appendix D      Geology Report**

**Diamond Mining Potential of the Admiralty Strip  
South of the Groen River Mouth**

**October 2016**

**Prepared by:**

**Dr J. Hattingh and L. J. Erasmus**

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**APPENDIX 1.** Table – De Beers Prospecting Data

**APPENDIX 2.** CV's of Authors

## **Executive Summary**

The Groen River is a river in the Northern Cape province of South Africa. It originates in the Kamiesberge range and has a catchment area of about 4500km<sup>2</sup>. The river mouth is located about 120km NNW of Strandfontein in the Namaqua National Park area by the Green River Mouth Lighthouse. A considerable amount of prospecting has been carried out by especially Firestone in this region, resulting in the identification of the palaeo river channels which were responsible for transporting the diamonds of large size and exceptional quality that have been mined near the mouth of the Groen River by De Beers and other operators. Diamonds from the Groen River Valley are considered to be similar in quality to those from the Orange River. The Groen River has the potential to become an important new alluvial diamond producing region. The palaeo channels identified by recent exploration lie in valleys up to 500m wide, with the active part of the channels, where diamond grades are typically highest, being between 30m and 50m wide. All locations tested by exploration to date have been proven to be diamondiferous.

## 1. Introduction

This report describes the geology of the diamond concession covering the Admiralty Strip south of the Groen River Mouth at the hand of historic studies done in this area with specific reference to the substrate geology and prevailing conditions such as depositional and sediment characteristics and its influence on the diamond mineralisation in the area. The Nisarox (Pty) Ltd Board requested the preparation of this report in the form of an overview report on the diamond concession.

## 2. Location

A regional map is depicted in Figure 1. The Admiralty Strip under application is located some 2.4km south of the Groen River Mouth along the western border of the farm Eiland Punt Noord 549 with the high-water mark above the beach forming its western border (Fig. 2). Access by road from Cape Town to the concession area is via the tarred N7 northwards to Springbok. At around 4km south of Garies the road to Groen River Mouth turns off to the west. By following this gravel road for some 80km the river mouth is reached, providing access to the project area by passing the lighthouse.



Figure 1. Large quantities of diamonds have been found both onshore and, more recently, offshore the west coasts of South Africa and Namibia. Noted here are the key rivers and towns involved in the distribution and recovery of the marine diamonds.

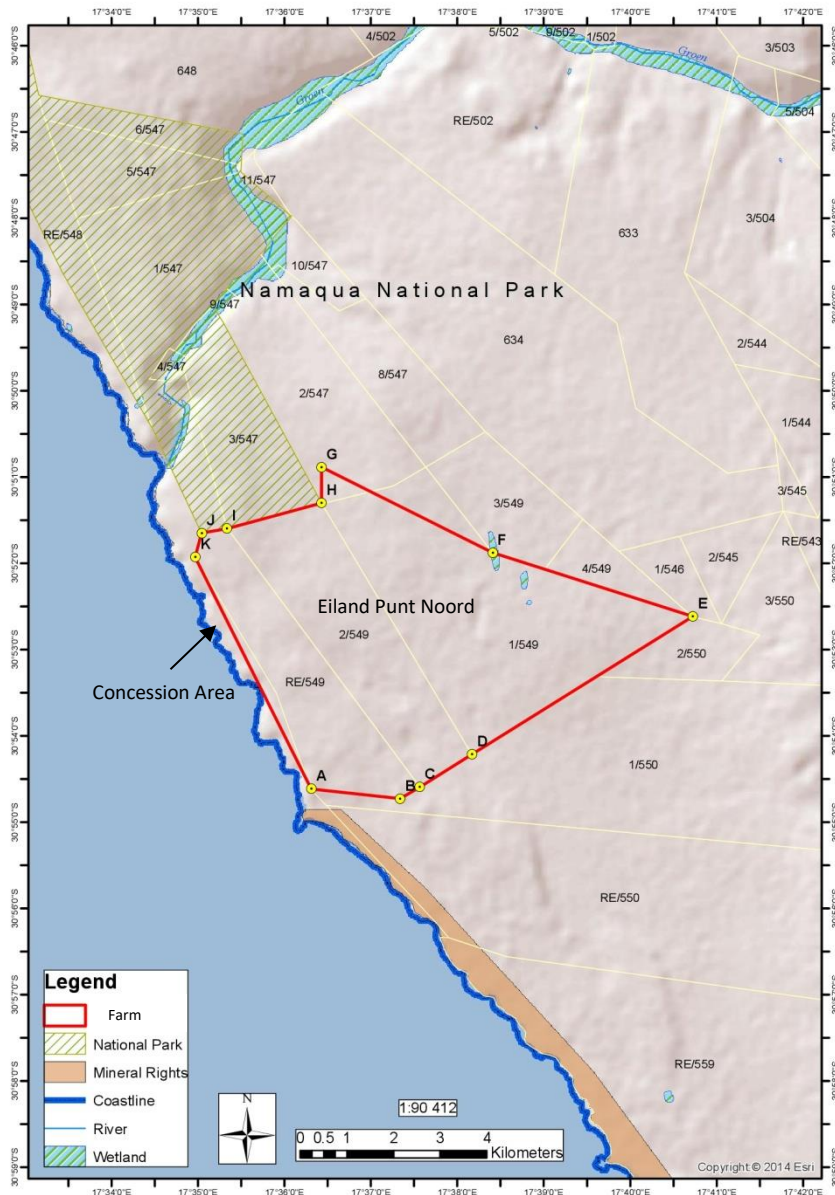


Figure 2: Regional locality map

### 3. Legal Status

The state currently holds common law mineral rights to the Admiralty Strip south of the Groen River Mouth. Nisarox (Pty) Ltd applied for, and is in the process of, obtaining the rights to prospect for diamonds at the Admiralty Strip between the high watermark and the farm boundary (Figs. 3, 4 & 5).

