



## mineral resources

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

# DRAFT SCOPING REPORT – PRAA 1

**SAMARA MINING (PTY) LTD APPLICATION FOR ALLUVIAL DIAMOND  
PROSPECTING WITH BULK SAMPLING  
ON THE LEFT BANK OF THE ORANGE RIVER, BOUNDARY TO  
PORTION OF THE REMAINDER OF THE FARM RICHTERSVELD NO. 11,  
RICHTERSVELD, NAMAQUALAND DISTRICT,  
NORTHERN CAPE PROVINCE (PRAA 1)**

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

**NAME OF APPLICANT:** Samara Mining (Pty) Ltd, Contact Dr Anthony Dywili  
**TEL NO:** +2753 861 1575  
**FAX NO:** 086 541 5463  
**POSTAL ADDRESS:** P O Box 11124, Hadison Park, Kimberley, 8306  
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**DMR FILE REFERENCE NUMBER (SAMRAD):** NC30/5/1/1/2/12664 PR

**REPORT DATE:**  
10 November 2020

**DRAFT AVAILABLE FOR 30 DAYS  
PUBLIC REVIEW & COMMENT**

## **IMPORTANT NOTICE:**

In terms of the Mineral and Petroleum Resources Development Act (MPRDA), No. 28 of 2002 as amended, the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”. Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment (EIA) and an Environmental Management Programme (EMP) report in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

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

**It is therefore an instruction** that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template.

**Furthermore please be advised** that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

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

## **OBJECTIVE OF THE SCOPING PROCESS**

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

## SCOPING REPORT

### 2) Contact person and correspondence address

#### a) Details of:

##### (i) The EAP who prepared the report

NDI Geological Consulting Service (Pty) Ltd (*hereinafter NDI*) has been appointed by Samara Mining (Pty) Ltd (*hereinafter Samara*) to provide geological and environmental management services for the application for a prospecting right with bulk sampling for alluvial diamonds on the left bank of the Orange River, boundary to a Portion of the Remainder of Farm Richtersveld No. 11, on the Lower Orange River in the Richtersveld within the Northern Cape Province of South Africa.

Naledzi Environmental Consultants (Pty) Ltd (*hereinafter Naledzi*) has been appointed to represent NDI as the independent environmental assessment practitioner (EAP) and conduct the Scoping and EIA process for project. This report has been prepared by Naledzi.

##### Details of NDI Geological Consulting Services (Pty) Ltd (agent to Samara):

Mrs Ndivhadzannyi Mofokeng

**Telephone no.:** +2753 842 0687 / +2782 760 8420

**Fax no.:** 086 538 1069

**Email address:** [atshidzaho@gmail.com](mailto:atshidzaho@gmail.com)

##### Name of Practitioner who prepared the report:

Mrs Marissa Botha, Naledzi Environmental Consultants (Pty) Ltd

**Telephone no.:** +2715 296 3988 / +2784 226 5584

**Fax no.:** +2715 296 4021

**Email address:** [botham@naledzi.co.za](mailto:botham@naledzi.co.za)

##### (ii) Expertise of the EAP

###### 1) Qualifications of EAP

Mrs Marissa Botha has 14 years working experience in environmental management and is a registered Environmental Scientist with the South African Council for Natural Scientific Profession (SACNASP), Registration No. 117526. (**Appendix 1 - SACNASP Registration Certificate**)

###### 2) Summary of EAPs experience

Ms Marissa Botha is the assigned EAP to drive the EIA process, compile the subject reporting and conduct a consolidated public participation process. She has extensive experience in EIA assignments related to prospecting and mining and comprise the following (not exhaustive);

- 2018: Prospecting Right with Bulk sampling for several minerals including graphite on unsurveyed stated land located west of the Kruger National Park at Gumbu, Musina District of Limpopo – Samin Group Pty Ltd. Responsible for conducting the EIA Process, management of specialists and associated public participation process.

Draft Scoping Report available for 30 days public review

- 2015 – 2017: Integrated EIA, Water Use License Application and Waste Management License for the application for a Mining Right for the proposed Geluk Mine, an iron and vanadium ore surface mine on the farms Geluk 512KS, Geluk Oos 513KS and Ironstone 847KS, south-west of Steelpoort, Sekhukhune District of Limpopo Province;
- 2014: Prospecting Right Application for limestone at Kalkbank, between Dendron and Polokwane, District of Aganang in Limpopo. Responsible for EIA Process and associated public participation process;
- 2014: Prospecting Right Application for coal, iron ore and copper, northeast of Alldays on the farms Polton, Salton and Hosselappe, District of Musina in Limpopo Province.
- 2013: Prospecting Right Application for iron ore at Koedoeskop, District of Thabazimbi in Limpopo Province for Bakwena Ba Phalane Traditional Community and Mantra Mineral Development. Responsible for conducting the EIA Process and associated public participation process.
- 2012: Prospecting Right Application by Tanduko Mineral (Pty) Ltd for coal north of Louis Trichardt and Soutpansberge, east of N1 National Toll Route, District of Makhado in Limpopo. Responsible for conducting the EIA Process and associated public participation process.

(Refer to **Appendix 2 for a CV of the EAP**)

## b) Description of property

**Table 1: Property Description**

<b>Farm name:</b>	Left bank of the Orange River, boundary to a Portion of the Remainder of Farm Richtersveld No. 11 (Namaqualand RD)
<b>Application area (Ha):</b>	987.98 Hectares
<b>Magisterial District:</b>	Namaqualand
<b>Distance and direction to nearest town</b>	The application area is approximately 250m west of Sanddrift
<b>21 digit Surveyor General code for each farm portion</b>	C0530000000001800000 (Application it to prospect on a portion of the Orange River).

## c) Locality Map

(Show nearest town, scale not smaller than 1:250000 attached as **Appendix 3**).

The Prospecting Right Application Area (PRAA) is situated on the left bank of the lower Orange River at Sanddrif, on the border between South Africa and Namibia, approximately 30km from Alexander Bay in the Northern Cape Province. Samara will prospect for alluvial diamonds within the flood line of the Orange River and focus on four (4) prospecting pockets (pockets 1, 2, 3A and 3B)<sup>1</sup> on the bed, banks and active channel of the river, within the greater PRAA. These pockets are considered the prospecting 'focus area'. Please refer to Figure 1, 2, 3, 4 and 5 overleaf.

The **Regulation 2(2) Locality Map** inclusive of coordinates is attached as **Appendix 3**.

<sup>1</sup> Please note that Samara has applied for two prospecting applications along the Orange River namely PRAA 1 (12664 PR) and PRAA 2 (12663 PR). PRAA 1 comprises prospecting pockets 1, 2, 3A & 3B on the left bank of the Orange River, boundary to a Portion of Remainder of the Farm Richtersveld No. 11 under DMR ref. NC30/5/1/1/2/12664 PR. PRAA 2 comprises prospecting pockets 4, 5 and 6, on the left bank of the river, boundary to a Portion of Remainder of Farm No. 18 under DMR ref. NC30/5/5/1/1/2/12663 PR. **This document deals with PRAA 1 (12664 PR).**

PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province

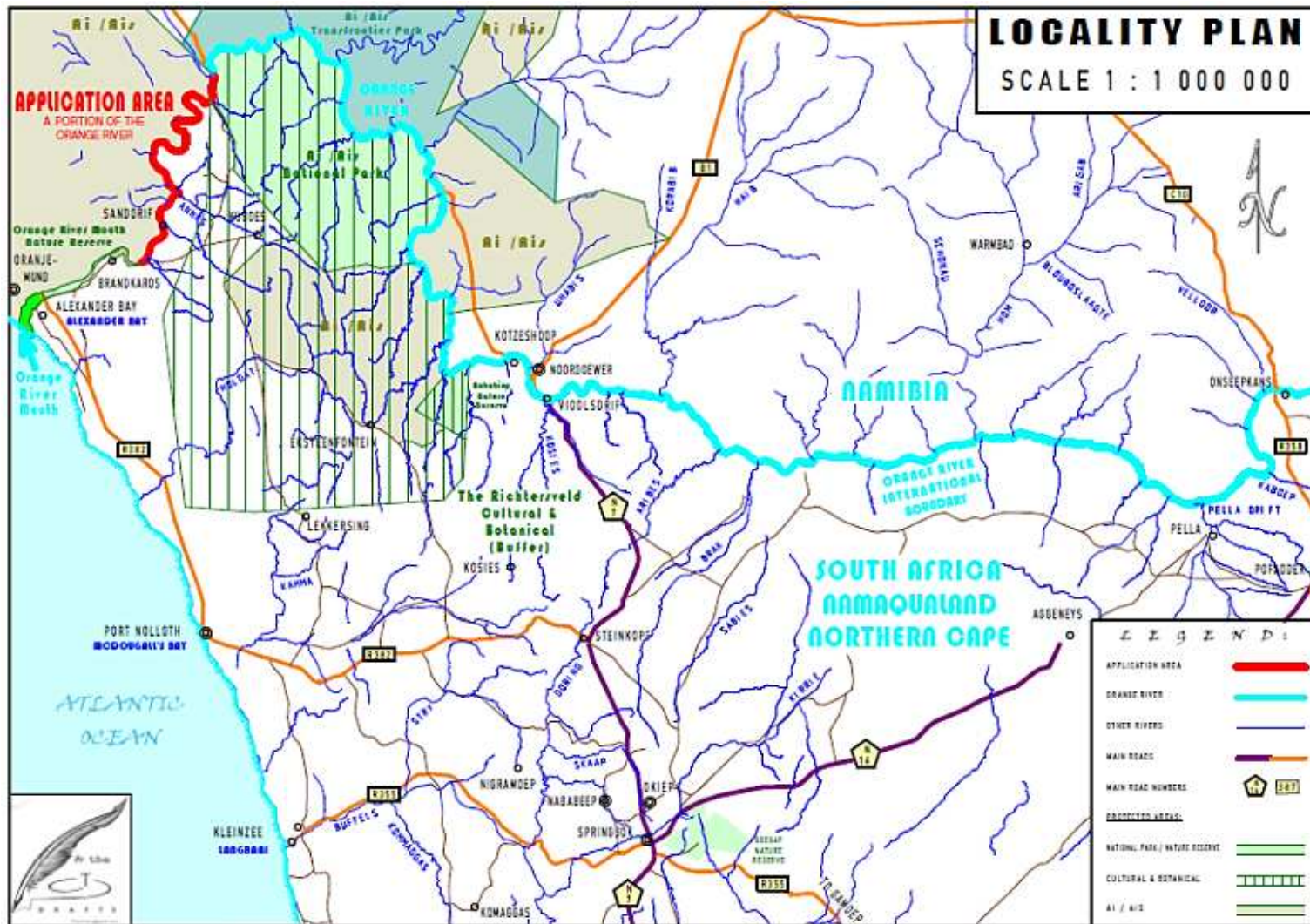


Figure 1: Locality Map showing application area PRAA 1 (red) along Orange River

PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province

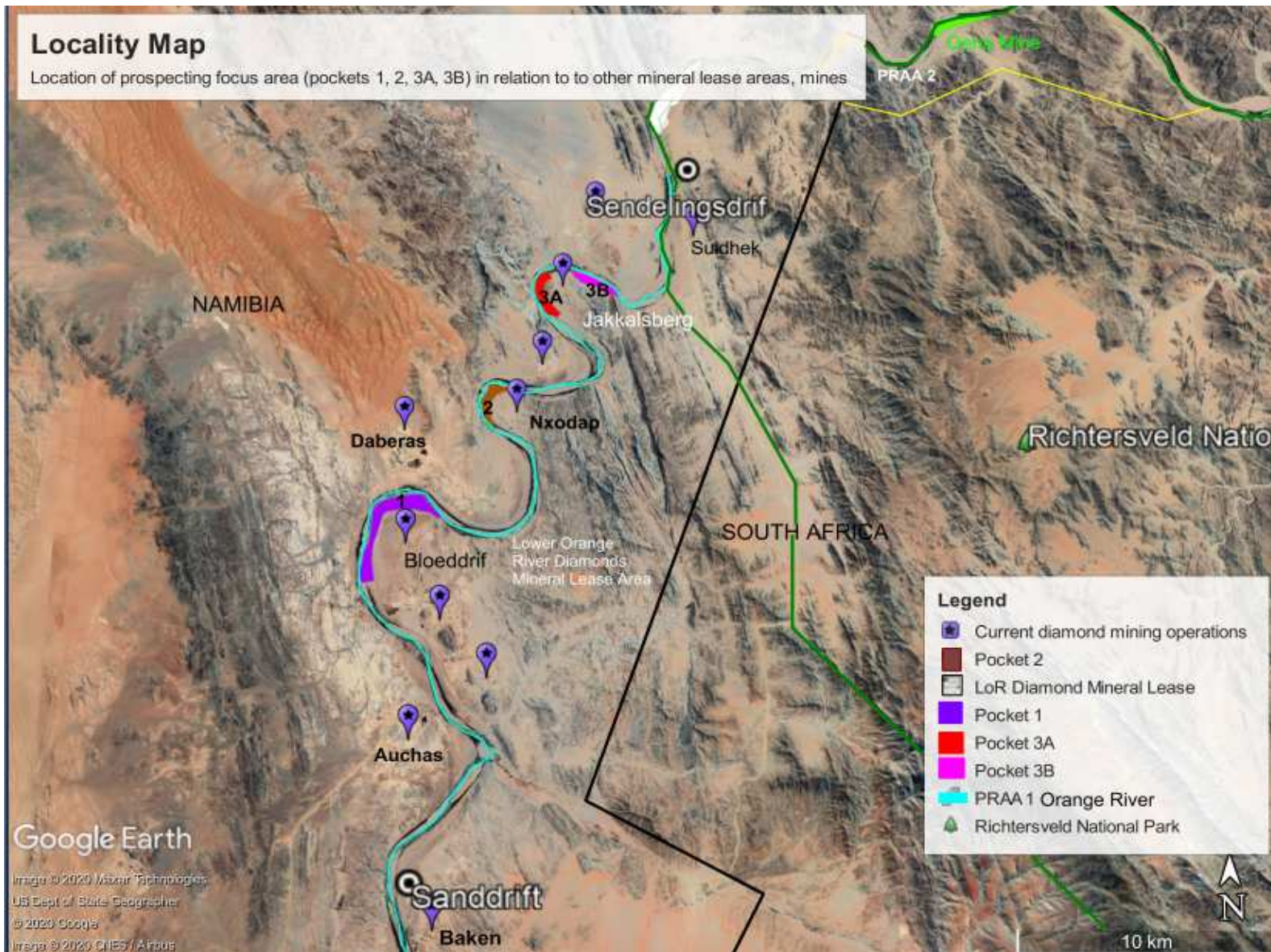


Figure 2 : Locality Map showing location of PRAA 1 focus area (pocket 1, 2, 3A & 3B) in relation to current diamond mineral lease areas  
Draft Scoping Report available for 30 days public review

PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province

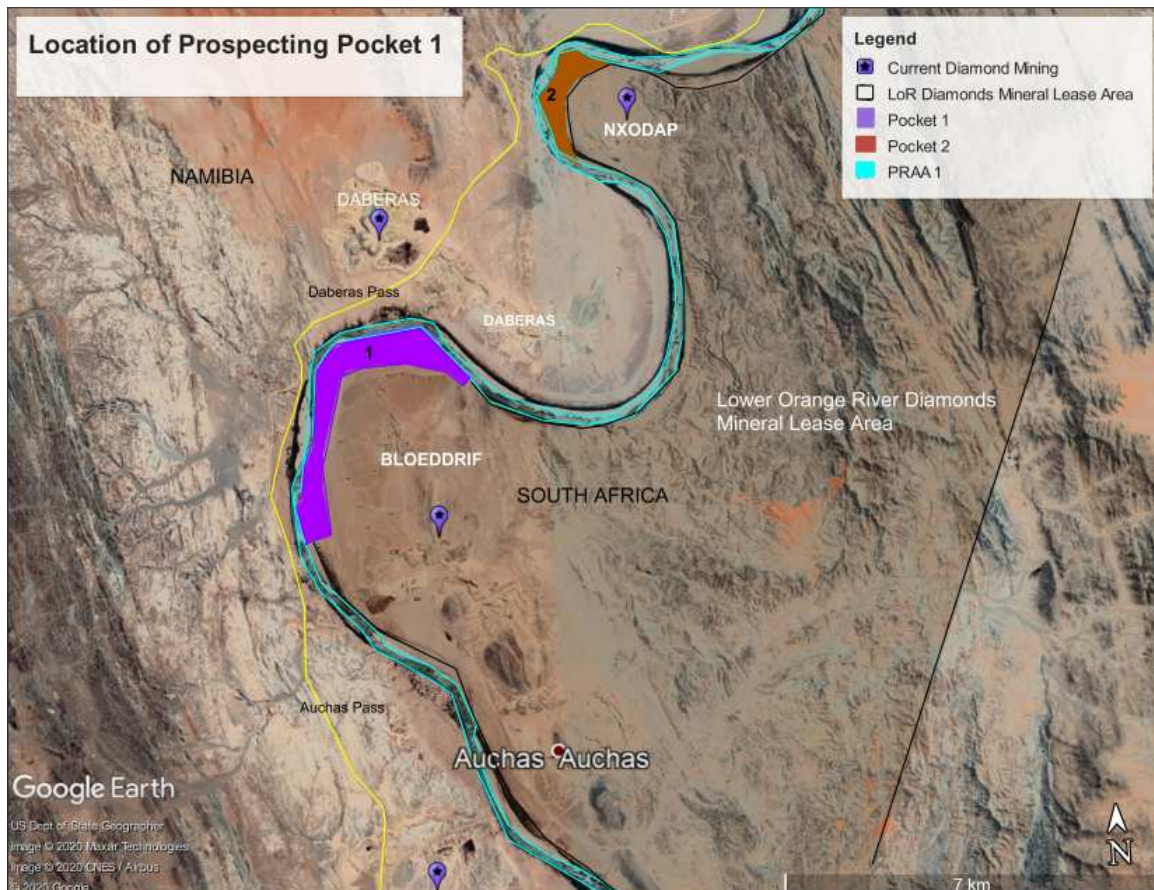


Figure 3: Location of Prospecting Pocket 1 on the Orange River in relation to Lower Orange River Diamonds Pty Ltd current diamond mining operations

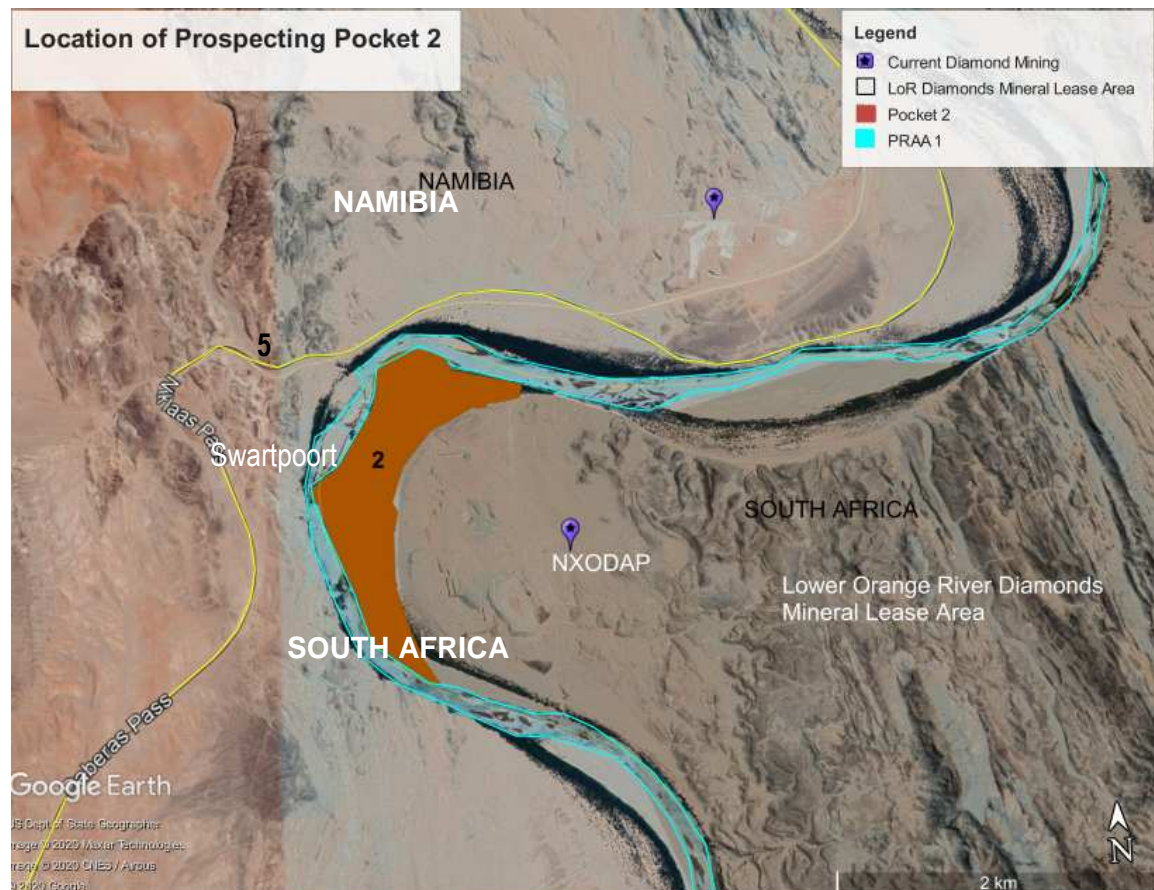


Figure 4: Location of Prospecting Pockets 2 on the Orange River and in relation to current diamond mining operations