### 4. Climate

An arid climate prevails along the Southern African West Coast region. Current rainfall is not sufficient to maintain continuous discharge of the smaller rivers, which sculpted their relatively large drainage valleys during geological periods of wetter climate. The Groen River falls within a region of episodic rainfall. The mean annual rainfall in the upper reaches of the catchment ranges between 150mm and 200mm, whilst in the lower reaches down to the coast, it varies from 100 to 150mm.



From time to time, the prevailing south-westerly winds reach gale force velocities more than 70km/h, producing swells up to a maximum of 10m in height.

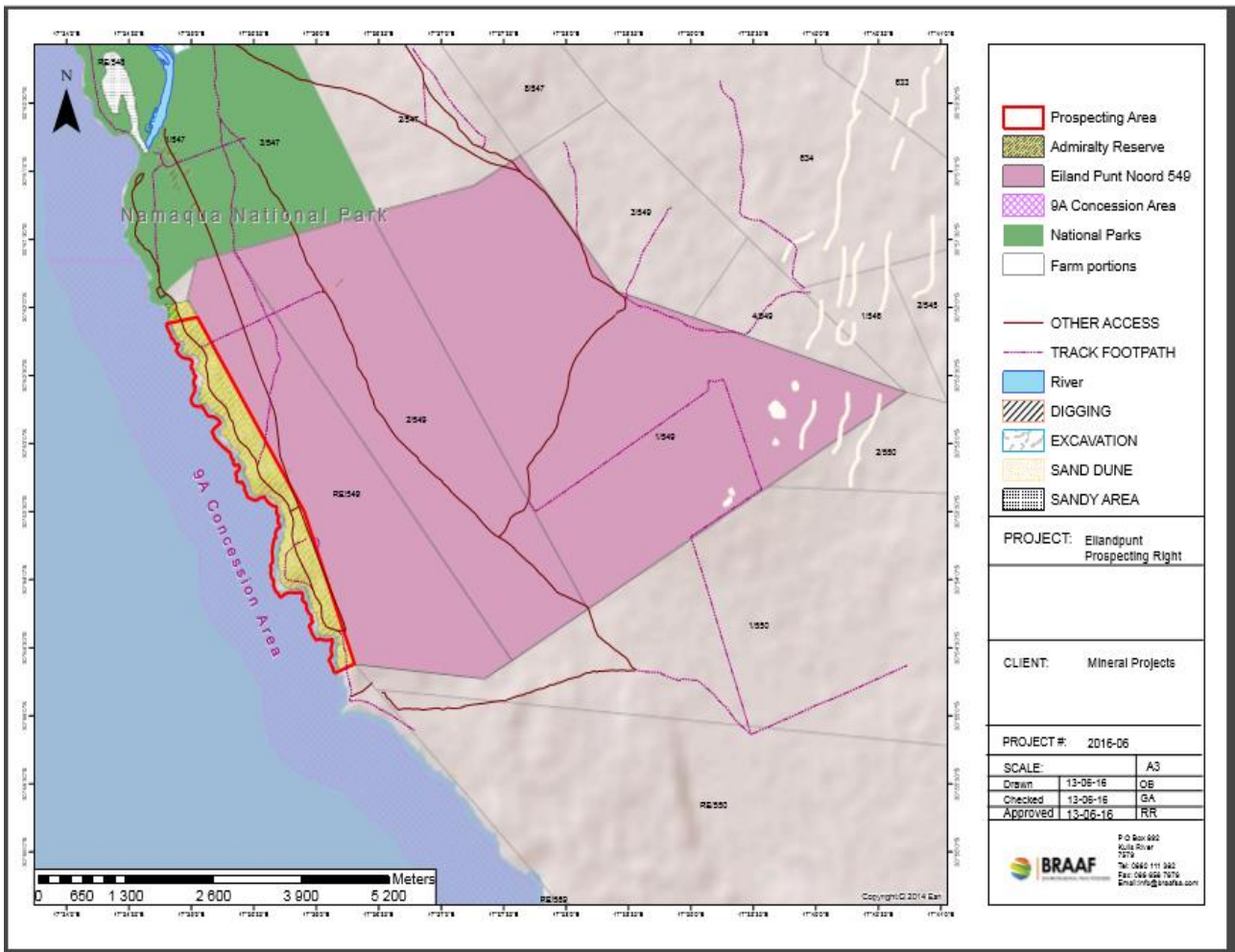


Figure 3. Eilandpunt Location showing the Admiralty Strip

## 5. Topography

The coastal topography around the concessions is generally flat across a ~30km wide stretch of sandy coastal lowland, which terminates against the mountain land of the Namaqualand Metamorphic Complex. Here the rugged granitic coastline has a few sandy beaches within well-developed embayments (Fig. 6).

## 6. Vegetation

Vegetation is sparse, and consists of low-level grasses, shrubs and bushes, typical of semi-desert climates.

## 7. Infrastructure

The entire coastline is accessible from a well-kept public dirt road, with smaller roads leading off to the beach areas, where launching is possible. Drinking water is available from the Kamiesberg Municipality at Garies. No national network electricity supply is available in the sparsely populated land region adjacent to the concessions.

Housing accommodation on temporary or long-term basis is available in Hondeklip Bay. An abundant supply of manual labour is readily available from the local population at Hondeklip Bay or Garies.

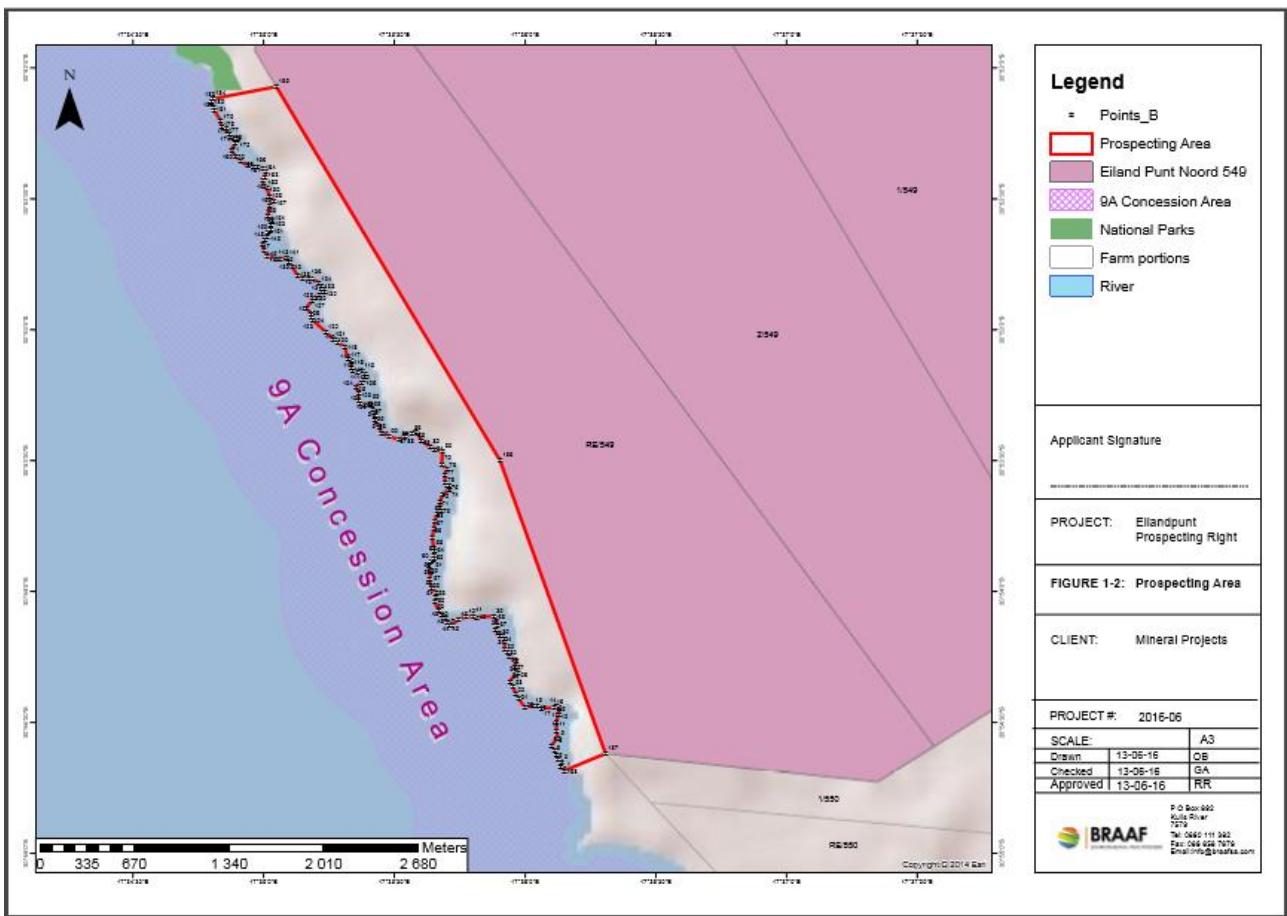


Figure 4. Eilandpunt Potential Prospecting – detailed Admiralty Strip (co-ords available)

## 8. Geological Parameters

The geology of the riverbed and inland catchment area is predominated by granites of the Namaqualand Natal Metamorphic complex. Along the coast, these bedrock granites are overlain by unconsolidated sands with fluvial and terrestrial gravels, shells, limestone and calcrete cappings.

The Groen River, as is the case with other Namaqualand rivers, has been incised into granite bedrock and can be seen as a small water course running down a wide shallow valley. The valley is filled with alluvium and rounded granite boulders. Granite outcrops can be seen in places in the valley and also along virtually the whole of the adjacent coastline.

### 8.1 Diamond Potential of the West Coast

Studies by De Wit (1993) and others, show that the Palaeo-Orange River switched direction at the Prieska fluvial junction from northward to southward during the very wet Late Cretaceous period, to culminate at what is now the Olifants River Mouth.

During the subsequent very wet early Miocene period, the drainage pattern migrated along a relic glacial valley, the Koa River Valley, to exit once again at the present Orange River Mouth. Since the mid-Pliocene, the mid Orange River switched completely to the north at the Prieska junction.

The wide westward range covered by the major palaeo-drainage basins, accounts for the widespread occurrence of diamonds along the South African West Coast, between the Olifants River in the south and the Orange River in the north.

The five main diamond-carrying rivers of Southern Africa is the Orange River, 130km north of the Buffels River, 90km north of the Spoeg River, 50km north of the Groen River, 120km north of the Olifants River. Few Namibian rivers, with the possible exception of the Koichab & Kaukausib Rivers, are diamond carriers.

The Groen River, which exits into the diamond concession 9A and the adjacent admiralty strip is a known diamond carrier, surrounded by alluvial terraces that have been prospected and mined by various companies over many years, including De Beers Namaqualand Mines (Appendix 1) and Firestone Diamonds of London.