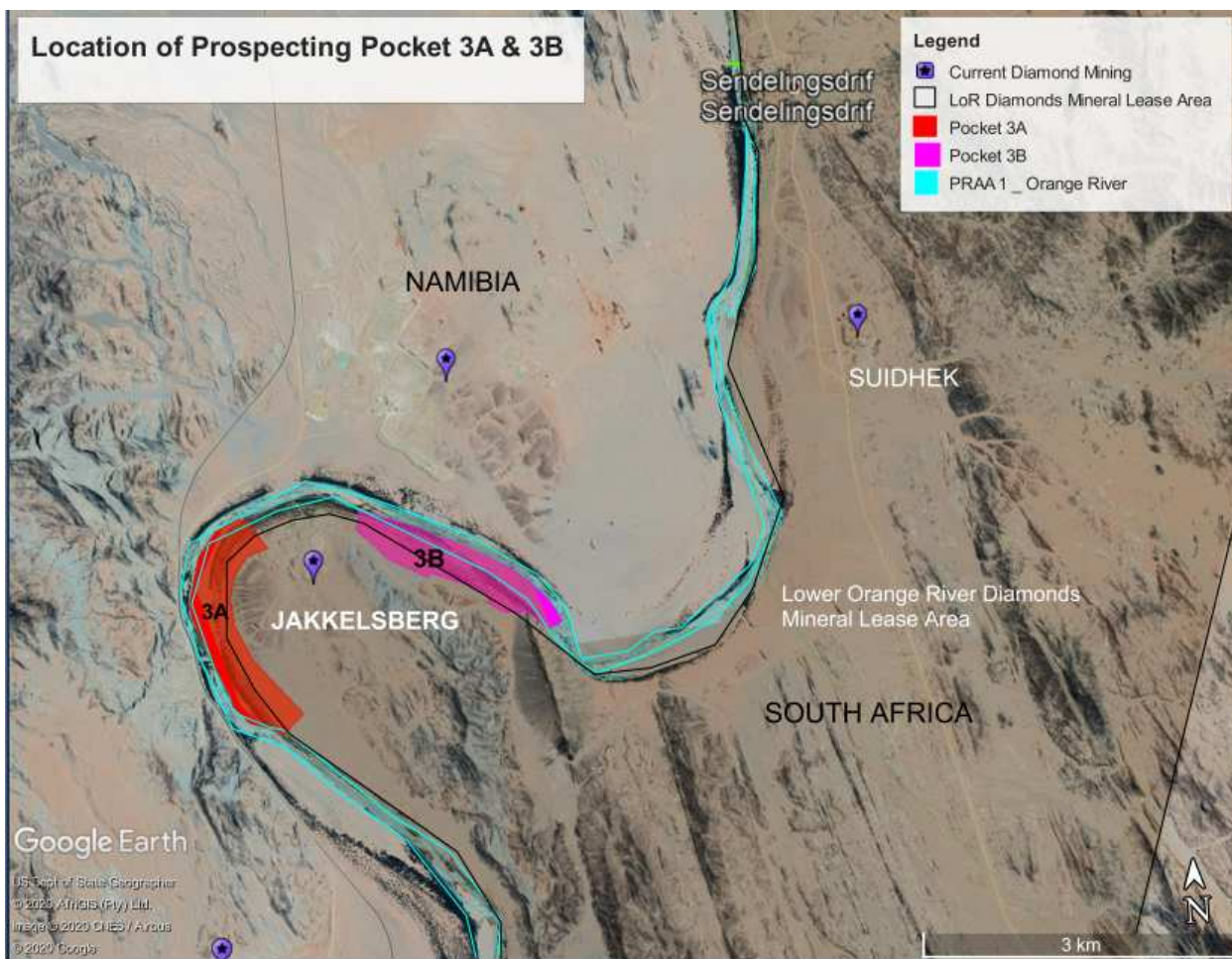


Figure 5: Location of Prospecting Pocket 3A & 3B in relation to current diamond mining operations

#### d) Description of the scope of overall activity

##### (i) Listed and specified activities

(Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on-site and attach as Appendix 4)

Prospecting activities will include only non-invasive activities limited to a desktop study. Invasive activities will include bulk sampling. Bulk samples will be collected from ten (10) trenches to be excavated below the flood line of the Orange River, from prospecting pockets 1, 2, 3A and 3B as per Figures 2, 3, 4 and 5. No drilling programme will be undertaken.

Processing infrastructure will include a Rotary Pan Plant to be located on the Orange River embankment below the 1: 100 year flood line, above the active channel, not less than 50m from the river bed. Only machinery and associated pumps will be located within the riverbed. No slimes dam will be constructed as part of the processing infrastructure.

Currently, the prospecting focus area within PRAA 1 has been confirmed on a **Site Plan attached as Appendix 4**.

The location of processing infrastructure must still be finalised based on the recommendations to be made by specialists in the field of freshwater, biodiversity, visual, hydrological and geohydrological in order to avoid/minimise impacts on the riverbed, embankments and active channel. A more detailed Site Plan illustrating the prospecting focus area and location of processing infrastructure will be included in the draft Environmental Impact Report for the application.

Specified listed activities are included in Table 2 overleaf.

A more comprehensive description has been provided in the table than required by the DMR to demonstrate the applicability of the listed activities to the application and geographical area.

**Table 2: Specified Listed Activities**

NAME OF ACTIVITY	Aerial extent (Ha or m <sup>2</sup> )	LISTED ACTIVITY	APPLICABLE LISTING NOTICE (GNR 327, 325, 324 325 <sup>2</sup> / NOT LISTED)	WASTE MANAGEMENT AUTHORISATION (Mark with an X)
Prospecting Right Application in terms of Section 16, 20 and Regulation 7(1) of the Mineral and Petroleum Resources Development Act (MPRDA).	690	x	<p><b>Activity 20 (GNR 327)-</b> Any activity including operation of activity that requires a prospecting right in terms of section 16 of the MPRDA, including associated infrastructure, structures, earthworks, directly related to prospecting of a mineral resource; and the primary processing of a mineral including winning, extraction, classifying, concentrating, crushing, screening or washing.</p> <p>DMR has accepted Samara's application for a prospecting right with bulk sampling. DMR Mineral Regulation Ref no. NC 30/5/1/1/2/12664 PR.</p> <p><b>Activity 19 (GNR 325)</b> The removal and disposal of minerals in terms of section 20 of the MPRDA including (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or (b) The primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening and washing.</p> <p>Ten (10) bulk samples of 10 000m<sup>3</sup> each (2500m<sup>3</sup> overburden, 7500m<sup>3</sup> ore) will be removed from the Orange River riverbed and active channel (below the 1: 100 year flood line).</p>	N/A
<b>Phase 1 - Non-Invasive Activities (Preparations)</b>				
<ul style="list-style-type: none"> <li>▪ Literature review and desktop investigations of remotely sensed data;</li> </ul>	690	N/A	NOT LISTED	N/A

<sup>2</sup> Please note that the NEMA EIA Regulations of 2014 and its associated list of scheduled listed activities have been amended on 7 April 2017 and are now referred to as GNR 327 (Listing Notice 1), 325 (Listing Notice 2), 324 (Listing Notice 3). Specified activities above have been itemized based on the amended 2017 listing notices.

<ul style="list-style-type: none"> <li>▪ Site geological mapping excursion to visit prospecting target areas. A geological map will be produced;</li> <li>▪ Determine / confirm bulk sample locations.</li> </ul>				
<b>Phase 2 – Invasive Activities – BULK SAMPLING</b>				
<p>Vegetation clearance at prospecting focus areas and processing infrastructure (inclusive of contractor’s camp, ablution facilities, stockpile areas, site offices, fences, vehicle parking areas, diesel storage)</p>	< 20 Ha	x	<p><b>GNR 327 – Activity 27</b> Clearance of an area of 1 Ha or more, but less than 20 Ha of indigenous vegetation. Less than 20 ha of Lower Gariep Alluvial Vegetation (endangered) and Western Gariep Hills Desert vegetation including will be cleared for prospecting focus areas and infrastructure areas.</p> <p><b>GNR 324 – Activity 12(g) (i) (ii)</b> Clearance of area of 300 m<sup>2</sup> or more of indigenous vegetation (g) Northern Cape (i) critically endangered or endangered ecosystems (ii) within critical biodiversity areas identified in bioregional plans. Clearance of 20 ha or less vegetation from pockets 1, 2, 3A and 3B and infrastructure areas within the (i) Lower Gariep Alluvial Vegetation type (endangered) and (ii) critical biodiversity area (Category 1 Critical Biodiversity Area) as per the Northern Cape Critical Biodiversity Area, Namaqua District Bioregional Plan.</p>	N/A
<p>Small temporary diversion, re-alignment of the watercourse to gain access to alluvial material for excavation (prospect in blocks with concurrent rehabilitation)</p>	> 100m <sup>2</sup>	x	<p><b>Activity 12 (GNR 327)</b> Development of infrastructure/structures with physical footprint of 100m<sup>2</sup> or more where such development occurs (a) within a watercourse.</p> <p><b>Activity 14 (GNR 324)</b> Development of structures/infrastructure with physical footprint of 10m<sup>3</sup> or more (a) within a watercourse (g) within the Northern Cape, (ii) outside urban areas (bb) National Protected Areas Expansion Strategy Focus Area (ff) critical biodiversity area in terms of bioregional plan (gg) Areas within 10km from national parks or world heritage sites.</p> <p>Excavate a channel way from the current river flow on the dry side of the river bed. Open bottom and top entrances will be included to allow flow through new channel and include a cast bunt wall in river to direct</p>	N/A

			<p>flow through new channel. This will take place within the Orange River riverbed and active channel categorised as a critical biodiversity area (CBA 1) and within 10 km of the Richtersveld National Park and Richtersveld Botanical and Cultural Landscape World Heritage Site. Pockets 1 -3B it is within a NPAES (National Protected Areas Expansion Strategy) protected area, within a SKEP (Succulent Karoo Programme) expert area.</p> <p>Both activity 12 and 14 are applied for since the exact dimensions of the river diversions cannot be confirmed at this stage.</p>	
Excavation of ten (10) trenches with Excavator to obtain bulk samples from Orange River riverbed and active channel (within 1:100 year flood line) and concurrent rehabilitation.	<p>Trench size: 100x25m x 4m = 0.25 Ha / 2500m<sup>2</sup></p> <p><b>10 Trenches = 2.5 Ha</b></p> <p>Bulk sample size/trench 2500m<sup>3</sup> overburden 7500m<sup>3</sup> gravel</p>	x	<p><b>Activity 20 (GNR 327) - Prospecting</b></p> <p><b>Activity 19 (GNR 327)</b> <i>The infilling / depositing of any material of more than 10 m<sup>3</sup> into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m<sup>3</sup> from a watercourse.</i></p> <p>Excavation of ten (10) bulk samples of 10 000m<sup>3</sup> each (2500m<sup>3</sup> overburden, 7500m<sup>3</sup> ore) from the Orange River riverbed and active channel (below the 1: 100 year flood line). A total of 100 000m<sup>3</sup> will be removed. The rocks, pebbles, gravel material left after screening and sorting will be backfilled into the trenches as part of the concurrent rehabilitation works.</p> <p><b>Activity 19 (GNR 325)</b> <i>The removal and disposal of minerals in terms of section 20 of the MPRDA including (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or (b) The primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening and washing.</i></p> <p>Ten (10) bulk samples of 10 000m<sup>3</sup> each (2500m<sup>3</sup> overburden, 7500m<sup>3</sup> ore) will be removed from the</p>	N/A

			<p>Orange River riverbed and active channel (below the 1: 100 year flood line). Eighty per cent (80%) of the riverbed will be worked dry. A total of 100 000m<sup>3</sup> will be removed.</p> <p><b>GNR 324 – Activity 12(g) (i) (ii) Vegetation clearance</b> 300m<sup>2</sup> or more at prospecting focus areas, which are located in endangered ecosystem (Lower Gariep Alluvial Vegetation type) and CBA 1 as per the Northern Cape Critical Biodiversity Area, Namaqua District Bioregional Plan.</p>	
Stockpiling of topsoil within the 1:100 year flood line / Topsoil Stockpile	3 Ha	N/A	NOT LISTED	N/A
Processing Plant (8x18 feet Rotary Pans)	500m <sup>2</sup>	x	<p><b>Activity 20 (b) (GNR 327)</b>  <i>The primary processing of a mineral including winning, extraction, classifying, concentrating, crushing, screening or washing.</i></p> <p><b>Activity 19 b (GNR 325)</b>  <i>The primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening and washing.</i>                  Bulk material reduction at the Rotary Pan Plant for screening and final recovery of alluvial diamond.</p>	N/A
Ablution facility	<6m <sup>2</sup>	N/A	NOT LISTED	N/A
Access roads	5 Ha	x	<p><b>Activity 24 (GNR 327) – Listing Notice 1</b>  <i>Development of a road (ii) with a reserve wider than 13.5m / where no reserve exist where the road is wider than 8 metres and which is 1 kilometre or longer.</i></p> <p><b>Activity 4 (GNR 324) – Listing Notice 3</b>  <i>The development of a road wider than 4 metres with a reserve less than 13.5metres in the (g) Northern Cape (ii) outside urban areas (ee) within critical biodiversity areas as per bioregional plan (gg) areas within 10km from national parks or world heritage sites.</i></p>	N/A

			<p>Access roads of various widths and lengths to cater for machinery (excavators, dump truck), single-, and double cab bakkies will be required. Haul road from trenches to stockpile and processing plant and another to the contractor's camp. The exact dimensions, lengths of each road are still to be determined. These will be developed within a CBA 1 and within 10km of the Richtersveld National Park and Richtersveld Botanical and Cultural landscape (World Heritage Site).</p>	
Diesel Storage	<p>1Ha Either &gt; 30m<sup>3</sup> or &gt; 80m<sup>3</sup></p>	x	<p><b>Activity 14 (GNR 327) – Listing Notice 1</b>  <i>The development/operation of facilities, for storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 80m<sup>3</sup> or more but less than 500 m<sup>3</sup>.</i></p> <p><b>Activity 10 (g) (ii) (bb) (ee) (gg) (GNR 324) – Listing Notice 3</b>  <i>The development and related operation of facilities/infrastructure for storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80m<sup>3</sup> in (g) the Northern Cape (ii) outside urban areas (bb) National Protected Area Expansion Strategy Focus Area (ee) in a critical biodiversity areas (gg) with 10km from national parks or world heritage sites.</i></p> <p>Diesel will be stored onsite in storage tank/s including oil in containers. The combined capacity cannot be confirmed at this stage. Both activities will be applied to cater for either a combined capacity of 30m<sup>3</sup> but less than 80m<sup>3</sup> or more than 80m<sup>3</sup>. The fuel storage will fall within a CBA 1 and within 10km of the Richtersveld National Park and Richtersveld Cultural and Botanical Landscape (World Heritage Site). Pockets 1 -3B it is within a NPAES (National Protected Areas Expansion Strategy) protected area, within a SKEP (Succulent Karoo Programme) expert area.</p>	N/A

PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province

Fence	5Ha	N/A	NOT LISTED	N/A
Site Office	1 Ha	x	Activity 27 (GNR 327) Activity 12 (g) (i) (ii) (GNR 324)	N/A
Vehicle Parking area	1 Ha	x	Activity 27 (GNR 327) Activity 12 (g) (i)(ii) (GNR 324)	N/A
Contractors' Camp (Fly Camp will be used which will be moved between one working are to the next).	1 Ha	x	Activity 27 (GNR 327) Activity 12 (g) (i) (ii) (GNR 324)	N/A
<b>PHASE 3 – Non-invasive activities</b>				
Feasibility Studies to produce Feasibility Study Report	690	N/A	NOT LISTED	N/A



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

(Describe Methodology or technology to be employed, and for a linear activity, a description of the route of the activity)

On 7 September 2020, the DMR accepted Samara’s application for a prospecting right with bulk sampling for alluvial diamonds on the lower Orange River (NC 30/5/1/1/2/12664 PR). The application covers a prospecting right area of 987.98 hectares along a 70 km section of the Orange River.

Samara’s intends to identify whether there are economically exploitable concentrations of alluvial diamond within the focus area by following a prospecting programme to assess the potential to feasibly mine alluvial diamonds along this specific stretch of Orange River. According to the PWP the highest concentration of diamonds is located in the lowest basal levels of the gravels (at the interface of the gravel and bedrock), this being below the flood line of the River.

If granted, the prospecting right will be valid for five (5) years. After the expiry of five years, Samara may request renewal for a period of no longer than three (3) years.

Over the five year period, Samara will follow a three-phased prospecting programme as illustrated in Figure 6.

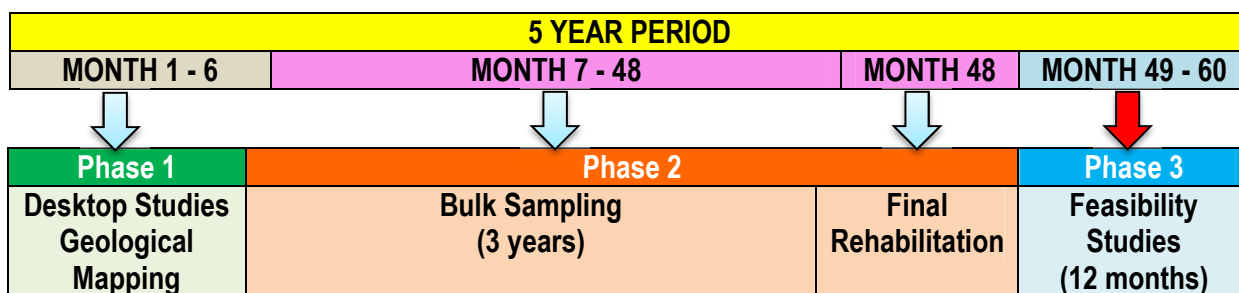


Figure 6: Illustration of three prospecting phases

The various phases are described in detail in the below section.

**Phase 1 – Non-Invasive Prospecting**

**Desktop Study (month 1 – 3):**

The mineral resource and its distribution will be determined through a desktop study where historical data will be extrapolated with the new proposed prospecting area.

**Geological Mapping (Month 1 – 6):**

- The geologist will conduct a site geological mapping excursion to visit prospecting target areas to determine the physical component of the site. A geological map will be produced.
- Positive geological mapping results will allow the geologist to determine/confirm the bulk sample locations and a trench plan will be produced. Next, bulk sampling can begin.

**Phase 2 – Bulk Sampling (Month 7 - 48 months) – 3 years**

As stated, Samara intends to prospect for alluvial diamonds within the 1: 100-year flood line of Orange River. Prospecting will focus on prospecting pockets 1, 2, 3A and 3B. Ten (10) trenches, each 100m x

25m x 4m, will be excavated from these pockets. The volume of gravel bearing resources to be abstracted per trench is 7500m<sup>3</sup> and 2500m<sup>3</sup> of waste/overburden. Bulk sampling will be conducted over a period of three (3) years.

The prospecting methodology will include the following:

- A fly camp (contractor's camp), site office including ablution facilities and equipment storage areas will be established. Areas designed for infrastructure will be cleared of vegetation (if any) and fenced off. All relevant equipment will be brought to site i.e. Excavator, dump trucks, geological equipment, machinery (pumps) and Rotary Pan Plant.
- Small temporary diversions / re-alignment of the river will be constructed to gain access to alluvial material for excavation. A channel way will be excavated from the current river flow on the dry side of the river bed. Open bottom and top entrances will be included to allow flow through new channel and include a cast bunt wall in the river to direct flow through the new channel. The process would include the diversion, abstraction and filtration of the river water, with release of the clarified water back to the river channel downstream of the workings.
- Vegetation (if any) will be cleared by dozer from trench sites, followed by top soil which will be stockpiled at the perimeter of trenches for rehabilitation of mined-out areas.
- An excavator will be used to dig trenches and collect bulk samples of diamondiferous gravels.
- Next, the samples will undergo a reduction and recovery process - Excavated samples will be processed in a 8 x 18 feet rotary pan operation within a closed circuit for pan porrel. The rotary pan will have a minimum and maximum tonnage of 45 and 56 respectively, subject to the Gravel Specific Gravity.
- From the rotary pans, the concentrate will be transferred to an x-ray sorter (Bouvestnik / BV) via a conveyor belt system for further processing and diamond recovery. No chemicals will be used in the process.
- All slimes from the scrubber and pan will be pumped to a Vacuum Claridisk Filter System to clean the water for repump into the Scrubber unit.
- Water for the processing operation will be abstracted from the Orange River. The vacuum and filter system will remove the dirt, filter the water to drinkable standard and either release it back into the river or supply communities with water by pumping it into municipal reservoirs (to be confirmed during Scoping Phase). Please refer to **Appendix 4 for the Processing Plant flow chart**.
- Tailing and overburden will be backfilled (returned) into excavations, followed by topsoil. Distributed areas will be appropriately rehabilitated according to environmental guidelines.

The following associated infrastructure will be developed in support of the prospecting activities:

- Ablution facilities;
- Access roads;
- Diesel storage facilities;
- Fences;

- Office sites;
- Plant sites; and
- Contractor's camp
- Vehicle parking areas.