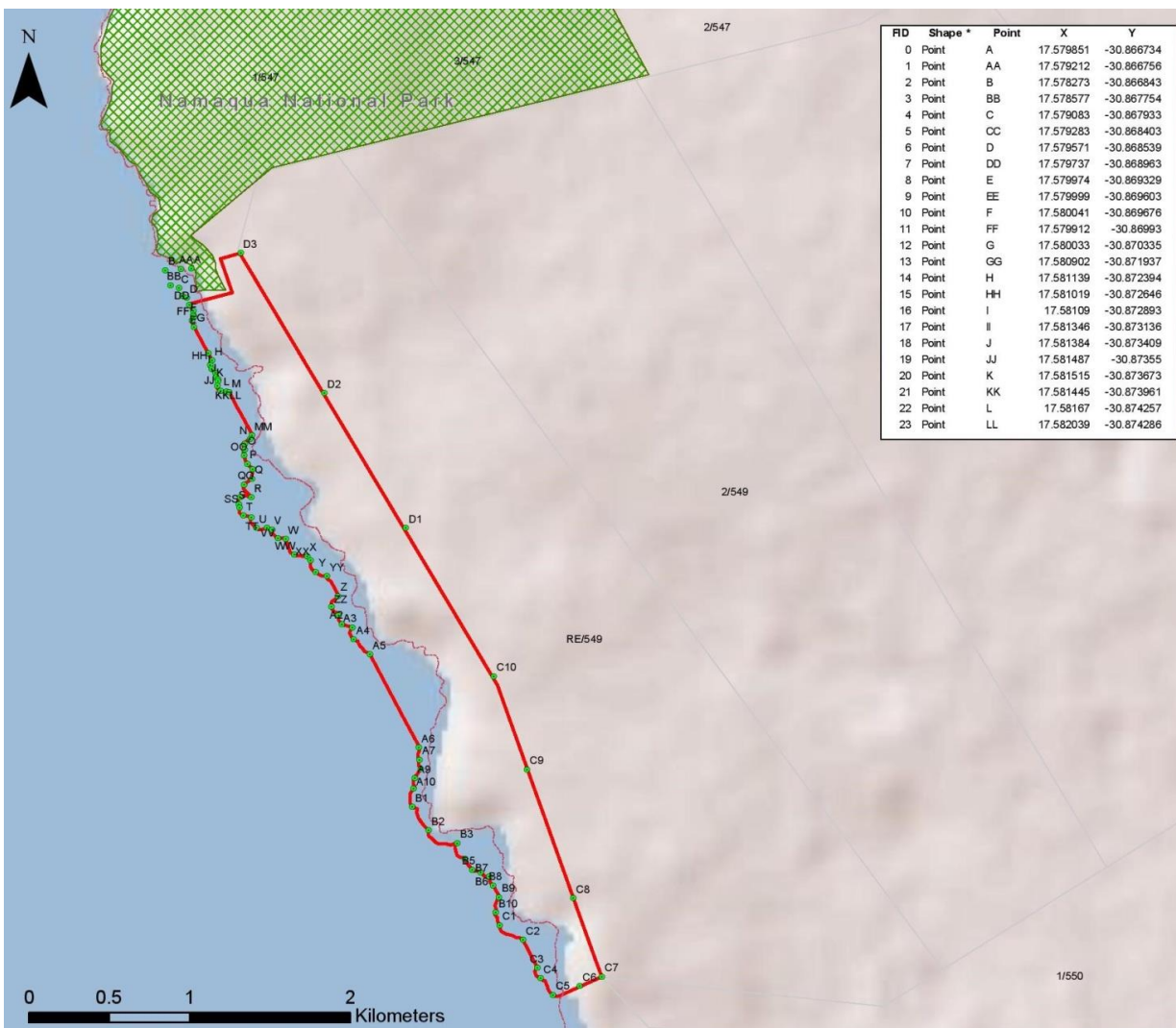


Figure 5: Admiralty Strip, concession boundaries and coast line.



Figure 6. Aerial view of typical West Coast topography

## 8.2 Sea levels

Tectonic movements and the melting of polar ice during warm climates, cause the level of the oceans to rise and fall repeatedly over geologic time. The resulting shift of shorelines, superimpose a terrestrial depositional environment upon the shallow marine zone.

At sea level stillstands (highstands & lowstands), which mark the turning points between transgressive and regressive phases, shorelines cut platforms (gravel-terraces) at different elevations, terminating on the landward side at the base of wave-cut cliff-lines, and sometimes stretching along the entire coastline.

The result of sea level variation has been to distribute diamonds across the vertical range 120m above to 150m below present sea level, and to concentrate the diamonds in gravel terraces at the specific elevations of sea-level stillstands.

For the Groen River Mouth area and the Admiralty Strip, these levels are found from high to low within a 2-5m range from the following elevations: +120m, +80m, +50m, +30m, +20m, +10m, -1m, -8m, -13m, -22m, -29m, -32m, -36m, -42m, -47m, -60m & -130m.

## 8.3 Sedimentary Cycle

The total sedimentary cycle of the SA coastal region includes the following:

- 1) Supply of sediment to the marine environment by river-mouths acting as point sources, during all phases of the sea level cycle.

- 2) Introduction of coarse and medium sediment into the energetic 0-15m water-depth zone, and settling of fine sediment in deeper water. Return of sand to land on windblown beaches.
- 3) Liberation of coarse sediment from submerged palaeo-channels (Fig. 7) and aeolian valleys by wave-induced currents in the near-shore environment during transgression of sea levels.
- 4) Northward transport of coarse sediment by littoral drift mechanisms, and entrapment of part of the coarse sediment in catchment morphologies during transport. The very coarse cobble and boulder fractions tend to be moved only during storms, do not travel far from their sources, and act as entrapment frameworks for pebble-sized material.
- 5) Concentration of the heavy mineral fraction by aeolian deflation mechanisms during regression of sea levels. Weathering of coarse sediment from subaerially exposed marine terraces and aeolian valleys, and reconcentration of the weathered material into reactivated fluvial channels during this phase.