The active channel of the Orange River is 30 – 40m wide; however, the riverbed is approximately 300 – 400m wide. It is proposed that eight per cent (80%) of the riverbed be worked dry. Samara will make small temporary diversions in the river to gain access to the alluvial material (worked in a phased manner with concurrent rehabilitation). No blasting will be required as part of prospecting activities, and there will be no processing in the riverbed only on the Orange River active channel embankment or within 50 m thereof. Only machinery and associated pumps will be located within the riverbed.

#### **Final Rehabilitation (Month 48) – 1 month**

- Once excavations, sampling and processing is complete, infrastructure and equipment will be removed from site;
- Trench sites will be backfilled, spoil material, topsoil replaced and landscaped;
- The contractor's camp, offices, plant, ablution facility, diesel storage tanks and fences will be removed from site and disturbed areas ripped to promote rehabilitation to pre-prospecting state;
- Any bare soils left post prospecting will be re-vegetated
- River bank stabilisation

#### **Phase 3 – Pre-Feasibility Study (Month 49 -60) – 12 months**

During the final year data will be interpreted, summarised, evaluated and modelled to determine the diamond resource on the property. This will be a continuous process through the prospecting works. Each phase of the prospecting programme will be followed by desktop studies involving interpretation and modelling of all data gathered and how the Samara will proceed with the work program in terms of activity, quantity, resource, expenditure and duration. A pre-feasibility study will be conducted to determine the economic viability of mining the resource and whether the results can support an application for a mining permit.

Initially the project will unfold in a pilot mine (Mining Permit) to allow Samara to study the proposed process (mining method, environmental risks) under the same conditions as will exist in the full-scale mine without the cost of experimenting on large tonnages of ore.

Once the 'proof of concept' shows the mine can be profitable and can be operated at an environmentally sustainable manner without adverse risks, Samara will apply for a Mining Right to upscale the mine to a commercial-scale mine.

### e) Policy and Legislative Context

(a description of the policy and legislative context within which the development is proposed including identification of all legislation, policies, plans, guidelines, spatial tools, municipal planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)

<b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</b> (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process);	<b>HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THIS LEGISLATION</b>
<b>Constitution of Republic of South Africa Act (Act 108 of 1996)</b> Section 24 states that every person has the right to an environment that is not harmful to their health or well-being and to have the <u>environment protected</u> for the benefit of present and future generations through legislative measures that prevent pollution, environmental degradation, promote conservation and secure ecologically sustainable development.	NEMA is designated within the framework of the Constitution. A full EIA process is being followed to determine the potential impact of the project on the social and environmental aspects of the application area. The deliverable from the EIA process will be an approved Environmental Management Programme (EMPr). The prospecting and bulk sampling activities will be managed in accordance to the approved EMPr to reduce environmental impacts on the prospecting focus area and ensure rehabilitation of affected areas to pre-prospecting state. The entire objective of the process is to ensure that the environment is protected.
<b>National Environmental Management Act (Act 107 of 1998) (NEMA)</b> NEMA has been designated within the framework of the Constitution to promote sustainable development. It requires that development must be socially, environmentally and economically sustainable by taking measures to prevent pollution and ecological degradation; promote conservation and secure ecologically sustainable development while promoting environmental justice. It requires that social, economic and environmental impacts of activities are considered, assessed and evaluated, and the impact on people must be anticipated and prevented.  Section 28 of NEMA imposes the ‘polluter pays’ principle whereas the person who causes the pollution must pay for its remediation. Section 24 (5) of NEMA provides for specific listed activities which	The principles of NEMA have been considered. An application for environmental authorisation has been lodged to the DMR under Ref no. NCS 30/5/1/1/2/1 (12664) PR, which specify triggered listed in terms of section 24 (5) of NEMA. A full EIA process is being followed to identify potential environmental and social impacts of the triggered activities. The Scoping Report provides a scope of the potential environmental impacts that need to be investigated as part of the environmental impact assessment and is prepared in compliance with the NEMA.  The Scoping report is subject to a 30-day public review and comment period to solicit valuable inputs from people (key stakeholders, interested and affected parties) which might be affected by the potential impacts from prospecting and details any further in-depth investigation required to evaluate the risks further.  Specialist Scoping Reports have been included for Visual, Freshwater, Wetland, Terrestrial Biodiversity, Hydrology and Geohydrology with the aim to screen the potential impacts on the environment.

<p>require environmental authorisation prior to their commencement. Environmental impacts of such activities must be considered, assessed, evaluated and where possible managed, minimized or prevented. The regulated activities and subject application processes have been published under the 2014 NEMA EIA Regulations (GNR 326).</p>	
<p><b>2014 NEMA Environmental Impact Assessment (EIA) Regulations</b> (as amended on 7 April 2017)          The EIA Regulations (GNR 326) and its associated listing notices 1 (GNR327), notice 2 (GNR 325) and notice 3 (GNR 324) lists developments which require authorisation. Prospecting right activities inclusive of bulk sampling are regulated activities in terms of the GNR 327 (Activity 20-Prospecting) and GNR 325 (Activity 19-Bulk sampling) and require environmental authorisation. The application for environmental authorisation is subject to a full Scoping and EIA Process.</p> <p>The Scoping and EIA Process is regulated in terms of Regulation 21-26 and Regulation 39-44 and sets out the minimum requirements for the process. The applicant must submit the following to the DMR Springbok for decision making:</p> <ul style="list-style-type: none"> <li>▪ Application for Environmental Authorisation</li> <li>▪ <b>Proof of Public Participation Process</b></li> <li>▪ <b>Scoping Report</b></li> <li>▪ Environmental Impact Report &amp; Environmental Management Programme (EIR &amp; EMPr).</li> <li>▪ Closure and Rehabilitation Plan inclusive of a quantum calculation to cater for the required rehabilitation costs.</li> </ul>	<p>The application for authorisation was submitted to the DMR and accepted on 15 September 2020 (NCS 30/5/1/1/2/1 (12664) PR) and is subject to a full Scoping and EIA Study in terms of the EIA Regulations.</p> <p>A Scoping Report (this document) has been compiled. The triggered listed activities have been specified in Table 2. The report is currently subject to a 30-day public review and comment period (public participation). Public engagements will be undertaken during the review period to solicit public inputs on the EIA process Scoping Report.</p> <p>The finalised Scoping Report inclusive of public submissions will be submitted to the DMR either before 21 December 2020 in the beginning of January 2021, based on a 50-day extension request.</p>
<p><b>Mineral and Petroleum Resources Development Act (Act 28 of 2002) (MPRDA) and its amendments</b>          In terms of the MPRDA all mining-related activities require environmental authorisation, rights and or permits before any mineral is removed or activity commenced with. Prospecting activities with bulk sampling require a prospecting right application in terms of Section 16 and 20 of the MPRDA.</p>	<p>Application has been lodged for a prospecting right to the DMR in terms of Section 16 and 20 of the MPRDA. Reference NC 30/5/1/1/2/12664 PR. Application for environmental authorisation has also been lodged and accepted. The Scoping Report (this document) has been prepared as per the predetermined DMR Scoping template.</p>

<p>The MPRDA and NEMA have been aligned with specific environmental legislation associated with mining activities to provide for one environmental system. The DMR is, therefore, the authorising authority for environmental authorisations. DMR has a predetermined Scoping Report template that needs to be completed for prospecting or mining right applications and submitted within a specified timeframe.</p>	
<p><b>Section 48 of the MPRDA – Restriction/prohibition of prospecting and mining on certain land</b>          Subject to section 48 of the MPRDA no prospecting right, mining right may be granted or mining permit issued in respect of –</p> <p><b>Section 48</b></p> <p>c) any land being used for public or government purposes or reserved in terms of any other law          (d) Areas identified by the Minister by notice in Gazette in terms of Section 49.</p> <p>Section 49 specifies the Minister’s power to prohibit or restrict prospecting or mining in certain areas. The Minister may, having regard to the national interest, prohibit or restrict granting of prospecting right, mining right or permit in respect of land identified by the Minister for a period and on such terms and conditions as the Minister may determine.</p>	<p>The PRAA 1 borders the Richtersveld National Park. <b>But the prospecting focus area (pockets 1, 2, 3A and 3B) does not fall within the protected national park.</b></p>
<p><b>National Water Act (Act 36 of 1998) (NWA)</b>          The principles and objectives of the NWA are to guide the protection, use, development, conservation, management and control of water resources in a sustainable and equitable manner for the benefits of all persons.</p> <p>Section 19 of the NWA deals with prevention and remedying effects of pollution in particular where pollution of water resources occur/might occur as a result of activity on land. The person who owns controls, occupies or uses the land in question is responsible for taking measures to prevent pollution of water resources.</p>	<p>The project triggers the following Section 21 water uses and a WULA will be lodged with the Department of Water &amp; Sanitation: Orange-Proto Catchment Management Agency:</p> <ul style="list-style-type: none"> <li>▪ Section 21a – abstracting water from the river, or from boreholes;</li> <li>▪ Section 21c – The temporary diversion of the watercourse during bulk sampling. Natural flow may also be impeded depending on the methodology employed.</li> <li>▪ Section 21f – Clarified water from the vacuum and filtration process at the prospecting works will be released into the river resource;</li> <li>▪ Section 21g – Overburden stockpile, Diamondiferous material stockpile from bulk sampling excavation, Diamond depleted stockpile (waste material) from process plant and temporary onsite disposal of waste;</li> <li>▪ Section 21 i – Temporary altering the course of the watercourse, bulk sampling excavation in the flood line (both bed and banks), rehabilitation of the bed and banks after</li> </ul>

<p>Chapter 4 of the NWA requires licensing of 11 listed water uses which are captured in Section 21, which require an application for a water use license (WULA).</p>	<p>excavations.</p> <p>A WULA Procedure will be followed in terms of the WULA and Appeals Regulations of 2017 (GNR 267). A Hydrological and Geohydrological Scoping Report has been prepared to scope the potential water uses and potential impacts including aspects for further investigation.</p>
<p><b>Mine Water Regulations 704 of 1999 (GG – 20119) – Section 26 – Regulation of the Use of Water for Mining and Related Activities Aimed at the Protection of Water Resources</b></p> <p>The “Mine-water Regulations” is aimed at ensuring the protection of water resources through restrictions on locality, material, and the design, construction, maintenance and operation of separate clean and dirty water systems related to mining activities. Restrictions to locality refers specifically to the placement of mine infrastructure and pollution control above the 1: 50 and 1: 100-year flood zones or within a horizontal distance of 100m of any watercourse or estuary, borehole or well. Detailed regulations on the use of water for mine-related activities were issued in 1999 under the National Water Act framework.</p>	<p>Excavation, bulk sampling activities and infrastructure will be located within the 1: 50 and 1: 100 year flood line of the Orange River. An application for exemption/relaxation of the condition imposed by GN 704 will be submitted as part of the overall WULA submitted to the DWS: Upington Regional Office.</p>
<p><b>National Environmental Management: Protected Areas Act (Act 57 of 2003) (NEMPAA) (effective 2004)</b></p> <p>NEMPAA provides in Chapter 4 Section 48 that, despite other legislation, no person may conduct prospecting or mining activities in special nature reserves or protected areas without the prior consent of the Ministers of Mineral Resources and Environmental Affairs.</p> <p>This prohibition extends to a protected area that was immediately before NEMPAA’s enactment, reserved or protected in terms of provincial legislation for any purpose for which an area could in terms of NEMPAA be declared as a nature reserve or protected environment. NEMPAA binds all state organs and trumps other legislation, including the Minerals and Petroleum Resources Development Act, No 28 of 2002 (MPRDA), in the event of a conflict concerning the development of protected areas.</p> <p>In terms of Section 48 (2), the minister for mineral and energy must review all mining activities which were lawfully conducted in a</p>	<p>The prospecting focus area (pockets 1, 2, 3A, 3B) does not fall within any protected area.</p> <p>PRAA 1 merely borders the Richtersveld National Park at Sendelingsdrif.</p>

<p>protected area prior to 2004. Section 48 (3) states the minister must prescribe conditions for mining activities conducted in protected areas, declared after the commencement of NEMPAA under which those activities may continue in order to reduce or eliminate the impact of those activities on the environmental or for the environmental protection of the area concerned.</p> <p>The interpretation is that prospecting and mining rights/ concessions which lawfully took place prior to the enactment of the NEMPAA, may continue given the footprint area is not increased. Any new prospecting or mining-related activities are prohibited in protected areas.</p>	
<p><b>Richtersveld National Park Proclamation (Government Notice 1969 / Government Gazette 13457 dated 16 August 1991)</b></p> <p>The Richtersveld National Park was proclaimed in August 1991. <b>The park has drafted applicable internal rules in terms of Section 52 of the NEMPAA.</b> The motivation for establishing the park is attributed to the requirement to preserve a representative sample of the Succulent Karoo. SANPARKS manages the park. The Minister of Minerals and Energy Affairs gave permission, in terms of Section 2B (1)(a) of the National Parks Act No. 1976 for the proclamation of the park with the following conditions:</p> <ul style="list-style-type: none"> <li>▪ Existing exploration and mining rights must continue to exist and not be affected by the proclamation of the national park; and</li> <li>▪ <b>Future applications for exploration and mining in the park after the proclamation will be considered on merit.</b></li> </ul> <p>Diamond mining currently takes place in the park at Acee plant, Grasdrift, Jakkalsberg, Oena and Sendelingsdrif. Current mining activities are managed according to section 48 of NEMPAA. Old mine dumps act as gravel source, used for maintenance purposes.</p>	<p>The prospecting focus area (pockets 1, 2, 3A and 3B) is not located within the national park but within 10km thereof.</p>
<p><b>National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM:BA)</b></p> <p>The NEMBA provides for the management and conservation of</p>	<p>The National Threatened Ecosystem Dataset has been studied. The prospecting pockets 1, 2, 3A and 3B fall within a threatened ecosystem namely Lower Gariep Alluvial Vegetation and is considered endangered. Clearing of vegetation will be required for trench sites and associated</p>



<p>South Africa's biodiversity within the framework of NEMA and the protection of species and ecosystems that warrant national protection. A list of threatened and protected species, categorised as critically endangered (CR), endangered (EN), and vulnerable (VU) or protected has been issued in terms of Section 56 (1) of the NEMBA. South Africa also uses the internationally endorsed World Organisation-International Union for Conservation of Nature (IUCN) <b>IUCN Red List Categories and Criteria</b> in the Red List of South African plants.</p> <p>A list of threatened and protected ecosystems was gazetted in 2011 in terms of Section 52 (1) of the same act. The ecosystems are categorised as critically endangered (CR), endangered (EN), and vulnerable (VN) or protected.</p>	<p>prospecting infrastructure.</p> <p>Several flora species listed under section 56 (1) may be present at the site. Several Faunal Species of Conservation Concern in terms of the Threatened and Protected Species list of 2015 as it relates to NEMBA has potential distribution ranges that encompass the focus area.</p> <p>A Biodiversity Scoping Report has been compiled to screen the potential impact of the prospecting activities on fauna, flora and avifauna including potential presence of possible threatened or protected species and including list of species potentially present at the focus area. It also details all applicable legislation. It prescribes the methodology to conduct a field assessment and the full Biodiversity Impact Assessment during the EIA Phase.</p> <p>The specialist will present findings and management measures if conservation concern species do exist on site. A licence to disturb protected flora will be obtained from the Northern Cape Department of Environment and Nature Conservation (DENC). Protected flora outside of the prospecting focus and infrastructure areas will be marked and left intact as much as possible.</p>
<p><b>National Forest Act, (Act 84 of 1998)</b> In terms of Section 15(1) of the act, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated.</p> <p>If any protected trees require removal from a development site a Protected Tree Permit needs to be obtained from the Department of Environment, Forestry and Fisheries (DEFF) prior to such removal.</p>	<p>Several protected tree species, <i>Boscia albitrunca</i> (Shepards Tree), <i>Vachellia erioloba</i> (Camelthorn) and <i>Euclea pseudebenus</i> (Cape Ebony) are likely to be located throughout the focus area and within the prospecting pockets.</p> <p>The prospecting activities would avoid removal of protected trees as far as possible. In stances where it cannot be avoided, a permit for removal will be obtained from DEFF.</p>
<p><b>National Environmental Management: Waste Act (Act 58 of 2008) (NEM:WA)</b> NEMWA is the principal act governing waste management within South Africa since 2009. The objectives of the act involve the protection of health, wellbeing and the environment. It provides measures for to avoiding and minimising the generation of waste, reducing, recycling and recovering waste, and treating and safely</p>	<p>The backfilling of process material back into trenches do not require a waste management license. No slimes dam will be constructed. No waste rock dumps will be created. Topsoil and material stockpiles will be backfilled into trenches as soon as the bulk samples have been collected (concurrent rehabilitation).</p>

<p>disposing of waste. It further requires that all waste management activities must be licensed. Schedule waste management activities which require a WML are included under Section 19 (GNR 921) of the NEMWA and GNR 633/2015 recently inserted residue deposits resultant from prospecting as a Category A activity which requires a WML under the provisions of NEM: WA. Accordingly, no person may undertake a waste management activity, without a waste management license. The DMR is the authorising authority for waste management activities related to prospecting, exploration and or mining.</p>	
<p><b>National Heritage Resources Act (Act 25 of 1999) (NHRA)</b>          NHRA protects all structures and features older than 60 years (Section 24), archaeological sites and material (Section 35) and graves and burial sites (Section 36). Section 38 indicates that any person intending on undertaking any form of development which involves the activities listed below must, at the earliest stage of initiation, notify the South African Heritage Resources Association (SAHRA):</p> <ul style="list-style-type: none"> <li>• Construction of road, wall, power line, pipeline, canale/similar form of linear development/barrier exceeding 300m in length;</li> <li>• Construction of a bridge/similar structure exceeding 50m in length</li> <li>• Any development or other activity which will change the character of the site-             <ul style="list-style-type: none"> <li>○ Exceeding 5000m<sup>2</sup> in extent or</li> <li>○ Involving 3 or more existing erven / subdivision thereof or;</li> <li>○ The re-zoning of a site exceeding 10 000m<sup>2</sup> in extent; or</li> <li>○ Any other category of development provided for in regulations by SAHRA / provincial heritage resources agency.</li> </ul> </li> </ul>	<p>A Heritage and Palaeontological Scoping Report has been compiled and attached to this report. Based on the desktop analysis of the archaeological sites presented by stone stool sites are scattered along the Orange River banks and are likely to be impacted by the prospecting and bulk sampling activities.</p> <p>The prospecting activities will aim to avoid any Heritage or Paleontological features on the project site.</p> <p>A full Heritage and Paleontological Investigation would be commissioned during the EIA Phase to establish whether any of protected features exist and whether such heritage or paleontological resourced will be affected, if so, also determine possible mitigation measures. No Heritage features will be disturbed without prior consultation with SAHRA/ National Heritage Council of Namibia / Northern Cape Heritage Resources Agency / South African National Commission for UNESCO.</p>
<p><b>World Heritage Convention Act 1999 (Act 43 of 1999)</b></p>	<p>A Heritage and Palaeontological Scoping Report has been prepared and found that the</p>

<p><b>(WHCA)</b> The WHCA incorporates World Heritage Convention into SA law and regulates the recognition and establishment of World Heritage Sites and management thereof.</p> <p>The act recognises that cultural heritage and the natural heritage are irreplaceable possessions, not only of the Republic, but of humankind as a whole and acknowledges that the loss, through deterioration, disappearance or damage through inappropriate development of any of these most prized possessions, constitutes an impoverishment of the heritage of all the peoples of the world and, in particular, the people of South Africa.</p>	<p>prospecting pockets 1, 2, 3A and 3B all fall within 10km of the Richtersveld Cultural Botanical Landscape (UNESCO World Heritage Site) which has full legal protection since 2007. Prospecting or mining near a World Heritage Site requires robust assessment based on ICOMOS Guidance.</p> <p>A full Heritage and Palaeontological field assessment and impact assessment will be conducted for the application and will follow the ICOMS Guideline published in January 2011 by the International Council for Monuments and Sites. The ICOMS offers guidance on HIA's for World Heritage properties in order to evaluate effectively the impact of potential development on the Outstanding Universal Value (OUV) of properties.</p>
<p><b>National Environmental Management: Air Quality Act (Act 39 of 2004) (NEM:AQA)</b> NEM: AQA regulates air quality to protect the environment by providing measures for prevention of pollution and ecological degradation and securing ecological sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring. Government Notice 893 of 22 November 2013 provides a list of atmospheric emission activities in terms of Section 21 of NEM: AQA which require licensing. The notice further establishes minimum emission standards for the listed activities.</p> <p>NEMAQA places the responsibility for air quality management on district authorities tasked with baseline characterisation, management and operation of ambient monitoring networks, licensing of listed activities and emission reduction strategies.</p>	<p>No Air Emission License (AEL) will be required for the prospecting activities as no listed activities are triggered under NEM:AQ.</p>
<p><b>Convention on Wetlands (RAMSAR, 1971 enforced 1975)</b> The Convention on Wetlands, Ramsar Convention, is an environmental treaty established in 1971 by UNESCO. It provides for national action and international cooperation regarding the conservation of wetlands, and wise, sustainable use of their resources. Ramsar lists wetlands of international importance across the world.</p>	<p>PRAA 1 prospecting pockets are located approximately 30km upstream from the Orange River Mouth RAMSAR Site. The proposed prospecting and bulk sampling activities have the potential to affect the Orange River Mouth and thus the RAMSAR wetland system. A Freshwater Ecological Scoping Report has been compiled to describe the baseline conditions of the affected environment and screen potential impacts and risks from the prospecting on the RAMSAR wetland system. A further field assessment and full Freshwater Ecological Impact Assessment Study will be conducted during the EIA Phase.</p>

<p>The Orange River Mouth was declared a Ramsar site in 1991, as was the Namibian side of the mouth in 1995. Together they form the Orange River Mouth Transboundary Ramsar Site. Due to server degradation of the salt marsh by mining activities, the site was placed on the Monteux Record in 1995, for wetland sites where changes in ecological character have occurred.</p>	
<p><b>Northern Cape Nature Conservation Act, 2009 (Act 9 of 2009) (NCNCA)</b>          NCNCA was written to consolidate environmental management legislation in the Province. It includes regulations which call for the protection of indigenous plants, animals which require a permit from the provisioning authority, NCNCA for its pick, sell, removal, donate, in and or export in the province. Schedule 2 (Protected Species) of the NCNCA lists several species that are protected within the Northern Cape Province.</p>	<p>A Biodiversity Scoping Report has been compiled for the project. Based on desktop analysis several floral species (e.g. Astridia herrei (a Critically endangered endemic) and Conophytum bilobum (a near threatened endemic)) that are protected under Schedule 2 have the potential to be located within the focus area and within all the prospecting pockets. The potential list of species has been included in the Biodiversity Scoping Report. A comprehensive biodiversity field assessment and impact assessment will be undertaken to determine the presence and the possibility of occurrence for all protected species and the impact on overall terrestrial ecology including biodiversity priority areas will be considered.</p>
<p><b>2016 Northern Cape Critical Biodiversity Areas</b>          Northern Cape DENC is the custodian of the environment in the Northern Cape Province and primary implementing agent of the Northern Cape CBA plan. This is done by providing a map of biodiversity priority areas, referred to as Critical Biodiversity Areas (CBAs) with accompanying land-use planning and decision making guidelines.</p>	<p>Prospecting pockets 1, 2 3A and 3B are located within a Category 1 CBA.</p> <p>CBA1 areas consist of intact, undisturbed ecosystems. A CBA is an area that must remain in good ecological condition to meet biodiversity targets for ecosystem types, species of special concern of ecological processes. CBAs can meet biodiversity targets for terrestrial and/or aquatic features. CBA Category 1 are areas that are irreplaceable or near irreplaceable for meeting biodiversity targets. There are no or very few other options for meeting biodiversity targets for this area. Mining is not a compatible land use within a CBA1. These areas were identified as being a CBA1 for a number of reasons: The area has a high value for climate resilience, it supports several threatened species, it maintains important landscape structural elements, it is within a NPAES (National Protected Areas Expansion Strategy) protected area, within a SKEP (Succulent Karoo Programme) expert area (i.e. geographic priority areas identified as the most efficient locations for achieving conservation targets), within a river area, within a wetland area, within a World Heritage Site, and within a protected area buffer.</p> <p>A Biodiversity Scoping Report has been compiled to screen the potential biodiversity</p>

	impacts (incl. CBAs) and is included in the Scoping Report. A full Biodiversity field assessment and impact assessment will be conducted during the EIA Phase.
<p><b>Namakwa Critical Biodiversity Areas 2016 (Bioregional Sector Plan)</b> The Namakwa CBA serves as the Bioregional Sector Plan and shows both aquatic and terrestrial CBA's and ecological reserve areas in the Northern Cape: Richtersveld, Nama Khoi, Kamiesberg, Hantam, Karoo Hoogland and KhGi-Ma.</p>	The prospecting pockets according the Bioregional Plan fall within an Ecological Support Areas (ESA) related to the Orange River Terrestrial Migration Corridor. A Biodiversity Scoping Report has been compiled to screen the potential biodiversity impacts (incl. CBAs) and is included in the Scoping Report. A full Biodiversity field assessment and impact assessment will be conducted during the EIA Phase to determine the impact on the ESA.
<p><b>2017 Strategic Water Source Areas for Surface Water</b> Surface water SWSAs are defined as areas of land that supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size. They include trans boundary areas that extend into Lesotho and Swaziland.</p>	The focus area is not located within 10 km of a Strategic Water Source Area.
<p><b>Mining and Biodiversity Guideline 2013 (MBG)</b> The MBG identifies and categorizes biodiversity priority areas sensitive to mining in order to mainstream biodiversity issues in decision making into the mining sector. It provides direction as to where mining-related impacts are legally prohibited, where biodiversity priority areas may present high risks for mining projects, and where biodiversity may limit the potential for mining.</p>	<p>The MBG 2013 has been consulted through the SANBI BGIS online mapping system. Prospecting pocket 1 is located within area considered to be of High Biodiversity Importance. An environmental impact assessment should include an assessment of optimum, sustainable land use for a particular area and will determine the significance of the impact on biodiversity. Mining options may be limited in these areas, and red flags for mining projects are possible. Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.</p> <p>Prospecting pockets 2, 3A and 3B are located within areas considered to be of Highest Biodiversity Importance. This is likely attributed to the location of the pockets alongside the Orange River. Environmental screening, EIAs and their associated specialist studies should focus on confirming the presence and significance of these biodiversity features, and to provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision making for mining, water use licences, and environmental authorisations. If they are confirmed, the likelihood of a fatal flaw for new mining projects is very high due to the significance of the biodiversity features in these areas and the associated ecosystem services.</p> <p>A Biodiversity Scoping Report has compiled and has considered the MBG and included in this report. The Biodiversity report has thus been used to inform the biophysical environment characterisation in this report.</p>
<p><b>Northern Cape Provincial Spatial Development Framework</b> The NCPSDF is a provincial strategy applies sustainable principles</p>	The prospecting focus area is located with the Gariiep Centre (GC) of plant endemism which encompasses the Richtersveld and extends northwards into Namibia's Spergebiet and supports

<p>to all forms of land use management through NC and facilitates practical results, as it related to the eradication of poverty and inequality and the protection of integrity of the environment.</p>	<p>355 endemic plant species. The prospecting activities do not fall within a specified development corridor set out for the Northern Cape Province.</p>
<p><b>Richtersveld National Park Protected Area Management Plan 2018 - 2028</b> The RNP Management Plan serves as a reference to the management and development of the KNP in its current and envisaged future form with information on the background, biophysical context, desired state, programmes at strategic and operational levels and costing.</p>	<p>The prospecting pockets 1, 2, 3A and 3B do not fall within the RNP.</p>
<p><b>Richtersveld Integrated Development Plan 2018/2019</b> The Integrated Development Plan is a strategic tool for governance and planning at the municipal sphere of government. It is used as a delivery tool that integrates the functions of three spheres of government in a given municipal space. As such, IDPs are a collective expression of the developmental intentions of all three spheres of government in a given municipal space based on local needs.</p>	<p>The IDP has been consulted in the preparation of this Scoping Report. The IDP targets economic growth but is silent regards to mining in the Richtersveld Local Municipality. The prospecting activities will meet the targets of the IDP in that it will create jobs, yet very few and temporary in nature.</p>
<p><b>SANBI BGIS Online Mapping System (<a href="http://www.bgis.sanbi.org">www.bgis.sanbi.org</a>)</b> Online biodiversity mapping system by SANBI used to determine sensitive environmental features across South Africa, which is sensitive to surface impacts from developments.</p>	<p>The SANBI BGIS system has been used to determine the baseline environmental conditions of the project site.</p>

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

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

### **Need**

The prospecting focus area is located on the left bank of the Orange River in a well-established alluvial diamond-mining province close to Auchas, Daberas alluvial diamond mines, downstream of Reuning (Sendelingsdrif) alluvial diamond mine, respectively, located on the south bank of the Orange River.

The geology of the PRAA 1 falls under the Gariep belt or complex that stretches over Namibia and South Africa. The Gariep belt makes up the immediate environs of the Daberas mine, characterised by lenticular bodies of meta-sediment with dolomite, shale, schist, green schist, ortho-/para-amphibolite, quartzite, intraformational and basal mixtite, grit, which belongs to the Namibian geological age (Botha, 2004). Prospecting and bulk sampling will occur in the raised river terraces along the Lower Orange River which consist of gravel deposits that have formed between Late Tertiary and Quaternary times. These fluvial sequences lie across the regional strike of the country rocks on the Hilda formation of the Precambrian Gariep Group (Enkara, 2004).

To explore the potential resource Samara needs to conduct prospecting and bulk sampling activities to confirm historic mineral information including occurrence of a viable diamond resource; and if a viable deposit exists within these prospecting pockets. The bulk sampling will confirm the information obtained through field mapping, desktop studies and literature review. It will allow the preparation of Geological Modeling and a resource estimation which confirms if the alluvial diamond resource can be feasibility mined in future in an environmentally, socially and economically viable manner.

If it can be proven that the alluvial diamond deposit can be optimally mined, a new small scale commercial mine (pilot mine) will be developed with the potential to contribute to the provincial and local economy and generate employment for both local and cross-border communities.

### **Desirability**

According to the Mining and Biodiversity Guidelines of 2013 prospecting pocket 1 is located within area considered to be of High Biodiversity Importance and pockets 2, 3A and 3B are located within areas considered to be of Highest Biodiversity Importance. This is likely attributed to the location of the pockets alongside the Orange River.

It should however be noted that the proposed prospecting activities, specifically bulk sampling, will be a short term activity (3 years). The provisional planning is for full rehabilitation of the bulk-sampling excavations using the same material that was excavated. The rehabilitation will be according to the environmental guidelines and is to be properly filled and compacted to 'fully' restore the beds and banks of the watercourse. Good monitoring and management, good housekeeping on-site during all phases of the project, and diligent attention to details during rehabilitation could result in a fully restored site.

The PRAA 1 prospecting focus area is located amidst several current diamond mining operations. The prospecting focus area is located either within or next to the Lower Orange River (LOR) Diamonds Pty Ltd Mineral Lease Area. Prospecting pocket 1 is next to current LOR mining operation Bloedrif, pocket 2 is next to Nxodap and pockets 3A and 3B is next to Jakkelsberg.

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

Samara requires an environmental authorisation valid for a period of 8 years. This period will allow for the five (5) year validity period of the prospecting right and potential renewal for another three (3) years.

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

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

### **i. Details of all alternatives considered.**

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

#### **(i) The property on which or location where it is proposed to be undertaken**

PRAA 1 comprises prospecting pockets 1, 2, 3A & 3B on the left bank of the Orange River, boundary to a Portion of Remainder of the Farm Richtersveld No. 11 under DMR ref. NC30/5/1/1/2/12664 PR.

Diamond mining currently takes place at Bloedrif, Nxodap, Jakkalsberg and Reuning at Sendelingsdrif. Based on the historical exploration works and the presence of established commercial diamond mines there is definite evidence of alluvial diamond deposits along the Orange River and according to Samara's PWP available in higher concentrations within the flood plains of the Orange River.

No property alternatives have been considered since historical data and current diamond mining confirms the presence of alluvial deposits on the property.

#### **(ii) The type of activity to be undertaken**

No activity alternatives were considered. Trenching and bulk sampling are the recognised methods of prospecting for alluvial diamonds within the application area. Samara will however be exploring alluvial gravel pockets within the flood line of the Orange River while other companies explored directly above the 1: 100-year flood line of the River.

#### **(iii) The design or layout of the activity**

The location of the prospecting and bulk sampling activities within the PRAA 1 are determined by the location of alluvial gravel pockets to be explored and sampled along the Orange River. Processing infrastructure will be placed in relation to the position of the bulk sampling activities. The Rotary Pan Plant will thus need to be located on the Orange River embankment below the 1: 100-year flood line, above the active channel, not less than 50m from the river bed.

The Orange River is extremely ecologically important and sensitive, and prospecting and bulk sampling activities pose a very significant risk to the system. It is thus deemed essential that all aspects of the proposed prospecting and bulk sampling activities are considered in extensive detail and all aspects are exceptionally well planned and executed. It is likely that significant constraints



will be placed on the activity to conserve the environment, as a minimum. This may also relate to the design and layout of activities.

Alternative positions will be considered for the processing infrastructure based on the outcome of freshwater, biodiversity, visual, hydrological and geohydrological specialist investigations in order to avoid/minimise impacts on the riverbed, embankments and active channel.

The specialist investigations will ensure that all planning of the proposed development is cogently considered and all project plans and designs can adequately consider the characteristics of the river system.

As long as the prospecting and bulk sampling activities do not take place within the active channel of the Orange River; and are undertaken in the low flow season with all rehabilitation completed before the rising of the river, the risk to the system can be significantly reduced. These mitigatory measures, combined with other design management mechanisms and with well-managed construction and implementation practices, could potentially lead to significantly reduced impacts.

**(iv) The technology to be used in the activity**

Samara will employ the latest diamond recovery technologies (Figure 7) in their operations. Bulk X-ray sorter (Bourevestnik) will be used for further processing and diamond recovery. The X-ray units make diamond recovery more efficient and limit product theft and shrinkage.

In order to limit pollution on the Orange River, Samara has excluded the use of a Dense Media Separation (DMS) technology since it requires chemical to separate heavy from light material in the processing plant and can pose a potential pollution risk to the Orange River.

Furthermore, Samara will keep its operations small and conduct current rehabilitation (rehabilitate quicker). All aspects of the prospecting and bulk sampling activities will be considered in extensive detail and all aspects will be well planned and executed.

	<b>Equipment</b>	<b>Applications</b>	<b>Comments</b>
1	Modern Drone Technology	Accurate survey, surface elevations to identify terraces and channels	Very useful on old deflated deposits
2	Reverse-Circulation Drilling	Accurate mine planning to identify minable gravels and stripping levels	
3	Digital Elevation Modelling	Modelling of drill bedrock data to identify scours where heavy minerals would concentrate	
4	Geographical information Systems (GIS)	Manage large volumes of surface elevation, survey and drill data.	
5	3D-Modelling packages	Used to identify potential high-grade areas	
6	In-Pit Screening Units	Efficient removal of the oversize at the face has led to large cost savings	Large cost, water savings
7	High-frequency De-sanding Screening	Efficient removal of the 3 mm to 6 mm fraction has revolutionised the industry.	Allows the mining of ultra-low grade, high diamond value deposits
8	Modern diamond X-Ray Recovery systems eg. Bourevestnik (BV) technology (Russian)	Primary and concentrate diamond recovery	Modular and containerized units; high security
9	X-Ray Tomography Mineral Particle Sorters (XRT)	Efficient recovery of large and Type II diamonds	One of the reasons why so many large stones have been recovered in the past 5 years
10	Remote CCTV Security and Site-Monitoring Technology	Remote monitoring of sensitive areas on mines as well as access routes have cut diamond theft significantly	

**Figure 7: Modern Technology Applications for Successful Diamond Mining**

#### **(v) The operation aspects of the activity;**

Alternative operational aspects being considered include:

- Water for the processing operation will be abstracted from the Orange River. The vacuum and filter system will remove the dirt, filter the water to drinkable standard release it back into the river; or
- Supply communities with water by pumping it into municipal reservoirs (to be confirmed during Scoping Phase).

No other operational alternatives have been considered. Operational alternatives may however prevail during the Scoping and EIA Phase based on specialist inputs and more in-depth field investigations.

#### **(vi) The option of not implementing the activity**

This alternative assumes that the activity does not go ahead. This alternative becomes particularly important when an activity poses several negative environmental impacts of high significance. In some cases, the no-go alternative is the only realistic alternative and has a critical role to play.

The NEMA seeks sustainable development where economic planning attempts to foster economic growth while preserving the quality of the environment. Sustainability comprises pillars i.e. economy, society and the environment.

The current economic status quo shows a significant decline in South Africa's diamond production from 15.8 million carats in 2005, with consequent negative impacts on the economy, foreign earnings, employment and communities in key mining provinces and areas. Specifically true for the Namaqualand area. It is believed that there is still a widespread and voluminous alluvial diamond deposit in Namaqualand.

According to the Richtersveld IDP (2020) mining is the dominant economic activity followed by conservation in the prospecting focus area. The mining industry employs many disadvantaged communities who rely on income from the industry. The recent mine closure at Trans Hex Operations in Richtersveld Ward 2 has negatively impacted on the economic activities and income of the people. The rural areas close to the prospecting focus area, Kuboes, Sanddrif and Lekkersing have an unemployment rate of between 54% to 76%. The proposed prospecting and bulk sampling activities will generate job opportunities (few in nature) for the period of prospecting. If the prospecting and bulk sampling results are favourable it will see the development of the pilot mine, later a full-scale commercial mine, which will provide much-needed job opportunities for both local and cross border communities. If the prospecting and bulk sampling does not go-ahead these opportunities will not be realised or the prospects of a full scale commercial diamond mine in future.

From an environmental point of view bulk sampling is proposed within the regulated area of the Orange River and poses a very significant risk to the system and is located approximately 30km upstream of the estuary known as the Orange River Mouth RAMSAR Site. Further diversion of flow in the headwaters of the Orange River is likely to further reduce water availability in the Orange River Mouth. The planned prospecting and bulk sampling activities have the potential to affect the Orange River Mouth and thus the RAMSAR wetland system. Such impact, if at all significant would be regarded as unacceptable. (SASS *Freshwater Scoping*, 2020).

However, the risk to the system can be significantly reduced by implementing mitigation measures combined with other design management mechanisms and with well managed construction and implementation practices i.e. no bulk sampling within the active channel of the Orange River, activities must be undertaken in the low flow season with all rehabilitation completed before the rising of the river, the risk to the system can be significantly reduced. Ultimately the provisional planning is for full rehabilitation of the bulk-sampling excavations using the same material that was excavated. The rehabilitation will be according to the environmental guidelines and is to be properly filled and compacted to 'fully' restore the beds and banks of the watercourse. Good monitoring and management, good housekeeping on site during all phases of the project, and diligent attention to details during rehabilitation could result in a fully restored site.

The Orange River will have the potential to provide further economic growth along its banks to the benefit of local communities in dire need of income. The no-go option is therefore not favourable and the go option should at least be subject to discussion and investigation.

In the end the EIA Process will need to take its course and determine if the environmental risk to the Orange River is worth the economic gain (wealth and jobs) of implementing the prospecting and bulk sampling activities and potential future mining aspect. This cannot be determined at this stage since further in-depth specialist field investigations are required and extensive stakeholder engagement.

## **ii. Details of the Public Participation Process followed**

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

The Public Participation Process (PPP) forms the cornerstone for detailing the Scoping Report. The PPP is conducted in accordance to Regulation 41 to 44 of Government Notice R326 of the NEMA Regulations. The objective of the EIA process is to engage the public in the decision-making process linked to the proposed project by doing the following:

- Identifying potential interested and affected parties (I&APs) on the project
- Soliciting inputs and comments pertaining to the activities from such parties by providing them with an opportunity to express their views on the environmental and social impacts of the application.
- Stakeholders are engaged in the two stages of the EIA Process i.e. Scoping, EIA Phase

Kindly note that a consolidated EIA Process and PPP is being followed the two Samara prospecting right applications along the Orange River namely PRAA 1 (12664 PR) and PRAA 2 (12663 PR). The application properties are end-to-end along a 70km stretch of the lower Orange River and the affected parties to be consulted are identical.

The EIA Process requires the submission of a Scoping Report and EIR & EMPr for each application, to the DMR for decision making, which have been subjected to a 30 day public comment period. The draft Scoping Report is, therefore, the first point of engagement with I&APs on the EIA Process.

To this effect, a draft Scoping Report (this document) has prepared for each application area and is made available for a 30-day public review and comment period from 13 November to 14 December 2020. Public engagements will be scheduled during the review period and the arrangements will be communicated to I&APs. These engagements could either be virtual, via email, teleconference or one-on-one or public meetings/open day.

Upon the lapse of the public review period, the public submissions and outcomes of the public engagements will be recorded in a consolidated Issues and Response Report (IRR). The IRR will be attached to each final Scoping Report and submitted to the DMR for approval. DMRs decision will state whether Samara may proceed to the EIA Phase based on the EIA Plan of Study presented in this document. I&APs will be notified of the DMR: decision via email.

**The sections below detail the public participation tasks scheduled for the Scoping Phase of the applications.**

**a. Identification and Registration of Interested and Affected Parties (I&APs)**

Regulation 42 of the NEMA EIA Regulations of 2014 requires that a register of interested and affected parties is opened and maintained and such is to be submitted to the decision making authority, it must (a) contain all persons, who as a consequence of the PPP conducted in respect of the application, have submitted written comments or attended meetings (b) all persons who have requested, in writing for their names to be placed on the register; and (c) all organs of state which have jurisdiction in respect of the project.

Regulation 41 (2)(b) of the EIA Regulations of 2014 requires that the PPP involves giving written notice, in any manner provided for in Section 47D of NEMA to-

- Registered landowners
- Occupiers of the application site
- Person in control of the application site
- Owners, persons and occupiers of land adjacent to the site where the activity is to be undertaken;
- Municipality in which the activity falls (local and district)
- Municipal councillor of the ward in which the site is situated
- Organisations of ratepayers that represent the community in the area;
- Every state department that administers a law relating to the project;
- All organs of state which have jurisdiction in respect of the activity;
- All potential, or, where relevant registered interested and affected parties
- Any other party as required by the decision making authority.

As per the requirements of the regulations an interested and affected party database has been opened for the project and will be maintained through the Scoping and EIA Process.