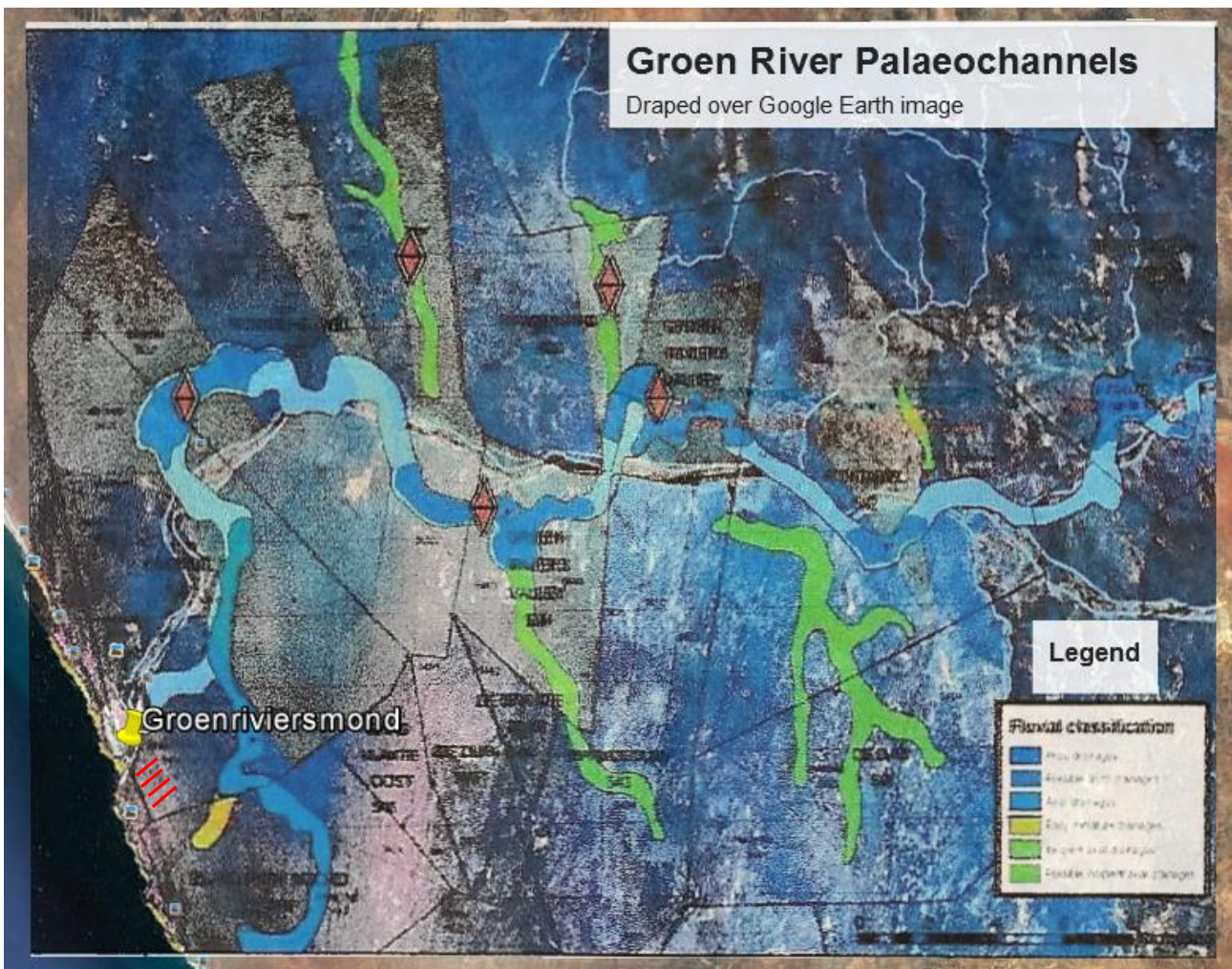


Figure 7. Historic drainages. Note De Beers trenches starting about 570m southeast of the Groen River Mouth

Legend:

- Proto drainages
- Possible Proto drainages
- Axial Drainages
- Early immature drainages
- Incipient Axial drainages
- Possible incipient Axial Drainages
- De Beers' trenches

## 8.4 Marine Terraces

It has been found from work done along the entire west coast, that those stretches of coast, which carry diamonds on one of the palaeo-shoreline levels, almost without exception also carries diamonds on most of the other levels.

In other words, where a diamond source is present in the form of a river-mouth, like the Groen River or Spoeg River (and their palaeo-distributaries), the diamonds get vertically displaced and reconcentrated on all the available terrace levels by marine action over geological time, due to the numerous changes in sea level as on Eilandpunt North where diamondiferous gravels occur up to 3km inland to the east.

This is a highly significant result, because it enables correlation between emerged and submerged gravel terraces in terms of diamond potential. Thus, a positive correlation between submerged diamondiferous deposits of the neighbouring terraces 200m from shore alongside the highly productive Namagroen Concession 9a, and the emerged terraces at this concession, may be drawn.

## 8.5 Site Geology

Rocks of the Namaqualand Metamorphic Complex are the only basement rock types found within 50 km inland from the shore of the concession area, between latitudes 30°S and 31°S. A thick blanket of aeolian sand covers most of the coastal plain.