The following key stakeholders have been identified, included on the I&AP Database and will be consulted:

<b>I&amp;AP Type</b>	<b>Details</b>
Landowner	<ul style="list-style-type: none"> <li>• Department of Public Works (state owned)</li> </ul>
Person in control of land	<ul style="list-style-type: none"> <li>• Richtersveld National Park under the management of SANPARKS</li> <li>• Richtersveld Combined Management Committee</li> </ul>
Lower Orange River Authority – South Africa	<ul style="list-style-type: none"> <li>• Department of Water and Sanitation: Orange – Proto (Upington)</li> </ul>
Lower Orange River Authority - Namibia	<ul style="list-style-type: none"> <li>• Namibia: Ministry of Agriculture, Water and Rural Development</li> </ul>
Occupiers of site	<ul style="list-style-type: none"> <li>• African Star Minerals (Pty) Ltd (Oena Mine Mineral Lease)</li> </ul>

(existing mining concessions)	<ul style="list-style-type: none"> <li>• Southstone Minerals Pty Ltd</li> <li>• Lower Orange River Diamonds (Pty) Ltd eight mining operations: <ul style="list-style-type: none"> <li>- Aace, Swartpoort, Reuning,</li> <li>- Suidhek, Jakkelsberg, Nxodap,</li> <li>- Bloeddrift, Baken,</li> </ul> </li> </ul>
Community Property Associations	<ul style="list-style-type: none"> <li>• Richtersveld Sida!Hub Community Property Association</li> </ul>
Adjacent landowner/communities	Communities situated in the Richtersveld deemed I&APs include: <ul style="list-style-type: none"> <li>- Kuboes, Eksteenfontein, Lekkersing, Alexander Bay, Sendlingsdrif, Sanddrift</li> </ul>
Downstream water users	Lower Orange River Stakeholders Forum
Affected Parties	Richtersveld Transfrontier Park
Municipality in which the activity falls	<ul style="list-style-type: none"> <li>• Richtersveld Local Municipality</li> <li>• Namaqua District Municipality</li> </ul>
Richtersveld Ward Councillor	<ul style="list-style-type: none"> <li>• Ward 1 – Willem Links (PR 12663)</li> <li>• Ward 2 – Anna Bock (PR 12664)</li> </ul>
Organisations	<ul style="list-style-type: none"> <li>• Orasecom</li> <li>• Centre of Environmental Rights, Greenpeace Africa</li> <li>• UNESCO, RAMSAR</li> <li>• Earth Life Africa, Namaqua Action Group</li> </ul>
Organs of State	<ul style="list-style-type: none"> <li>• National Department of Environment, Forestry and Fisheries (Protected Areas)</li> <li>• Department of Environment and Nature Conservation (Springbok, Kimberley)</li> <li>• Department of Forestry, Fisheries</li> <li>• Department of Rural Development and Land Reform</li> <li>• Land Claims Commissioner</li> <li>• South Africa Heritage Resource Agency</li> <li>• Northern Cape Heritage Resources Agency</li> <li>• National Heritage Council of Namibia</li> <li>• Northern Cape Department of Economic Development and Tourism (DEDT) (Kimberley)</li> <li>• Northern Cape Department of Sports, Arts and Culture</li> </ul>

### **b. Newspaper Advertisements**

Regulation 41, 2(c) of the NEMA EIA Regulations of 2014 requires that an advertisement is placed in (i) one local newspaper or provincial Government Gazette and (ii) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the metropolitan or district municipality.

A newspaper advertisement has been published in the Plattelander and Gemsbok newspapers on 13 November 2020 to call for registration of I&APs and notify the public of the availability of the draft Scoping Reports for 30 days public review and comment from 13 November to 14 December 2020.

I&APs are given the opportunity to register and raise comments within 30 days of the advertisement.

### **c. Site Notices**

Regulation 41 (2) of the NEMA EIA Regulations of 2014 requires a person conducting PPP to take into account any relevant guidelines applicable to PP as contemplated in section 24J of the Act and Draft Scoping Report available for 30 days public review

must give notice to all potential I&APs of an application or proposed application which is subject to PP by - (a) fixing a notice board at places conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of (i) the site where the activity to which the application or proposed application relates; and (ii) any alternative site.

Site notices will be placed in Sanddrif, Sendlingsdrif, Eksteenfontein, Kuboes, Alexander Bay, Lekkersing and Alexander Bay Border Control as well as at highly frequented areas within the application area.

#### **d. Direct Notification to I&APs of Draft Scoping Report Availability**

The draft Scoping Reports have been prepared and are currently out for public review and comment for a period of 30 calendar days from 13 November to 14 December 2020. Electronic versions of the reports and comment sheets are available on the following website: <http://www.naledzi.co.za/public-documents-naledzi.php>. Hard copies of the Scoping Reports have also been made available at the following public libraries for review:

- Sanddrift, Sendelingsdrif, Alexander Bay, Eksteenfontein , Kuboes and Lekkersing.

I&APs can comment on the draft Scoping Reports by completing the comment sheet (available on the above website and or at above-mentioned locations), writing a letter, sending an email or contacting the appointed independent environmental consultant as per the below-given details. I&APs should submit their comments together with their name, contact details to the contact person indicated below **on or before 14 December 2020.**

The availability of the Scoping Report is announced in the Plattelander and Gemsbok newspapers as well as through the distribution of Stakeholder Notification letters. Electronic and hard copies of the Scoping Reports will be submitted to organs of state including local and district authorities.

#### **e) Round One of Public Engagements**

I&APs will be consulted through Focus Group Meetings/one on one meeting, virtual and public engagement meetings. The following engagements are proposed and will be communicated to I&APs and key stakeholders during the Scoping Report public review period:

- Virtual Focus Group Meeting with DWS
- Virtual Focus Group Meeting with Authorities (Local, district authorities including ward councillors), DENC, SAHRA, DRDLR, DMR, DEFF (Protected Areas)
- Virtual Focus Group Meeting with Key Stakeholders i.e. Richtersveld National Park, Lower Orange River Stakeholders Forum, organisations, action groups etc.
- Two public engagements in the project area (Sendelingsdrif, Sanddrift).

The engagements will be announced to stakeholders through emailed communication, telephone calls, Whatsapp and SMS's. The public engagements will provide I&APs the opportunity to obtain information regarding the two prospecting right applications, obtain clarity on information contained in the Scoping Report and provide I&APs the opportunity to raise comments, issues and concerns

regarding the applications. It will allow the project team to record comments and issues relevant to the application.

#### **e. Issues and Response Report**

Regulation 44 of the NEMA EIA Regulations of 2014 requires that the applicant must record comments of interested and affected parties in reports and plans, and such written comments, including responses to such comments and recordings of meetings, are attached to reports and plans that are submitted to the decision making authority.

All comments raised during the public review and comment period on the draft Scoping Reports for the applications and during the public engagements will be captured in a consolidated Issues and Response Report (IRR). The IRR will be appended to both Final Scoping Reports and submitted to the DMR: Springbok Office.

#### **f. Submission of Final Scoping Report to DMR**

I&APs will be notified of the submission of the Final Scoping Reports to the DMR and will be given access to the finalised Scoping Reports on the Naledzi website. The EAP will further notify I&APs of the DMR's decision to either reject/accept the reports.

### **iii. Summary of issues raised by I&APs**

The PPP announcing the project and availability of the Scoping Phase commenced on 13 November 2020 and will lapse on 14 December 2020. When the comment period ends, comments received will be included in the comments and response table below. No comments had been solicited by the time of compilation of the Scoping Report.

LIST OF INTERESTED AND AFFECTED PARTIES	DATE COMMENTS RECEIVED	ISSUES RAISED	EAP'S RESPONSE TO ISSUES
(List of names of persons consulted in this column and Mark with X where those who must be consulted were in fact consulted)			
<b>AFFECTED PARTIES</b>			
<b>Landowners</b>			
<b>Richtersveld Sida!Hub Community Property Association</b> Representing Sendelingsdrif, Sanddrif, Alexander Bay, Kuboes, Eksteenfontein, Lekkersing			
Department of Public Works (state-owned land)			
<b>Person in control of land</b>			
South African National Parks (SANPARKs) Richtersveld National Park – Park Manager			
Richtersveld Combined Management Committee			
Ais-Ais / Richtersveld Transfrontier Park- Park manager			
Department of Water and Sanitation: Orange –Proto Water Management Authority (Upington - Lower Orange River)			
Namibia: Ministry of Agriculture, Water and Rural Development			
<b>Lawful occupiers of land (existing mining concessions)</b>			
African Star Minerals Pty Ltd (Oena Diamond Mine)			
Lower Orange River Diamonds Pty Ltd			
<b>Landowners on adjacent properties (adjacent &amp; downstream)</b>			
Orange River Stakeholders Forum (downstream water users)			
Farm Brandkards No. 621 (downstream)			
Farm Grootderm No. 10 (Portions 2, 3, Remainder) (downstream)			
Farm Korridor Wes No. 2 (Portions 8, 9) (downstream)			
Farm No. 600 (Portions 1, 2, 3 and 4) (downstream)			
Farm No. 1 (Remaining Extent, Portion 7) (downstream)			
Farm No. 625 (Orange River Mounth) – Ramsar (downstream)			
<b>Municipal Councillor</b>			
Ward 1 – Willem Links(PR 12663)			



PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province

Ward 2 – Anna Bock (PR 12664)				
<b>Municipality</b>				
Richtersveld Local Municipality – Municipal Manager, Environmental Manager				
Namaqua District Municipality – Municipal Manager, Environmental Manager				
<b>Organisations</b>				
Orasecom				
UNESCO				
RAMSAR				
Centre for Environmental Rights, Greenpeace Africa, Earth Life Africa, any other particular action groups				
<b>Organs of State</b> (Roads Department, Eskom, Telkom, DWA)				
Eskom Senior Environmental Manager (Deidre Herbst)				
Department of Water and Sanitation: Upington, Kimberley				
Department of Rural Development and Land Reform				
South African Heritage Resources Agency				
Northern Cape Heritage Resources Agency				
National Heritage Council of Namibia				
Northern Cape Department of Sports, Arts and Culture				
Department of Agriculture Forestry and Fisheries (Directorate: Forestry Regulation – Namakwa District: Springbok)				
Northern Cape Department of Economic Development and Tourism (Kimberley)				
<b>Department of Land Affairs</b>				
Commissioner on Restitution on Land Rights – Department of Rural Development and Land Reform	x			
<b>Traditional Leaders (Communal Property Association)</b>				
Richtersveld Sida!Hub Community Property Association				
<b>Department of Environmental Affairs</b>				
National Department of Environment, Forestry and Fisheries (Protected Areas)				
Northern Cape Department of Environment and Nature				

PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province

Conservation (Kimberley and Springbok)				
<b>Other Competent Authorities</b>				
To be populated during Scoping Report engagement				
<b>Other Affected Parties</b>				
To be populated during Scoping Report engagement				

#### iv. Environmental Attributes associated with the sites

##### 1) Baseline Environment

###### a) Type of environment affected by the proposed activity

(Current geographical, physical, biophysical, socio-economic, and cultural character)

Section 21 (3) and Appendix 2 of the NEMA EIA Regulations of 2014 (GNR 326) requires a description of the environment that may be affected by the activity and the manner in which the activity may affect the environment should be considered. The receiving environment consists of different components such as the biophysical, social, economic, heritage and cultural aspects.

The data pertaining to the receiving environment and its social surroundings have been sourced through preliminary specialist inputs, desktop analysis and use of tools such as Geographic Information Systems including reference to previously completed EIA Reports for current mining operation where available. The preliminary specialist inputs have been provided in the form of Specialist Scoping Reports and are attached to this DMR Scoping Report under **Appendix 5**.

Kindly note that the Specialist Scoping Reports address both Samara application areas, namely PRAA 1 and PRAA 2. The application areas are end-to-end, and the affected environment of both includes the Orange River, which is basically similar throughout.

##### 1.1 Climate

The PRAA 1 is located in the Arid West Coast Climatic Region and Winter Rainfall Season (May to September) of South Africa. The regional climatic regime is classified as Arid, Desert, Hot arid, according to the Köppen-Geiger Classification System (Conradie, 2012). (Source: <https://en.climate-data.org/africa/south-africa/northern-cape-470/>). Climate data specific to the prospecting focus area has been retrieved from the SANPARKS owned Sendelingsdrif weather station (co-ordinates: -28.12982; 16.89239. Figure 8). The data recorded is for the period 2013 – 2020 (8 year period) and was recorded on a daily basis.

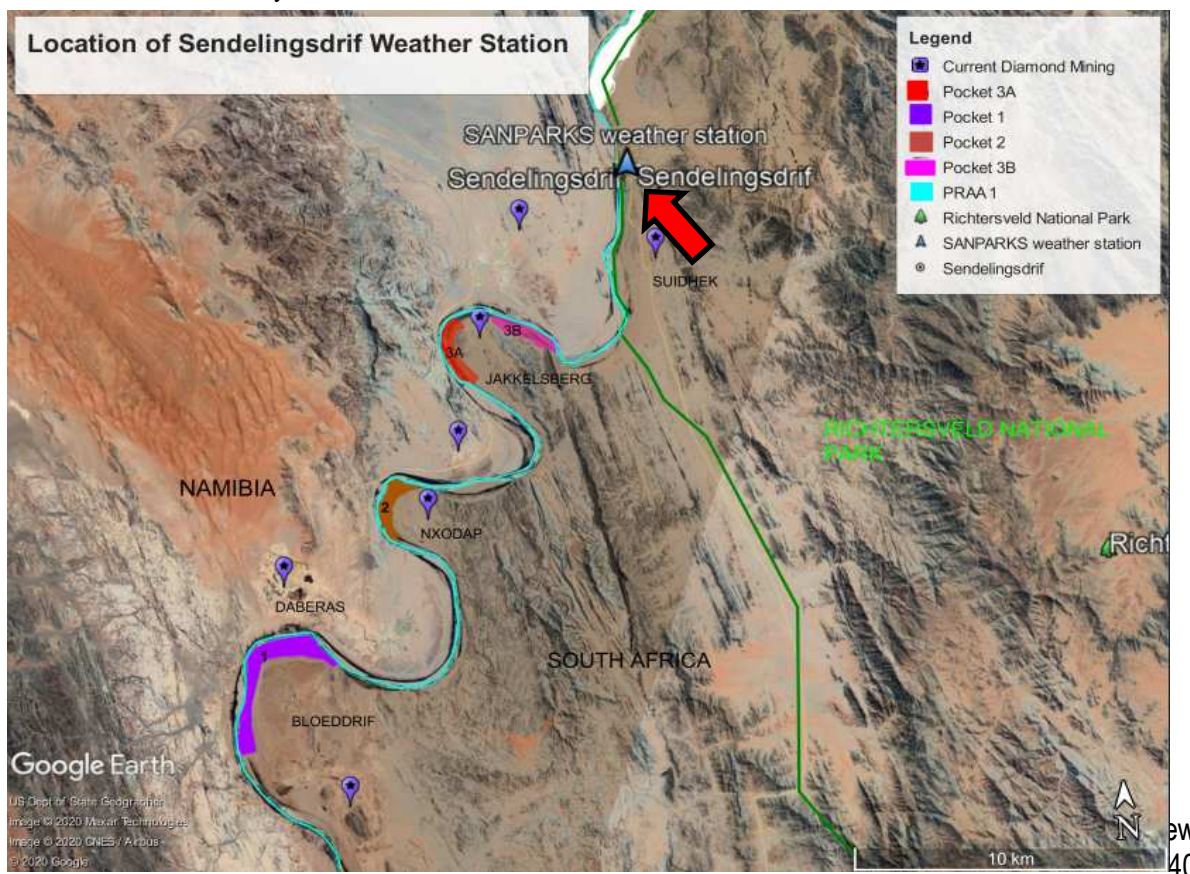


Figure 8: Map illustrating the location of Sendelingsdrif weather station (arrow) in relation to the prospecting pockets 1, 2, 3A and 3B

The Sendelingsdrif station data has also been compared with data provided in attached specialist investigations and the Richtersveld National Park (RNP) Management Plan.

The climate of the lower Orange River is mainly characterised by very low rainfall (<50mm/year), occasional penetration of coastal fog this far inland, frost-free winters, strong southwesterly winds; and very high temperatures and uncomfortable summers. (*Site Plan Consulting, 2018*)

### **Mean Annual Precipitation (MAP)**

The prospecting focus area exhibit a very low average MAP of 19.84mm for the period 2013 to 2020. The months with the highest average rainfall are March (5.9mm), April (2.7mm) and August (3.22mm). The highest rainfall event recorded during the period was in March 2016 (23.88mm). See Table 3 for the average monthly rainfall over the period 2013 – 2020, including annual averages.

Data retrieved for year 2014 is unusually high for the Richtersveld and is considered incorrect and has been excluded from the average MAP calculations.

**Table 3: MAP data for period 2013 -2020 (SANPARKS Sendelingsdrif weather station)**

Climate Data analysis of the SANPARKS Sendelingsdrif Weather Station for Period 2013 - 2020													Annual Average Rainfall (mm)
Period	Jan	Feb	Mar	April	May	June	Jul	Aug	Sept	Oct	Nov	Dec	
2013	0	0	15.1	3.6	0	4.9	0	15.7	6.8	0	0.1	0.3	46.5
2014	3.7	0	19.79*	432.9*	55.97*	40.59*	39.73*	46.73*	51.1*	70.32*	71.9*	71.16*	-
2015	0.4	0.4	0.3	0.1	0	3.7	1.5	0.25	0	0.4	2.4	2.3	11.75
2016	0	0	23.88	1.9	2.1	1.7	0.3	0.7	1.6	0.1	0.4	0	32.68
2017	7.9	0	0.8	2.7	0	3.7	0.5	0.8	0.3	1.7	1.9	0	20.3
2018	0	0.4	1	0.3	0.9	1.4	0	3.4	0.2	0.2	0	3	10.8
2019	0	0.9	0	0	0.3	2.7	1.2	0	0.4	0.3	0	0	5.8
2020	0.7	0	0.2	10.5	0.2	3.1	4.5	1.7	0.2	1.4	F*	F*	11.1
<b>Ave</b>	<b>1.6</b>	<b>0.2</b>	<b>5.9</b>	<b>2.7</b>	<b>0.5</b>	<b>3</b>	<b>1.14</b>	<b>3.22</b>	<b>1.35</b>	<b>0.58</b>	<b>0.8</b>	<b>0.93</b>	<b>19.84</b>

\*F refers to future months – data still to be recorded

\* Data inaccurate

Comparative data shows a MAP of 35mm (*AGES, Geo-and Hydrological Report, 2020*) and 40.5mm/year (*Lower Orange River Diamonds draft Scoping Report, Site Plan Consulting, July 2020*). The 40.5mm MAP was recorded for Vioolsdrif for the period 1993 – 2000. Similar annual averages were recorded at Sendelingsdrif in the year 2013 and 2016.

Even though precipitation is generally of low intensity, the relatively cohesionless sandy topsoil at the site is prone to scouring by concentrated runoff, especially in areas exhibiting steep topography (Figure 9).

### **Temperature**

The minimum and maximum temperatures recorded daily at Sendelingsdrif and the mean minimum and maximum temperatures for the past nine years (2008 - 2016) were 14 °C and 29 °C respectively. Temperatures easily rise above 50 °C in the summer months and plunge to freezing point on winter nights. The mean maximum temperature rapidly declines from April to June followed by a gradual increase to a maximum in February. (*RNP draft-plan*).

### **Wind**

The Richtersveld is characterised by relatively high wind speeds, overall ranging from an average of 7km.hr<sup>-1</sup> in January to 4km.hr<sup>-1</sup> in June (Hendricks et al., 2004). (*RNP draft plan*)

The Sendelingsdrif data reveals the prevailing wind direction as south, south-westerly with infrequent easterly winds. An average wind speed of 8.1m/per second (2019) and 7.9m/per second (2020) was recorded at the station.

Comparative data for Vioolsdrif shows dominance of >30% in the S, SSW and SW sectors in summer with southerly wind speeds also generally >5m/s and an easterly wind domination in the winter months of March – September (*Lower Orange River Diamonds 2020 draft Scoping Report, Site Plan Consulting*).

The sandy topsoil throughout the prospecting focus area is highly susceptible to wind erosion. (*AGES, 2020*) and topsoil in the study area is scarce. Loss of topsoil due to erosion can deter successful rehabilitation of disturbed areas.

### **Evaporation**

The mean annual evaporation recorded at Sendelingsdrif ranges between 1650mm – 1700mm for the period 2013 – 2019, with the highest annual evaporation rate recorded in 2013 (2010.05mm). (*Sendelingsdrif Weather Station, Daily Monitoring Data*)

Comparative data shows an APAN of >2600mm (*AGES, Geo-and Hydrological Report, 2020*) and 3576mm/year (*Lower Orange River Diamonds, 2020 draft Scoping Report, Site Plan Consulting*). The 3576mm APAN was recorded for Okiep and Keetmanshoop statistics over a four year period.

### **Extreme weather incidents**

- The RNP management plan stated that temperatures easily rise to 50°C in summer;
- The warmer easterly winds (usually in August) dry out the veld and destroy annual plants, crucial fodder for livestock;
- The Richtersveld experiences relatively high wind speeds and cause sand storms on a regular basis.

### **Future Climate based on climate change**

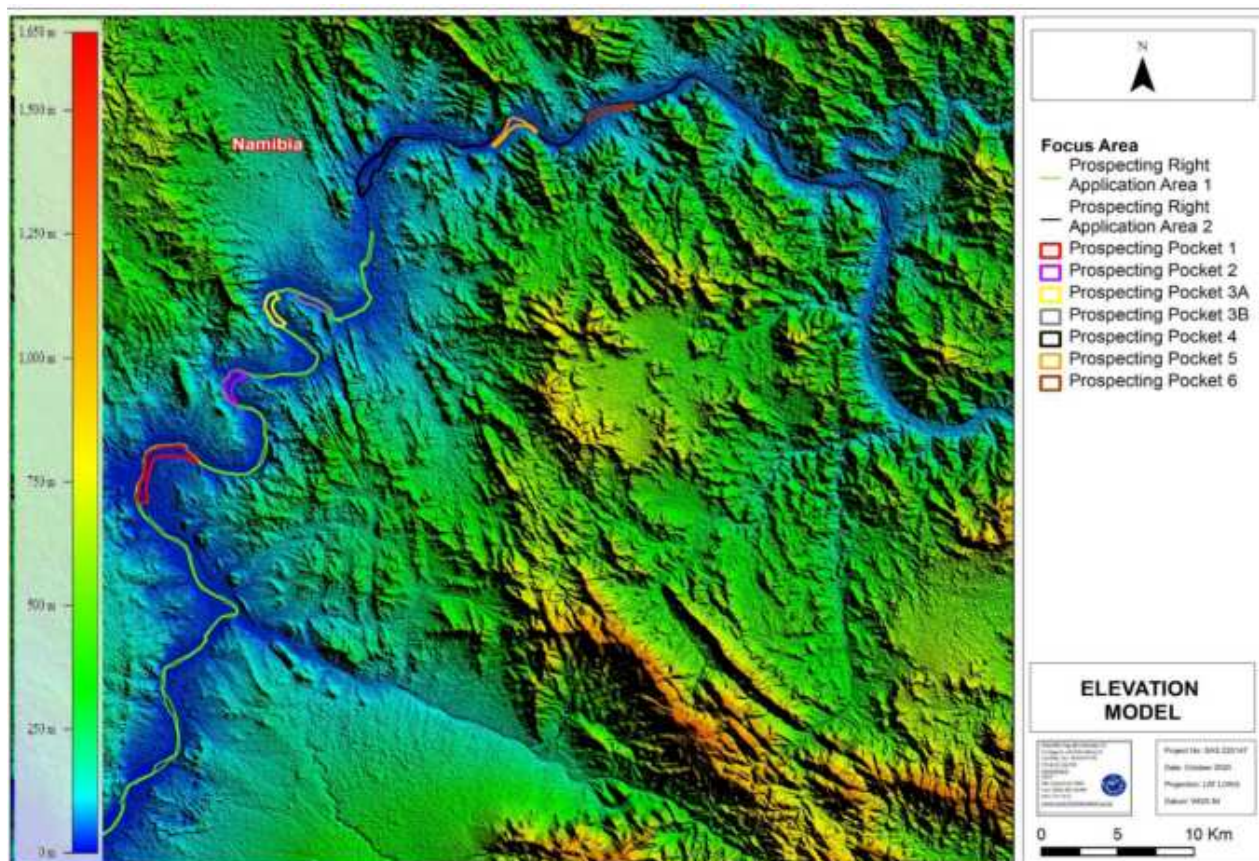
Dramatic temperature changes have been observed in the Richtersveld with significant increases in temperatures of 1.1 to 1.2 °C in just 20 years at the Henkries weather station (*RNP draft-plan*). This has resulted in a sharp increase in the number of very hot days in summer. Changes in rainfall are less obvious, rainfall events appear to decrease slightly over time. Smaller rainfall events will evaporate quickly, and the area will become even drier. It is expected that the Richtersveld area would become more desert-like with much less of the Succulent Karoo characteristics that are currently present.

The above precipitation, temperature, evaporation including extreme weather conditions are pointing to much drier conditions which could pose a risk to successful rehabilitation and re-establishment of riparian vegetation removed from the River embankment and channel. Vegetation (endemic to the area) removed from the focus area will need to be kept in a nursery to be restored as part of the rehabilitation efforts. Small operations in a phased manner with quick concurrent rehabilitation efforts will need to be undertaken.

## 1.2 Topography

The prospecting focus area is located on the flood plain of the Orange River, in the broad and very gently sloping Orange River valley. The river cuts through numerous prominent rocky ridges separated by smaller narrow valleys and lowlands (Figure 9).

The area surrounding the focus area is characterised by deep canyons, jagged mountain ranges. Vegetation also comprises of extremely rare succulent plants and languid stretches and white water rapids of the Orange River.

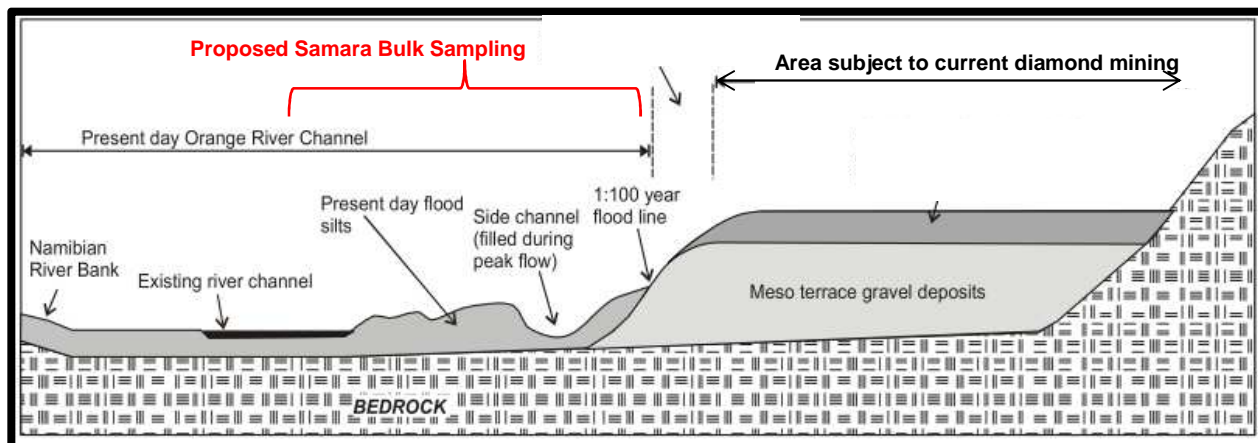


**Figure 9: False colour elevation rendering depicting topographical character of the focus area (Pocket 1, 2, 3A and 3B)**

Proposed prospecting and bulk sampling activities will more likely be observed within Namibia than South Africa, due to the mountainous terrain on the South African side of the Orange River. According to the viewshed analysis limited portions of the Richtersveld National Park will observe the proposed prospecting and bulk sampling activities.

Bulk samples will be abstracted by excavating trenches at deep alluvial gravel pockets situated below the 1: 100-year flood line of the river. Small re-alignment of the river will be constructed to gain access to the alluvial material for excavation. The bulk sampling activities will be short term and will be rehabilitated.

The 1: 100-year flood line is generally located near or at the interface of the meso terrace gravel deposits. The Orange River channel has an existing river channel and a side channel that carries overflow water during peak flow (Figure 10). Given the damming of the Orange, Vaal & Malibamatso Rivers upstream, the normal flood flow of the Orange River has been altered to such an extent that normal flood flows do not occur (only occasional flooding when the Fish River system floods). (*Oena Mine draft EIR, Site Planning, 2018*).



**Figure 10: Illustration of the Orange River valley floor topography and location of the proposed prospecting and bulk sampling pockets (image courtesy of Oena Mine / Site Planning, 2018)**

## 1.3 Geology

### 1.3.1 Regional Geology

The lower Orange River basement geology is dominated by rocks of the Richtersveld supergroup. These rocks formed during the middle to late Proterozoic age (2 Ma to 5 Ma). Over time a rocky mountain landscape has formed, forcing the Orange River to pierce through the mountains changing directions (meandering), losing energy and depositing minerals. Alluvial diamonds in the study area are a result of transportation of eroded diamonds from kimberlitic sources.

The bedrocks of the Daberas area consist mainly of schist, amphibolite and metaquartzite of the Neoproterozoic Gariiep Belt. The rocks were subjected to green-schist facies metamorphism during the Pan-African event at about 530 Ma (Frimmel and Frank, 1998).

The origin of the Orange River can be traced back to the break-up of Gondwana, when during a humid period in the late Cretaceous and early Tertiary, erosion was at its peak in central southern Africa (Schneider, 2004). Fossils recorded from its sediments can be dated back from the early Miocene to the basal middle Miocene (Pickford and Senut, 2000). The area of the lower Orange River experienced an arid climate during the Cretaceous and Tertiary leading to the formation of continental salt pans along the river. The formation of evaporites in pores cemented the coarse clastic material (Partridge and Maud, 1987).

Diamond mining is already taking place in the study area by companies named Lower Orange River Diamonds (Baken, Bloeddrift, Nxodap, Jakkelsberg, Suidhek, Reuning, Aace and Swartpoort). Trans Hex

was the mining rights holder since the seventies and over years expanded their area of operation. These rights have recently been sold to Lower Orange River Diamonds.

### 1.3.2 Local Geology

The study area falls under the Gariep belt or complex that stretches over Namibia and South Africa. The Gariep belt makes up the immediate environs of the Daberas mine, characterised by lenticular bodies of meta-sediment with dolomite, shale, schist, green schist, ortho-/para-amphibolite, quartzite, intraformational and basal mixtite, grit, which belongs to the Namibian geological age (Botha, 2004).

Mining will occur in the raised river terraces along the Lower Orange River which consist of gravel deposits that have formed between Late Tertiary and Quaternary times. These fluvial sequences lie cross the regional strike of the country rocks on the Hilda formation of the Precambrian Gariep Group (Enkara, 2004).

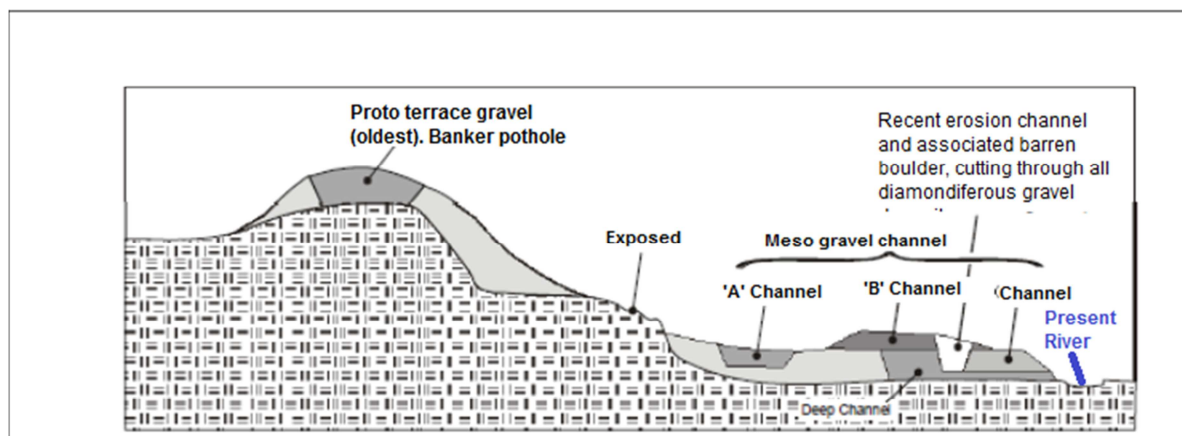


Figure 11: Geological cross section of the proposed prospecting area (map abstracted from Samara PWP and courtesy of Oena Diamond Mine)

### 1.4 Soils

Soil in the study is scarce. Prospecting pockets 1, 2, 3A and 3B are proposed in the flood plain of the Orange River comprising alluvial gravels of the Meso terraces. All the current diamond mining operations take place in alluvial gravels and sands in proximity to the alluvial deposits of the Meso terraces.

The sandy topsoil is prone to scouring by concentrated runoff especially in areas exhibiting steep topography. The sandy topsoil throughout the area is highly susceptible to wind erosion.

The creation and utilisation of temporary tracks to the prospecting pocks especially when activities move from one prospecting pocket to the next may lead to soil compaction and altered runoff patterns. Vegetation clearing for bulk sampling and prospecting activities will result in the exposure of soils, leading to increased runoff and erosion, resulting in erosion of the river embankment.

The decommissioning and rehabilitation of the trenched areas within the Orange River may potentially lead to soil contamination from hydrocarbons.

Removal of topsoil to stockpile will be essential before any site infrastructure areas are disturbed to ensure that topsoil is conserved for rehabilitation works. Importantly, bulk sampling activities would



need to be implemented in a phased manner (keep affected areas small) followed by concurrent rehabilitation.

## **1.5 Surface and Groundwater**

The description that follows below has been abstracted from the AGES Pty Ltd Hydrological and Hydrogeological Scoping Report (Appendix 5). The data provided below is a short summary of the information contained in the AGES Scoping Report. Please refer to the Hydrological and Hydrogeological Scoping Report for detailed figures, maps and information.

### **1.5.1 Surface Water Features**

The PRAA 1 and prospecting pockets 1, 2, 3A and 3B are located on the left bank of the lower Orange River, 30km upstream from the Orange River Estuary (declared Ramsar site). The Orange River is South Africa's largest river flowing westwards from Lesotho to Alexander Bay where it flows into the Atlantic Ocean, west of the study site. (Figure 12).

The river enters the study site in the east at an elevation of approximately 36 mamsl, dropping to 18 mamsl over a direct distance of approximately 46km. As a result, the river is characterised by low surface flow velocities, and deposition of sediments as a result of a very gentle slope (<0.5°). The active channel of the Orange River is 30 – 40m wide; however, the riverbed is approximately 300 – 400m wide.

The palaeo-channels in the study area have been cut off from the present Orange River Valley. Changes in the direction of the river over the years has resulted in the remnants in the study area due to river meandering. The deposition of heavy minerals happened where the river lost energy due to change in direction that was caused by obstructions, junctions of cross-channel, rising bedrock etc. Deposits of alluvial diamonds are limited to remnant paleo-channels systems that formed later.

The prospecting focus area (pockets 1, 2, 3A and 3B falls with the quaternary catchments D82L and D82K.

All current diamond mining operations within the Lower Orange River Diamonds Lease Area honour the 1:100 year flood line of the Orange River with activities below the flood line limited to pumps. The current diamond mining operations along the Orange River are responsible for ensuring riverbank stability.

Samara proposes to undertake the bulk sampling and processing activities below the 1: 100-year flood line of the Orange River. Ten (10) trenches will be excavated from the Orange River active channel, bed, banks and various terraces along the river from prospecting pockets 1, 2, 3A and 3B (Figure 12, 13). There will be no processing in the riverbed only on the river active channel embankment or 50m from it. Only machinery and associated pumps will be located within the riverbed. During concurrent rehabilitation tailings and overburden from the processing plant will be backfilled into excavations also within the regulated zone of the Orange River.

No slimes dam will be constructed as part of the prospecting and bulk sampling infrastructure.

GN704 places a restriction on the placement of mine infrastructure and pollution control above the 1: 50 and 1: 100-year flood zones or within a horizontal distance of 100m of any watercourse or estuary, borehole or well. With excavation, bulk sampling and processing activities within the 1: 100-year flood line, an application for the relaxation of the conditions imposed by GN 704 will be required to the DWS: Orange-Proto as part of a Water Use License Application for the project.

PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province

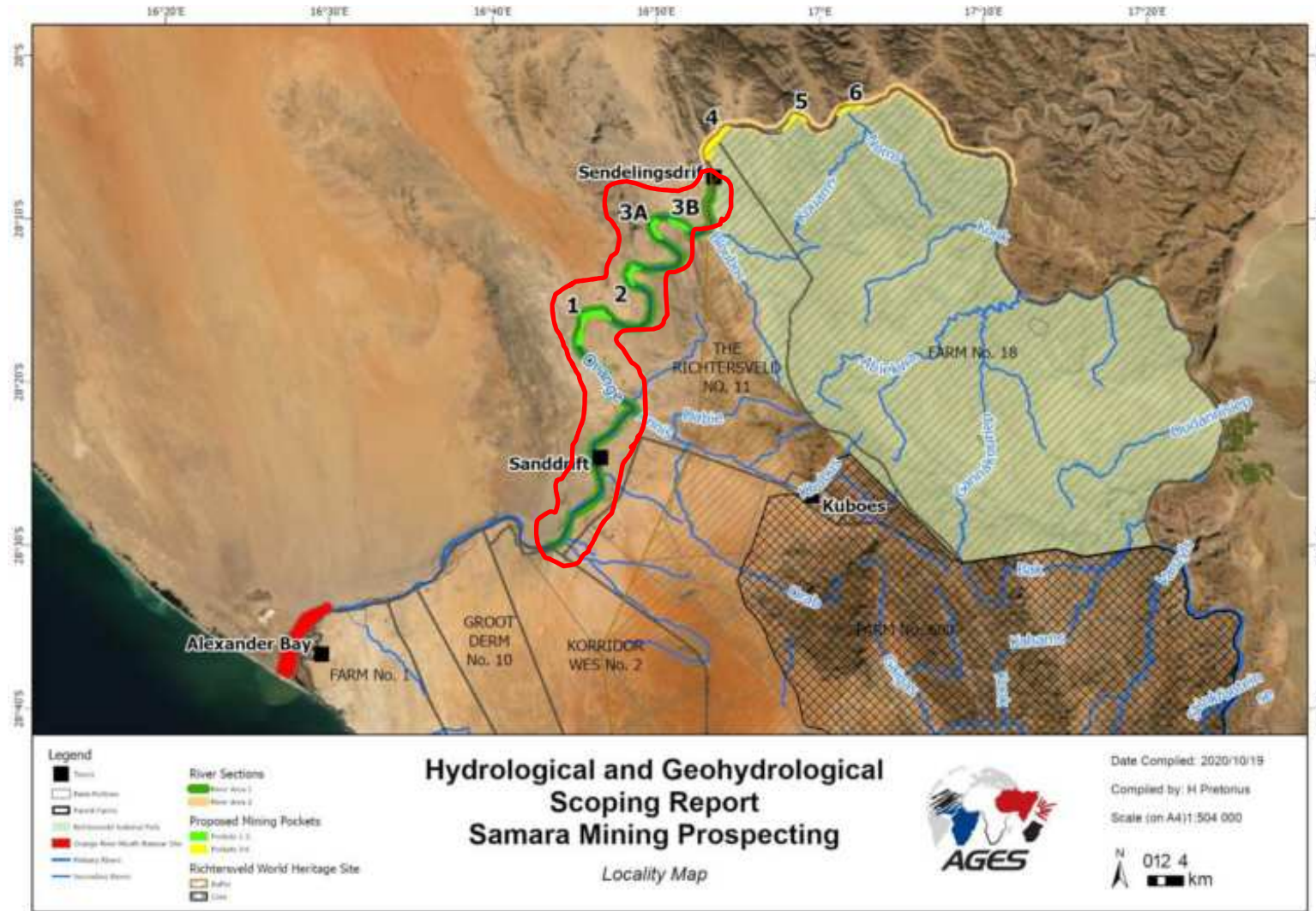


Figure 12: Location of Prospecting Pockets 4, 5 and 6 (PRAA 2) along the lower Orange River.

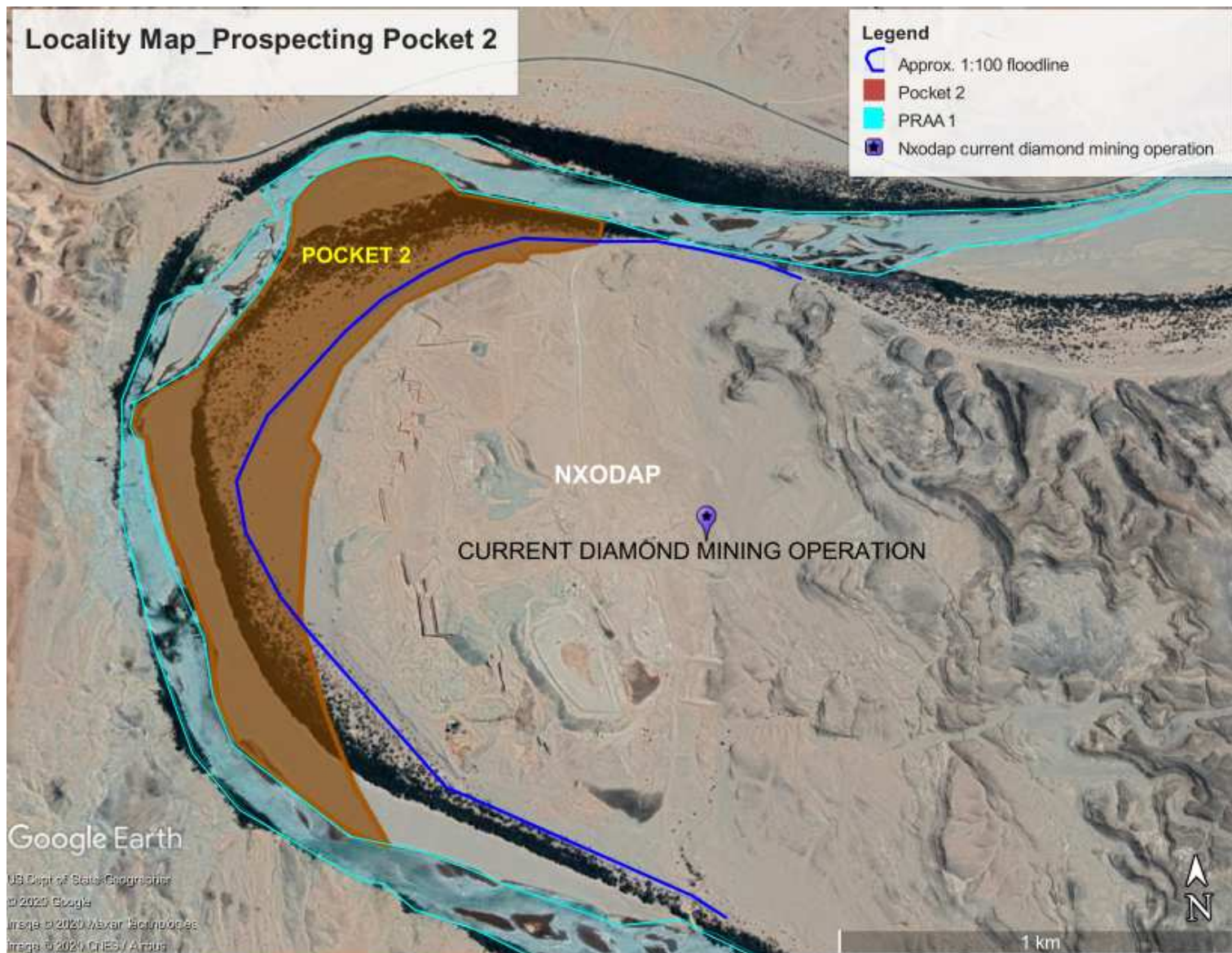


Figure 13: Locality Map illustrating the position of prospecting pockets relative to the Orange River, flood line (approximate) and existing diamond mining operations. This particular map shows the position of pocket 2.