These gneissic bedrock types of the Namaqualand Metamorphic Complex underlie the entire concession area. The regional gneisses differentiate locally into schists, small pegmatites and minor ultramafic intrusives. The Kamieskroon Gneiss is found around the Groen River Mouth.

These rock types have a high tendency to form potholes and gullies, due to compositional and grain size differentiates within the metamorphic unit. It also contains crevices, cracks, schistose lineaments within granitic bedrock and other entrapment features.

Regional lineaments consist of tectonic joint systems, gneissic fabric, schistose foliation and minor intrusive dykes in all possible orientations, predominantly north-westward. Bedrock morphology is the key concentration factor, and controls all major aspects of sediment deposition in the marine environment.

The basal conglomerate carries the highest diamond grade, followed by the compact gravel, while the unconsolidated gravel carries least.

Exotic minerals include: black chert, jasper, and banded ironstone.

Heavy minerals include: epidote, ilmenite and metamorphic garnet.

Along with quartz, these minerals often occur as well-rounded pebbles (Figure 8). Of all gravel constituents, epidote has been found to be most closely associated with diamonds.

## 8.6 Diamond Mineralisation

The Groen River Mouth acted as a point source introducing diamonds washed down the Groen River during high discharge conditions in the Pliocene and early to mid-Pleistocene when climatic conditions supported high rainfall in this region. During sea level low stands the Groen River entered the ocean several kilometers south of the present-day mouth. Much of the Pleistocene the Groen River Mouth was situated due west of the concession area. This resulted in the emplacement of large diamonds directly in line with the concession. This explains the larger than average stone sizes found in the Namagroen Concession 9a south of the Groen River Mouth. Here a high overall volumetric grade of 1.0025 carats per in situ cubic metre of sediment, and very high grade of 4.72 carats/m<sup>3</sup> in the case of one sample, were obtained during a recent sampling program in the surf zone some 200m from the concession.

Furthermore, a remarkably large average stone size of 1.19 carats per stone was obtained. Average wholesale market value per carat of stones in this size range is US\$450 per carat.



Figure 8: Black chert, jasper (red), epidote (green) and banded iron stone from the concession area on Eilandpunt Noord.

Maximum stone size obtained in a sampling session was 2.85 carats per stone. The high gem quality (>95%), clarity and brightness of this stone, places it in the US\$1 100 per carat range, at current wholesale value.

Just north of the Groen River Mouth Trans Hex is achieving similar grades, reporting 50ct/100m<sup>3</sup>, and south of the Groen River Mouth on Eilandpunt North De Beers made some prospecting trenches over a large area with similar grades then Trans Hex at approximately 50ct/100m<sup>3</sup>.

## **9. Conclusion and Recommendations**

The Groen River Valley project is a promising exploration project on the West Coast, primarily due to the high quality and large size of diamonds that have been mined in the area, which are similar or better in quality to those from the Orange River. There is huge potential south of the Groen River Mouth to confirm a major diamond deposit.

It is thus strongly suggested that all historic data gets compiled in a Preliminary Economic Assessment (PEA) or a Pre-feasibility study, considering possible further exploration and bulk sampling activities in areas where required.



## References

Van der Westhuizen, A. (2012): PROVENANCE OF ALLUVIAL DIAMONDS IN SOUTHERN AFRICA: A MORPHOLOGICAL AND MINERAL CHEMISTRY STUDY OF DIAMONDS AND RELATED HEAVY MINERALS FROM THE VAALORANGE SYSTEM AND THE WEST COAST. PhD dissertation. University of Stellenbosch.

<http://www.ewisa.co.za/misc/EstuaryWC/EstuaryGroen/defaultgeneralinfo.htm>

[https://en.wikipedia.org/wiki/Green\\_River\\_\(Northern\\_Cape\)](https://en.wikipedia.org/wiki/Green_River_(Northern_Cape))

<http://www.gia.edu/gems.../winter-1991-diamonds-south-africa-gurney>

## 15. DATE AND SIGNATURE PAGE

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### **Johan Hattingh**

I, Johan Hattingh of Stellenbosch, South Africa, do hereby certify that as the author of this Independent Report on the Diamond Mining Potential of the Admiralty Strip South of the Groen River dated October 2016, hereby make the following statements:

I am a Principal Resource Geologist with Creo Design (Pty) Ltd. I am a graduate of Stellenbosch University (B.Sc., 1985; B.Sc. Hons., 1988) and University of Port Elizabeth (M.Sc., 1992; Ph.D. Geology, 1996).

I am a member in good standing of the Geological Society of South Africa and I am registered with The South African Council for Natural Scientific Professionals (Registration #400112/93). I have practiced my profession in the mining industry continuously since graduation.

My relevant experience with respect to resource modelling includes 23 years' experience in the mining sector covering exploration geology, mine geology, grade control, and resource modelling. I was involved in numerous projects around the world in both base metals and precious stone and metal deposits.

I am responsible for the entire content of this report titled "Diamond Mining Potential of the Admiralty Strip South of the Groen River Mouth, dated October 2016.

I have no prior involvement with the property that is the subject of this Report. As of the date of this Report, to my knowledge, information, and belief, this report contains all scientific and technical information that is required to be disclosed to make the report not misleading.

Signed and dated this 27<sup>th</sup> day of October 2016.



*J. Hattingh*

*Ph.D. Geology, Pr. Sci. Nat.*

## **Lourens J Erasmus**

I, Lourens J. Erasmus of Somerset West, South Africa, do hereby certify that as the reviewer of this Independent Report on the Diamond Mining Potential of the Admiralty Strip South of the Groen River dated October 2016, hereby make the following statements:

I am a Principal Geologist with Creo Design (Pty) Ltd.

I am a graduate of Stellenbosch University (B.Sc., 1984; B.Sc. Hons., 1985, MBA, 2008) and UNISA (B Com 1995).

I am a member in good standing of the Geological Society of South Africa and I am registered with The South African Council for Natural Scientific Professionals (Registration #400040/91).

I have practiced my profession in the mining industry continuously since graduation.

I was involved in numerous projects around the world in both base and noble metals and precious stone.

I have no prior involvement with the property that is the subject of this Report. As of the date of this Report, to my knowledge, information, and belief, this report contains all scientific and technical information that is required to be disclosed to make the report not misleading.

Signed and dated this 27<sup>th</sup> day of October 2016.

A handwritten signature in black ink, appearing to read 'L. J. Erasmus', with a large, stylized initial 'L'.

L. J. Erasmus

*Hons B Sc (Geology), B Com, MBA (USB), Pr. Sci. Nat, MGSSA*

## APPENDIX 1

S UNITNAME	SOL_BRT	OVB_BRT	SEC_BRT	ORE_BRT	ORE_BRC	ORE_BRS	Farm / Area	Mining Area	Grade (cpht)	Stone Size (cts/stn)
EPN_6869_01	41684	1834074	0	95,851	2,593.60	11,843	Eiland Punt Noord	EPN	2.71	0.22
EPN_6869_02	39629	1450414	0	151,877	8,718.30	36,026	Eiland Punt Noord	EPN	5.74	0.24
EPN_6869_03	3846	403612	31	21,422	885.00	3,540	Eiland Punt Noord	EPN	4.13	0.25
EPN_6869_04	0	19353	0	949	47.10	188	Eiland Punt Noord	EPN	4.96	0.25
EPN_6869_05	0	741	0	46	1.40	6	Eiland Punt Noord	EPN	3.04	0.23
EPN_6869_07	1398	197999	26	15,705	486.60	1,946	Eiland Punt Noord	EPN	3.10	0.25
EPN_6869_17	10694	431627	47	47,976	6,580.00	43,867	Eiland Punt Noord	EPN	13.72	0.15
EPN_6869_19	0	99	0	9	0.80	2	Eiland Punt Noord	EPN	8.89	0.40
EPN_6869_A	0	1592310	0	133,127	12,180.80	55,368	Eiland Punt Noord	EPN	9.15	0.22
EPN_6869_B	0	1283973	0	156,940	11,580.40	52,638	Eiland Punt Noord	EPN	7.38	0.22
EPN_6869_D	0	4	11	2	0.20	1	Eiland Punt Noord	EPN	10.00	0.20
EPN_6869_E	0	0	10	24	5.40	20	Eiland Punt Noord	EPN	22.50	0.27
EPN_6869_F1	0	6055	6053	3,265	5,169.20	19,882	Eiland Punt Noord	EPN	158.32	0.26
EPN_6869_F5C	0	1269	363	3,795	5,610.80	25,504	Eiland Punt Noord	EPN	147.85	0.22
EPN_6869_F5C-SP4	0	0	0	4,978	-	1	Eiland Punt Noord	EPN	-	0.00
EPN_6869_F5-P1	0	102526	861	15,479	1,935.30	9,676	Eiland Punt Noord	EPN	12.50	0.20
EPN_6869_F5-P3	0	3197	118	1,598	325.50	1,050	Eiland Punt Noord	EPN	20.37	0.31
EPN_6869_F6-C	11195	563716	348	40,357	152,297.10	761,485	Eiland Punt Noord	EPN	377.37	0.20
EPN_6B69_17-1	10281	525779	118	53,775	17,464.60	72,769	Eiland Punt Noord	EPN	32.48	0.24
EPN_6B69_17-2	9668	602305	74	30,639	2,215.10	15,490	Eiland Punt Noord	EPN	7.23	0.14
EPN_7-1	0	1567	157	12,338	2,479.80	12,399	Eiland Punt Noord	EPN	20.10	0.20
EPN_7-2	15580	374296	13871	49,633	12,734.80	67,025	Eiland Punt Noord	EPN	25.66	0.19
EPN_9882_05	0	4	0	2	0.70	2	Eiland Punt Noord	EPN	35.00	0.35
EPN_9882_20	0	16152	16187	17,195	10,468.70	41,875	Eiland Punt Noord	EPN	60.88	0.25
EPN_9882_21	0	9763	9812	8,774	6,284.90	25,139	Eiland Punt Noord	EPN	71.63	0.25
EPN_9882_24	0	6038	6337	1,543	939.30	3,757	Eiland Punt Noord	EPN	60.87	0.25
EPN_9882_29	0	0	0	2,241	320.20	1,033	Eiland Punt Noord	EPN	14.29	0.31
EPN_9883_05	12171	241270	38	20,258	2,082.30	9,465	Eiland Punt Noord	EPN	10.28	0.22
EPN_CRD	0	0	0	11,395,511	428,927.00	1,949,668	Eiland Punt Noord	EPN	3.76	0.22
EPN_F7	10437	208742	0	24,000	90,570.90	452,855	Eiland Punt Noord	EPN	377.38	0.20

Abbreviations: BRT – Bulk remaining tons

BRC – Bulk remaining carats

BRS – Bulk remaining stones

## **APPENDIX 2**

### **CV's of Authors**

## **CURRICULUM VITAE**

### **JOHAN HATTINGH**

#### ***PERSONAL DETAILS***

**Surname** : Hattingh  
**Christian Names** : Johan  
**Date of Birth** : 25 May 1963  
**I.D. Number** : 630525 5122 084  
**Nationality** : South African

#### ***Personal:***

- Married to Ertru Gauche in 1990
- Two daughters
  - Naomi (1994)
  - Magdaleen (1997)
- One son
  - Hendrik Vos (2004)