### **1.5.1.1 Mean Annual Precipitation**

The area receives a MAP of 35mm (March, April, extending through winter season) with a APAN in excess of 2600mm. Rainfall is expected to follow an eight (8) year cycle, ranging from 0 – 78mm/year.

Even though precipitation is generally of low intensity; the relatively cohesionless sandy topsoil is prone to scouring by concentrated runoff especially in areas exhibiting steep topography and poses an increased risk of erosion and sedimentation load into the river. The sandy topsoil throughout the area is highly susceptible to wind erosion. Conservation of topsoil will be essential, and topsoil stockpiles will need to be protected from erosion to ensure availability for rehabilitation efforts.

### **1.5.1.2 Surface water use**

There are several gauging weirs within the Orange River being a shared resource between Namibia and South Africa. South Africa has an international obligation to allow a certain amount of water to pass for Namibian users. It is therefore essential that measurements of the water are vital to know that SA is fulfilling those obligations.

In the Lower Orange WMA, irrigation is the dominant water use and comprises 94% of the total water requirement compared to 3%, 2% and 1% thereof, respectively, for urban, rural and mining purposes. Nearly all irrigation developments are dependent on water from the river. More than 35 000 ha of land are cultivated between Boegoeberg and Onseepkans, with grapes (60%) and cotton (ca. 20%) constituting the main crops. Other crops include lucerne (8.2%), wheat (7.9%) and maize (3.5%). Most of the irrigation water is applied to high-value orchard type crops of which yield and quality may be negatively affected by water deficits or excessive salinity. The irrigation water is therefore needed with a relatively high assurance of supply and should be of acceptable quality. The upper Orange River serves as a domestic water source and is experiencing increasing demand.

Mining is the dominant economic activity within the Richtersveld Local Municipality. Many of the disadvantaged communities are employed within the mining industry and rely on income from the industry. The scaling down of mines and the subsequent decline in the contribution of the mining sector is threatening the employment opportunities for these communities. The dominant water uses downstream from the prospecting focus area includes urban, rural, mining and irrigation.

Water for the prospecting and bulk sampling operation will be abstracted from the Orange River. The vacuum and filter system will remove the dirt, filter the water to drinkable standard and either release it back into the river or supply communities with water by pumping it into municipal reservoirs (to be confirmed during Scoping Phase).

The water diversion and impedance to limit ingress of water to the excavations would result in reduced river flow volumes. The prospecting and bulks sampling activities will result in sedimentation into the Orange River, which will impact the functioning of the Orange River gauging weirs and affect their accuracy. Sedimentation and erosion control will be vital at the proposed prospecting focus area.

A Water Use License Application will be submitted to DWS: Orange-Proto for the abstraction from and subsequent release of clarified water into the Orange River (refer to section 1.5.1.6)

### **1.5.1.3 Normal Flow Rate**

The normal flow rate of the Orange River is recorded as 53m<sup>3</sup>/second at time of the Hattingh report of (2001) 1: 100-year flood line determination. Subsequent to such determination, further dams have been built on the Orange River and the fish river, reverse pumping on the Vaal River has been reduced and extensive irrigation pumping downstream of Prieska is now occurring with very noticeable low flow this past year at the Rosh Pina cause-way. (*Site Planning, 2020, LoR-D draft Scoping*).

Small temporary diversions of the river will be constructed around the excavations. A channel way will be excavated from the current river flow on the dry side of the river bed. Open bottom and top entrances will be included to allow flow through new channel and include a cast bunt wall in the river to direct flow through new channel. The process would include the diversion, abstraction and filtration of sediment-laden river water from the excavations, and the release of clarified water back to the river channel downstream of the workings as per section 1.5.1.2.

The water diversion and impedance to limit ingress of water to the excavations would result in reduced river flow volumes. The diversion and impedance of the river is a Section 21 water use under the NWA and requires authorisation from DWS (see Section 1.5.1.6).

### **1.5.1.4 Surface Water Quality**

It is recorded that the Orange River carries a 60,4x10<sup>9</sup> ton silt load annually into the sea. (*Site Planning, 2020*). The Orange River Estuary (declared Ramsar site) is located only 30km downstream from the prospecting site. The estuary cannot tolerate unnecessary siltation or chemical contamination of the river.

Stockpiling of topsoil, excavations of alluvial material from the bed, banks, and various terraces along the Orange River, rehabilitation of bulk-sample excavations and processing the bulk sample all the potential to result in increased sediment load into the river during rainfall events (elevated TSS). The operation of the rotary processing plant may cause surface water pollution (including petrochemicals).

The abstraction and filtration of sediment-laden water from excavations to be used in the plant with release of filtered /clarified water back into the river channel downstream of the workings may change the water quality (decreased TSS).

GN704 (GG 20119) (June, 1999) restricts the use of pollutants near streams.

No Dense Media Separation (DMS) technology will be used as part of the proposed Rotary Pan Process Plant since it requires chemicals to separate heavy from light material in the processing plant and can pose a potential pollution risk to the Orange River.

Other sources of potential contamination at the proposed prospecting and bulk sampling activities include:

- Petro-chemicals – particularly from heavy machinery
- Increased sediment loads (TSS) due to the mining process and disturbance of the alluvium in and along the riverbanks
- Possible e-coli contamination from on-site sanitation

### **1.5.1.5 Acid Generating Capacity**

The project area is not dominated by rocks containing sulphides, which have an influence on acid-generating capacity. The acid-generating capacity of the local geology is low.

### **1.5.1.6 Applicable Regulated water use in terms of the National Water Act**

The project triggers the following Section 21 water uses and a WULA will be lodged with the Department of Water & Sanitation: Orange-Proto Catchment Management Agency:

- Section 21a – Abstracting water from the Orange River;
- Section 21c – The temporary diversion of the watercourse during bulk sampling. Natural flow may also be impeded depending on the methodology employed;
- Section 21f – The clarified water from the filtration process at the prospecting works will be released to the river resource;
- Section 21g – Topsoil/ overburden stockpile, Diamondiferous material stockpile from bulk sampling excavation, Diamond depleted stockpile (waste material) from process plant and temporary onsite disposal of waste, including Petro-carbons;
- Section 21 i:
  - Temporary altering the course of the watercourse
  - The bulk sampling excavation in the 1:100-year flood line (both bed and banks)
  - The rehabilitation of the bed and banks after excavation
  - The release of clarified water (with a lower TSS) into the watercourse downstream of the workings

With excavation, bulk sampling and processing activities within the 1: 100-year flood line, an application for the relaxation of the conditions imposed by GN 704 restriction on the placement of mine infrastructure and pollution control above the 1: 50 and 1: 100-year flood zones or within a horizontal distance of 100m of any watercourse or estuary will be required to the DWS: Orange-Proto as part of a Water Use License Application for the project.

A WULA Procedure will be followed in terms of the WULA and Appeals Regulations of 2017 (GNR 267).

DWS: Orange – Proto will be consulted during pre-application meeting before starting with the WULA, submission of the required 'Water Use Technical Reports' including a site visit and liaison during the assessment of the Licence Application

### **1.5.2 Groundwater**

Pockets 1-3 has fractured and intergranular aquifers with typical borehole yields (0.0 – 0.1l/s). The water table is between 30 – 39mbgl. The aquifer has zero contribution to baseflow, with zero average groundwater resource potential (GRA, 2012). According to the Vegter Harvest Potential, the area is characterised by a resource potential of 500m<sup>3</sup>/km<sup>2</sup>/annum, with an annual groundwater recharge of 0-1mm.

The aquifers have low hydraulic conductivity ( $1 \times 10^{-1}$  –  $1 \times 10^{-5}$  and  $1 \times 10^1$  –  $1 \times 10^{-1}$ ) and the prospecting area has low groundwater vulnerability. The aquifer at the site is classified as a minor aquifer system.

The baseline groundwater quality is not known at this stage and would be an important baseline for assessing contamination of the groundwater resource.

Due to the reliance on groundwater in most parts of the Richtersveld Local Municipality, wellhead areas and aquifer yield zones must be protected. On a municipal scale, a Groundwater Management plan is urgently needed (Harrison, et al., 2019). The interim measures proposed are to place High Yield Aquifer Protection Zones of 250 – 500m around Kuboes and Port Nolloth aquifers; and to place 50m wellhead protection zones around boreholes, especially those supplying the Richtersveld towns (Harrison, et al., 2019).

The proposed prospecting and bulk sampling activities have the potential to impact on the groundwater quantity by lower the static water level and localised dewatering.

#### **1.5.2.1 Potential Groundwater contaminants**

- Petro-chemicals – particularly from heavy machinery
- Increased sediment loads (TSS) due to mining process and disturbance of the alluvium in and along the riverbanks
- Possible e-coli contamination from on-site sanitation

### **1.6 Freshwater Ecosystems**

Scientific Aquatic Services (SAS) has compiled a Freshwater Ecological Scoping Report (Appendix 5) in support of the prospecting right applications along the Orange River. The description that follows below has been abstracted from the Freshwater Scoping Report. For a complete description, maps and figures, please refer to the specialist report.

The desktop study identifies all potential watercourses that may be impacted by the proposed prospecting and bulk sampling activities, a 500m 'zone of investigation' around the focus area, in accordance with GN 509, 2016 as it relates to the NWA, was used as a guide to assess possible receiving watercourses. The 500m zone of investigation around the focus area – is referred to as the investigation area.

#### **1.6.1 Orange River**

The proposed prospecting and bulk sampling activities are located directly adjacent to and within the delineated boundary of the Orange River. The majority of the focus area (all prospecting pockets PRAA 1 and PRAA 2) falls within the Orange River Gorge and the southern portion falls within the Western Coastal Belt Aquatic Ecoregion in the Lower Orange River Catchment. The PRAA 1 falls within both quaternary drainage regions D82L and D82K but the prospecting pockets only fall within QDR D82K (Figure 15).

According to National Freshwater Ecosystem Priority Area (NFEPA, 2011) database, the majority of the focus area (including pockets 1 to 5) is situated within a Sub WMA currently not considered important in terms of fish or watercourse ecological importance.

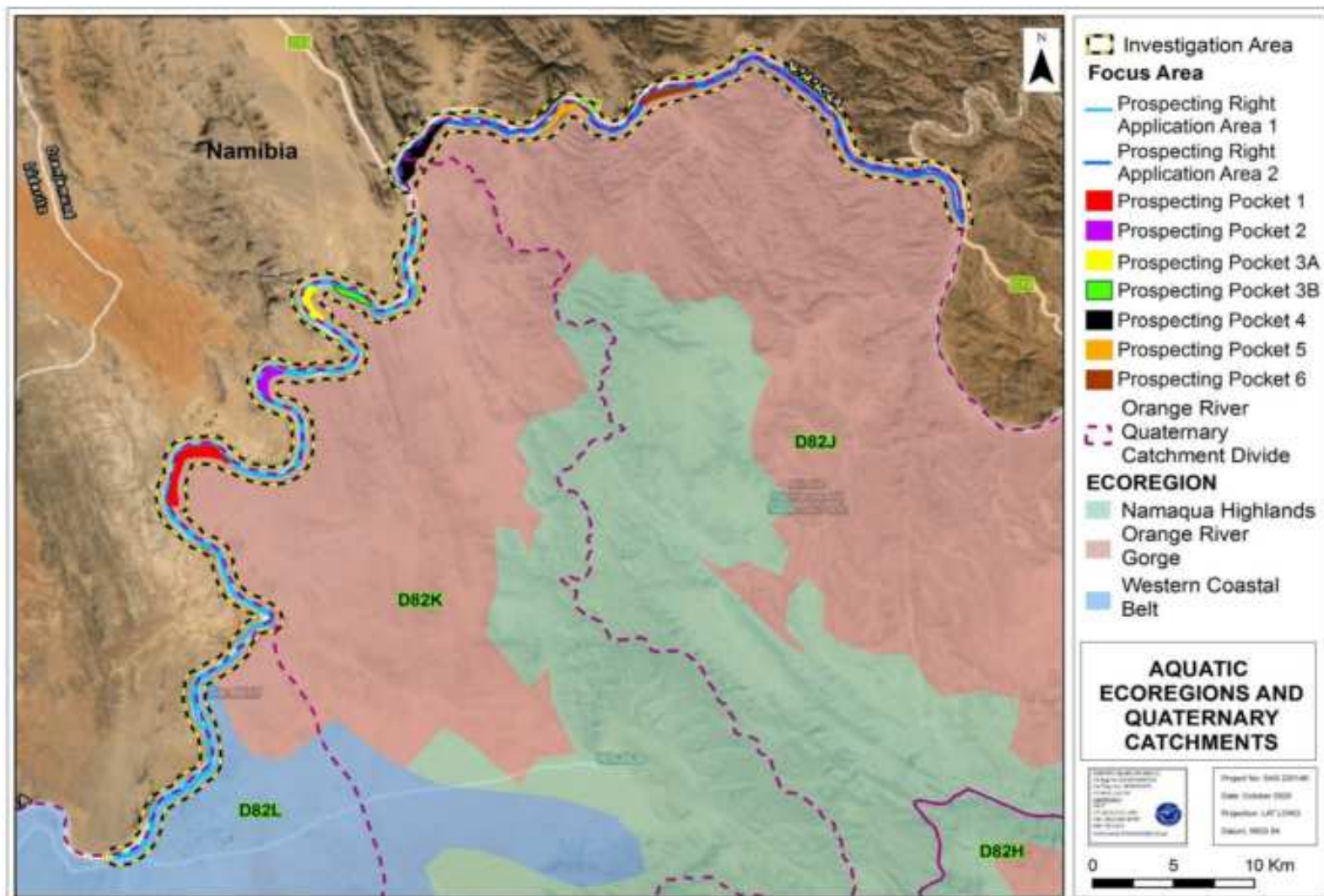


Figure 14: The Quaternary Catchments and aquatic ecoregions that pertain to the focus area (SAS, 2020)



According to the NFEPA database (2011) there is a natural floodplain wetland associated with the Orange River (associated with all prospecting pockets). The floodplain wetland is moderately modified (Class C) (NFEPA, 2011).

The prospecting pockets (1, 2, 3A, 3B) correspond to the Southern Namib Desert (Least Threatened) Wetland Vegetation Type. (Figure 16).

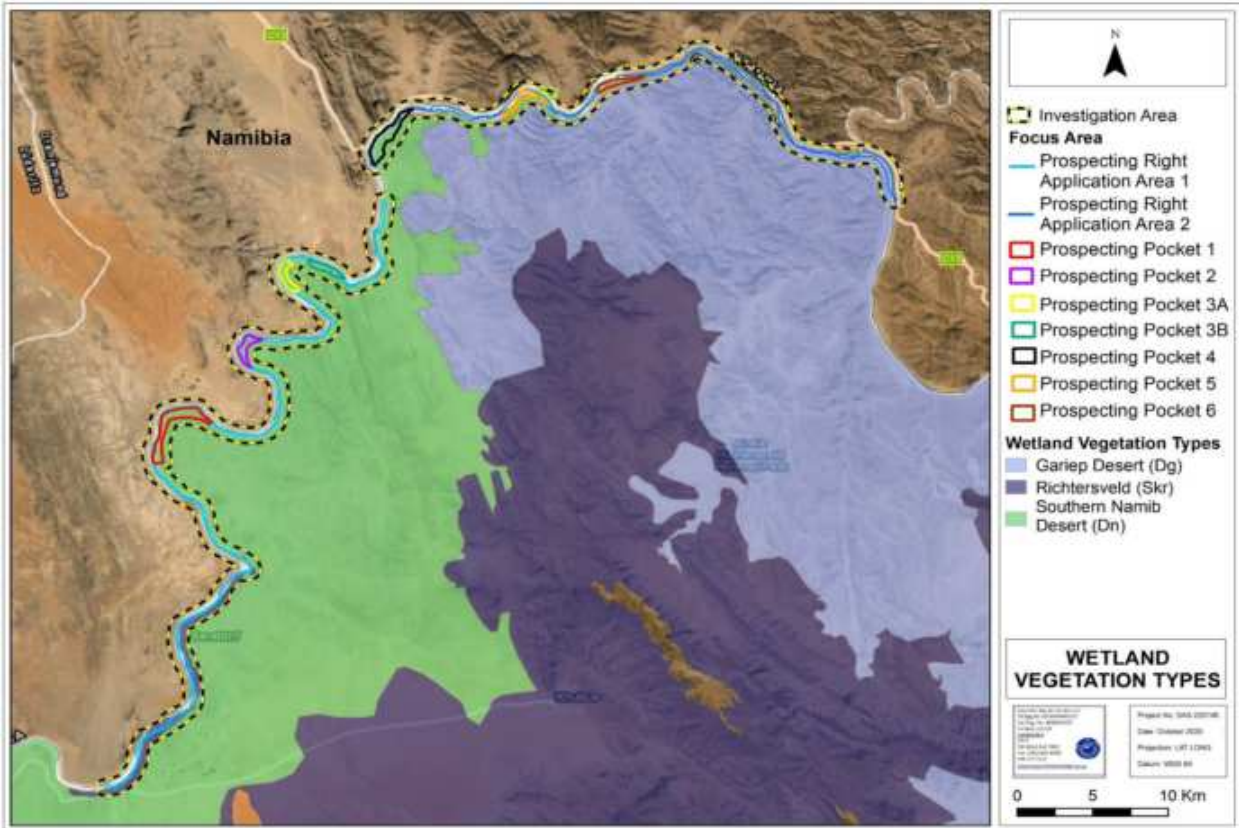
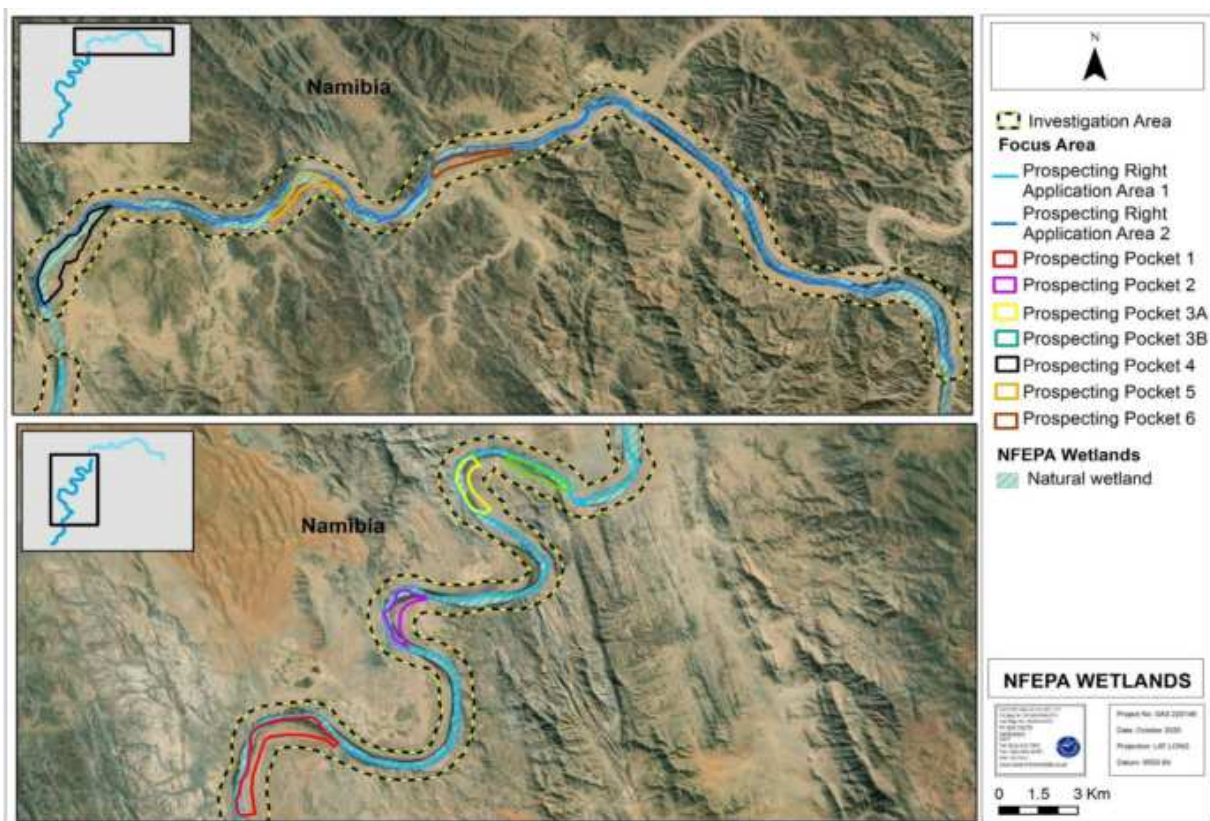


Figure 15: The Wetland Vegetation Types associated with the focus area according to Mbona et al. (2015) (SAS, 2020)

According to the NBA (2018): SAIIE the portion of the Orange River where prospecting pockets 1, 2, 3A and 3B are proposed is classified as a river according, and several dam features are located along the PRAA 1. (Figure 17). According to the NBA 2018 Dataset, the Orange River is considered to be in a moderately modified ecological condition (Class C), moderately protected (EPL) and therefore least threatened (ETS).