#### ***EDUCATIONAL QUALIFICATIONS***

##### ***Schooling:***

Paul Roos Gymnasium, Stellenbosch - 1982

##### ***University Qualifications:***

B.Sc. University of Stellenbosch	1985
B.Sc. (Hons.) University of Stellenbosch	1988
M.Sc. University of Port Elizabeth	1992
Ph.D. University of Port Elizabeth	1996

##### ***Professional Career:***

Geologist at the Geological Survey of S.A. Regional office in Port Elizabeth involved in research on distribution of heavy minerals in natural river systems.  
(1989 - 1993)

Senior Geologist at the Geological Survey Regional office in Port Elizabeth involved in research on distribution of heavy minerals in natural river systems.  
(1993 - 1994)

Principal Geologist at the Council for Geoscience Regional office in Port Elizabeth employed as consulting geologist - consulting to various mining companies in Africa.  
(1994 - 1997)

Senior Exploration Geologist at Trans Hex Reuning Mine - responsible for management of mining projects and exploration projects (1998 - 1999).

Chief Executive Officer of Creo Design (Pty) Ltd - responsible for management of Creo following the retirement of Dr H.V. Hattingh who managed the company as a mechanical engineering design and manufacturing company since 1978.

Converted Creo to an exploration and mine management services company, mainly providing professional services to the mining industry such as geological, mine engineering and metallurgical services, mine planning risk analysis, exploration planning, management and equipment design and installation (1999 - present).

***Professional Affiliations:***

Member of: The Geological Society of S.A.

The Sedimentological division of the GSSA

The Southern African Society of Quaternary Research

The South African Association of Geomorphologists

Registered with the S.A. Council for Natural Scientific Professions

***Major Projects:***

- Chamber of Mines placer research project
- Geological mapping of the Karoo (1:50 000 scale)
- Geological mapping of the Sundays River alluvium (1:10 000 scale)
- Palaeoflood studies in all major river systems in Southern Africa
- Diamond exploration in the Central African Republic
- Pre-feasibility study for diamond mining operations in the Democratic Republic of Congo
- Exploration & Mine evaluation, risk analysis and commissioning of Denver Quarries, Port Elizabeth and developed it into the largest aggregate supplier in the Eastern Cape.
- Exploration and production manager for the Reuning diamond mine of Trans Hex Mining Ltd.
- Chief Executive of Creo Design (Pty) Ltd responsible for management, strategic planning and new business.
- Geological consulting (base metals and diamonds) to mining companies and Industrial Development Corporation
- Director and Exploration Manager for Lehumo Resources Ltd nickel project
- Project Manager for Namagroen offshore diamond mining
- Technical Director on the Board of Otjozondo Mining (Pty) Ltd
- Technical Director on the Board of Aquarella Mining (Pty) Ltd

- Technical Director on the Board of Aranos Gas (Pty) Ltd

-

***Publications:***

- 12 articles in international scientific journals
- 2 contributions to books published by: Wiley & Sons, London and Grahamstown University Press

**CV – Lourens J. Erasmus, Pr. Sc. Nat.**

Hons B Sc (Geology), B Com, MBA, MGSSA

**EDUCATIONAL QUALIFICATIONS**

**Schooling:**

Wennie du Plessis High School, Gobabis, Namibia, matriculated in 1981

**University Qualifications:**

B Sc (Geology and Geochemistry) - University of Stellenbosch	1984
Hons B Sc (Geology) - University of Stellenbosch	1985
B Com - University of South Africa (UNISA) – Part-time	1996
MBA - University of Stellenbosch Business School - Modular	2008

**Employment History**

**Permanent positions**

Anglo American Corporation

1988 to 1990	Staff Geologist - Wits Gold Mining (Northwest Province, South Africa)
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Anglovaal Minerals (AVMIN)

1991 to 1993	Senior Exploration Geologist – Wits Gold Exploration (Northern Free State, South Africa)
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1993 to 1996	Senior Exploration Geologist – Ni and PGE Exploration (Barberton, South Africa)
--------------	---

1996 to 1998	Senior Exploration Geologist – Base Metal and Gold Exploration (Namibia)
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BHP Minerals International Exploration

1998 to June 1999	Manager - Copperbelt – Base Metal Exploration (Namibia and Botswana)
-------------------	--

**Contract positions**

2000	Exploration Geologist – PGE Exploration (Eastern Bushveld Complex, South Africa)
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2000	Senior Offshore Geologist – Diamond
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2001	Exploration (Namibia) Exploration Geologist – PGE Exploration (Eastern Bushveld Complex, South Africa)
2002	Exploration Geologist – PGE Exploration (Western Bushveld Complex, South Africa)

### Permanent positions

Anglo Platinum Corporation  
2002 to 2007

Senior Project Geologist – PGE Exploration  
(Bushveld Complex, South Africa)

Albidon Ltd  
2007 to 2009

Regional Exploration Manager - Base Metal  
Exploration (Southern and Eastern Africa)

ENRC  
2011 to 2012

Exploration Manager – Base Metal Exploration  
(Copperbelt – DRC)

### Contract positions

2009 to 2011

Principal Geologist (SRK) and Project  
Geologist – Gold Exploration (Thani Emirates  
Resource Holdings - Project Generation and  
Evaluation (Middle East - Yemen and Dubai),  
including short stints in HMS Exploration (Sri  
Lanka) as well as in Gold Exploration (Sudan)

AngloGold Ashanti  
2012 to 2013

Exploration Manager – Gold Exploration  
(Guinea)

Self-employed  
2014 to currently

Principal Geological Consultant: Green- and  
Brownfields Exploration (South Africa and  
Namibia)