**Figure 16: The natural floodplain wetland associated with the Orange River associated with the focus area according to NFEPA (2011). (SAS, 2020)**

There are numerous tributaries (named and unnamed) associated with the Orange River (Figure 17). According to the NFEPA Database (2011) the portion of the Orange River along PRAA 1 is considered to be in a moderately modified ecological condition (Class C). Based on the Present Ecological State (PES) 1999 classification, the Orange River and all its tributaries are considered to be moderately modified (Class C). The Orange River is not classified as a FEPA river. Various anthropogenic activities have occurred along the Orange River, i.e. historic sand and diamond mining on both sides of the river, establishment of small settlements such as Driftsand, and formalised road within 32m of the Orange River on the Namibia side. The settlements were likely established because of mining activities along the river. The settlements may have become reliant on ecosystems provided by the Orange River.

The prospecting and bulk sampling activities will take place directly adjacent and within the delineated boundary of the Orange River. The potential impact on the Orange River is, therefore, significant.

Prospecting pockets 1, 2 3A and 3B fall within a Category 1 Critical Biodiversity Area (CBA). CBA1 areas consist of intact, undisturbed ecosystems (Figure 18). A CBA is an area that must remain in good ecological condition in order to meet biodiversity targets for ecosystem types, species of special concern of ecological processes. CBAs can meet biodiversity targets for terrestrial and/or aquatic features. CBA Category 1 are areas that are irreplaceable or near-irreplaceable for meeting biodiversity targets. There are no or very few other options for meeting Critical Biodiversity Area (CBA) Category biodiversity targets for this area. Mining is not a compatible land use within a CBA1. The area identified as a CBA1 is mainly attributed to the following: having intact riparian vegetation, the area

has natural wetlands and a river (Orange River), the area maintains important landscape structural elements, it is within a National Protected Areas Expansion Strategy (NPAES) protected and/or focus area, and within a World Heritage Site and a protected area buffer.

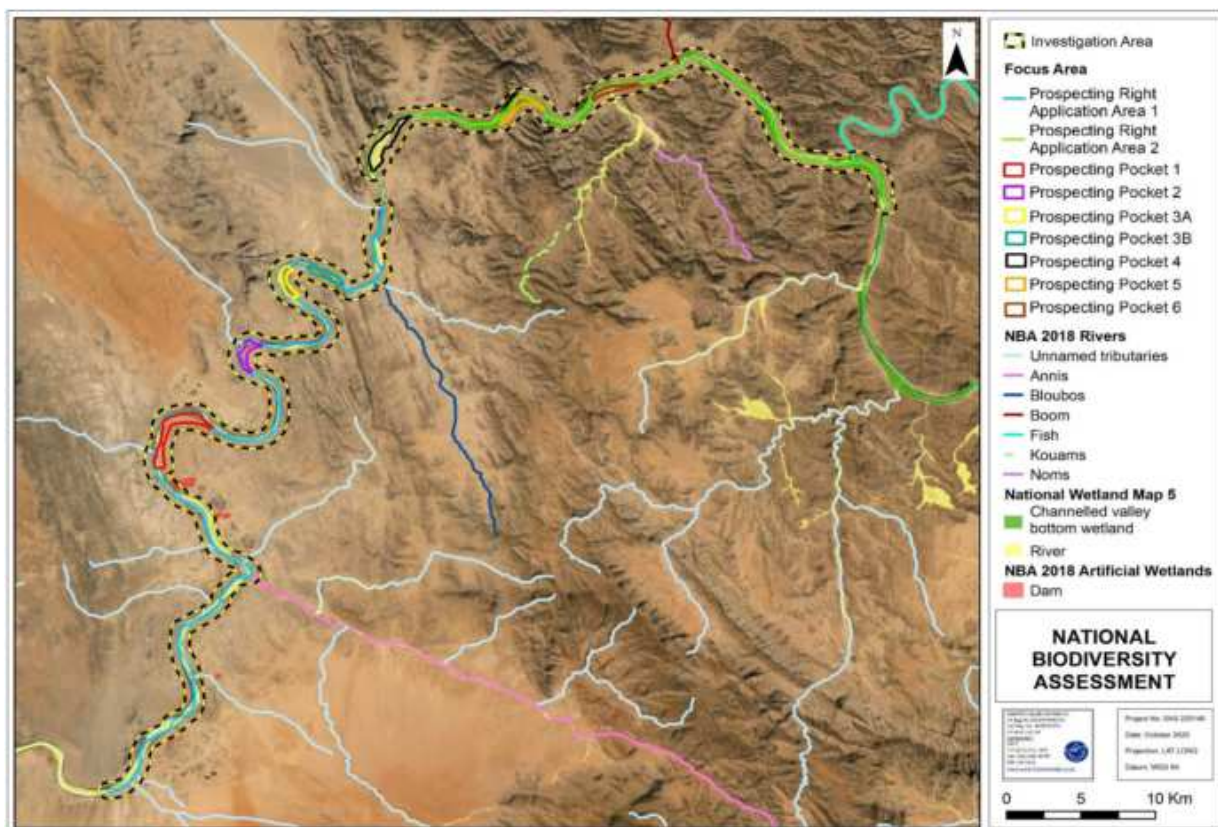


Figure 17: Watercourses including the Orange River and its tributaries associated with the focus area, according to the NBA (2018)

According to the Mining and Biodiversity Guidelines, a portion of the prospecting pocket 1 and the entire extent of prospecting pockets 2, 3A and 3B fall within areas considered of highest biodiversity importance. The remaining portion of the prospecting pocket 1 is located within an area of high biodiversity importance. The implications for mining include:

- **Highest biodiversity importance** - Environmental screening, EIAs and their associated specialist studies should focus on confirming the presence and significance of these biodiversity features, and provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision making for mining, water use licences, and environmental authorisations. If they are confirmed, the likelihood of a fatal flaw for new mining projects is very high due to the significance of the biodiversity features in these areas and the associated ecosystem services.
- **High biodiversity importance:** An environmental impact assessment should include an assessment of optimum, sustainable land use for a particular area and will determine the significance of the impact on biodiversity. Mining options may be limited in these areas, and red flags for mining projects are possible. Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.

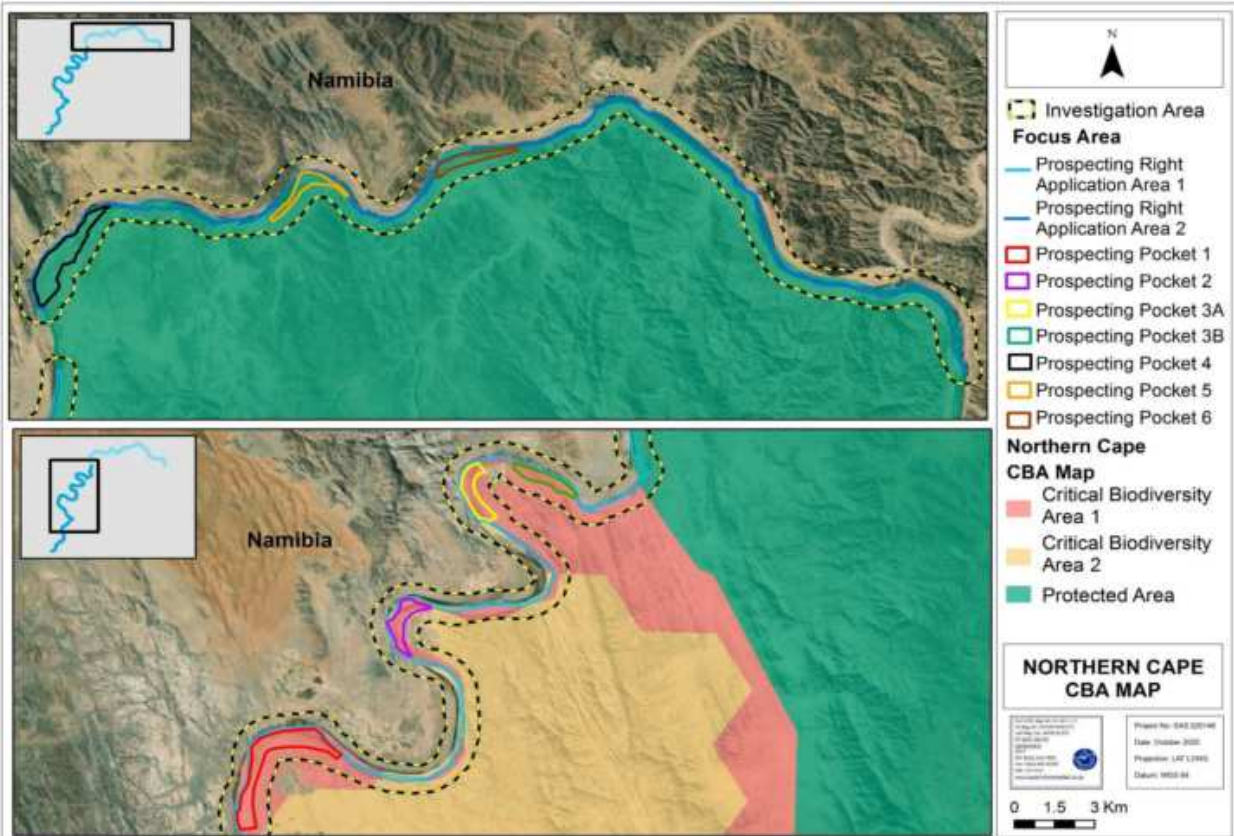


Figure 18: Northern Cape Critical Biodiversity Areas associated with the focus area (NC CBA, 2016). (SAS, 2020)

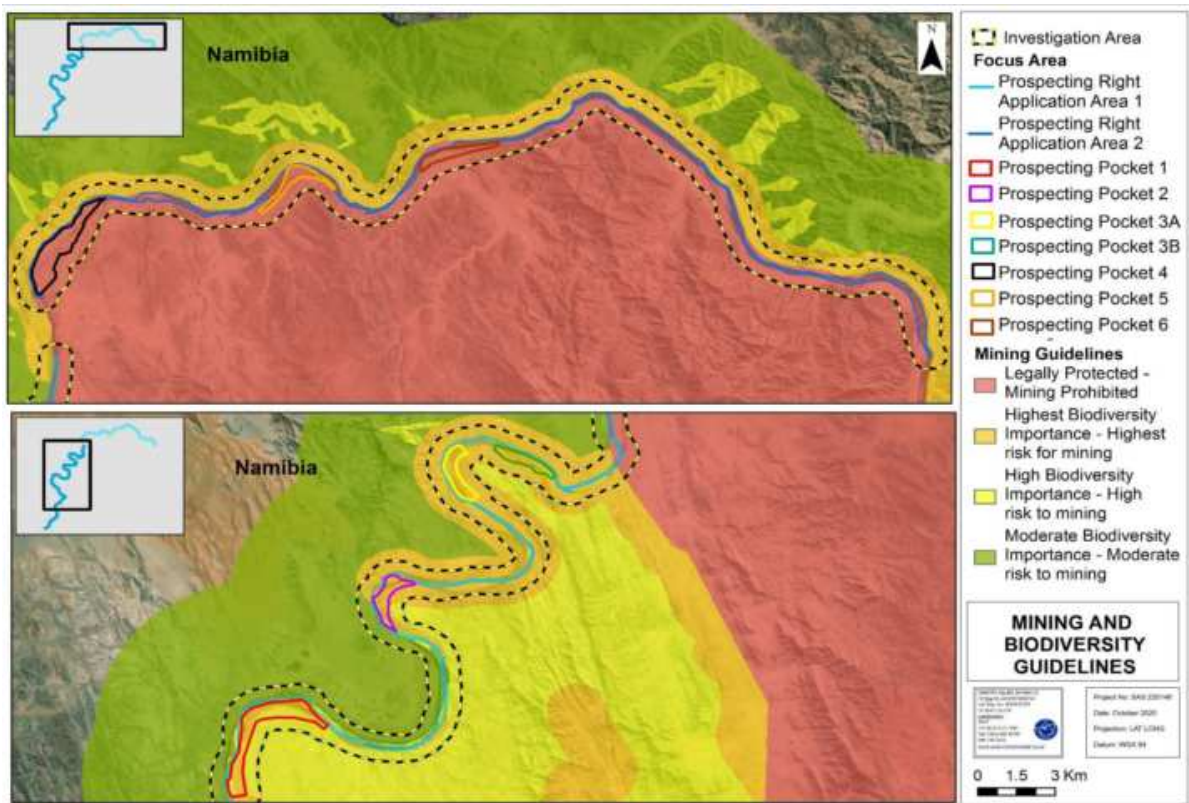


Figure 19: Biodiversity importance of the focus area according to the Mining and Biodiversity Guidelines (2013). (SAS, 2020)

### **Present Ecological State (PES) / Ecological Importance and Sensitivity (EIS)**

According to the DWS Resource Quality Information Services (RQIS) PES/EIS Database, the following sub-quaternary catchment reaches (SQRs) of the Orange River are applicable to the focus area (PRAA 1):

- D82L – 03298, 03238 , 03166
- D82K – 03175, 03084, 02994, 0000

Key information on fish species, macro-invertebrates and background conditions, associated with the above SQRs and pertaining to the PES, EIS for the Orange River are provided in Table 2 to 4 of the Freshwater Scoping Report.

Importantly, *Namaquacypris hospes*, a fish species, is known only from the section of the Orange River below Augrabies Falls, it prefers rocky and cobble habitat. The mobilisation of sediment from the proposed prospecting and bulk sampling activities has the potential to result in habitat smothering and has the potential to have a significant impact on this species as well as the *Labeos sp* (mudfishes). and *Labeobarbus sp.* (yellowfishes) from within the river that also have the same habitat preference.

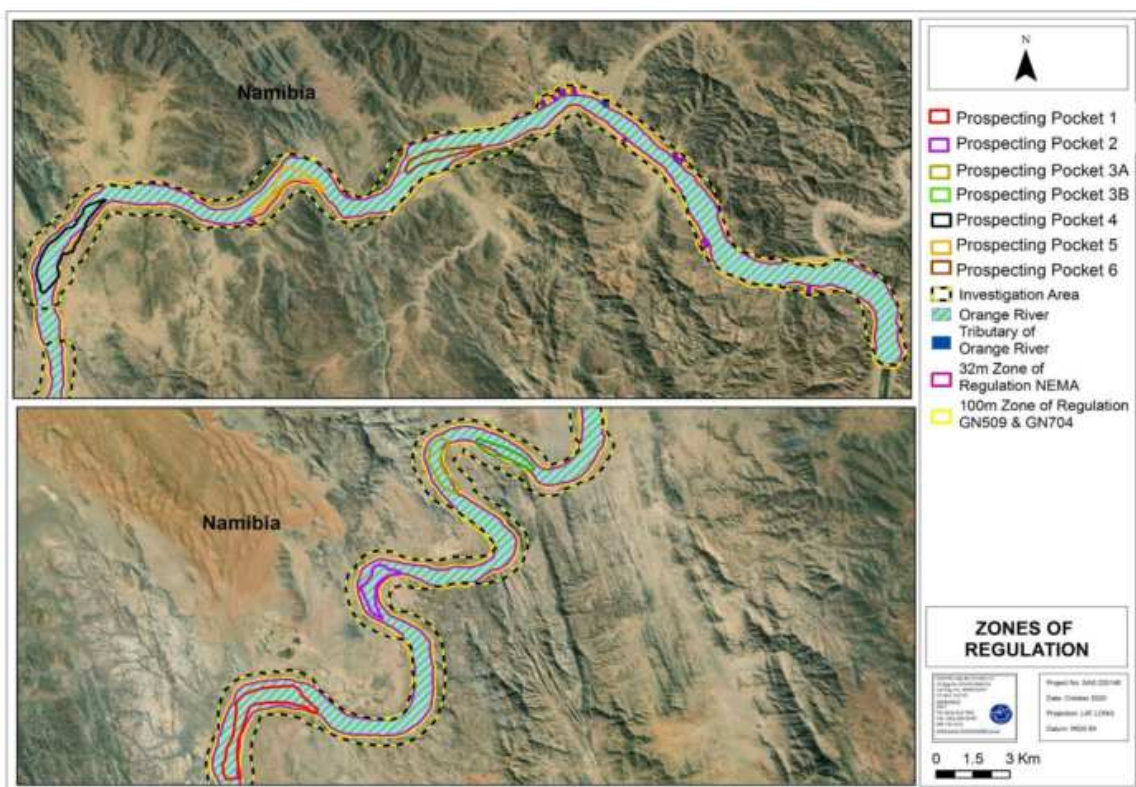
### **Watercourse Delineation**

The Orange River is identified as an alluvial river channel, which are self-formed features, meaning that they are shaped by the magnitude and frequency of the floods that they experience, and the ability of these floods to erode, deposit, and transport sediment. Alluvial channels are, therefore, formed in material that is able to move during moderate floods. This indicates that the bed and banks of an alluvial river channel are characteristically made up of unconsolidated mobile sediments such as silt, sand or gravel or cobbles and small boulders. Alluvial river channels tend to erode their banks and deposit the eroded material on bars and on their floodplains (Ollis et al., 2013).

Various anthropogenic activities have occurred along the Orange River, such as; historic sand and diamond mining on both sides of the river, establishment of small settlements such as the Drifsand settlement, and a formalised road within 32m of the Orange River on the Namibian side. The settlements were likely established because of the mining activities along the river. The settlements may have become reliant on ecoservices provided by the Orange River. Based on the above activities it is evident that the Orange River has undergone varying degrees of disturbance. Numerous quarries from historic mining activities have also been identified along the Orange River. The delineations of the Orange River and its associated riparian habitat and floodplain will need to be refined during the field assessment in the EIA Phase of the project.

In terms of NEMA any activities falling within 32m of a delineated boundary will trigger a listed activity. Any activities proposed within the watercourse and the associated 100m GN 509 Zone of regulation (ZOR), including rehabilitation, must be authorised by DWS in terms of Section 21 (c) & (l) of the NWA. In addition, according to GN 704, the activity footprint must fall outside of the 1: 100-year flood line of the watercourse or 100m from the edge of the watercourse, whichever distance is the greatest. Should this not be feasible, the applicant is to undergo a Water use Licence Application Process to attempt to obtain approval from the DWS in terms of Section 21 c& l of the NWA. In addition, exemption from the requirements in terms of Regulation GN 704 will be required.

The 100m and 32m ZOR around the watercourses are indicated in Figure 20. The 1: 100 year flood line will need to be determined for this reach of the Orange River to verify the regulated zone of the watercourse.



**Figure 20: Conceptual watercourse delineation and associated Zone of Regulation (ZOR) associated with the prospecting pockets. (SAS, 2020)**

**Orange River RAMSAR Site**

The prospecting and bulk sampling activities (PRAA 1 – pockets 1, 2, 3A, 3B and PRAA 2 – pockets 4, 5 and 6) are located approximately 30km upstream of the Orange River Mouth RAMSAR site. It is a transboundary area of extensive salt marshes, freshwater lagoons, marshes, sandbanks, and reed beds shared by South Africa and Namibia. Extensive abstraction of water from the Orange River for domestic, commercial and industrial purposes could severely restrict the amount of water reaching the site. See Figure 21 below.

Following the collapse of the saltmarsh component of the estuary, the site was placed on the Montreux Record in 1995. The site has experienced rapid degradation as a result of adjacent diamond mining activities (Alexander Bay) and flow regulation of the Orange River as a result of dam construction and water consumption. The Orange River Mouth is regarded as the second most important estuary in South Africa in terms of conservation importance after Knysna. The mouth supports several fish and bird species listed in international red data books. Further diversion of flow in the headwaters of the Orange River is likely to further reduce water availability in the Orange River Mouth. Construction of the proposed Neckartal dam in the lower Fish River in Namibia will further compound this situation since the Fish River is currently the main source of floods at the Orange River Mouth. The prospecting and bulk sampling activities have the potential to affect the Orange River Mouth and thus the RAMSAR wetland system. Such impact, is regarded as significant at all, will be unacceptable.

PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province



Figure 21: Location of proposed prospecting activities 30km upstream of the Orange River Mouth

Provided that the prospecting and bulk sampling activities do not take place within the active channel of the Orange River and undertaken in the low flow season with all rehabilitation completed before the rising of the river the risk can be significantly reduced. These mitigation measures, combined with other design management mechanisms and with well-managed construction and implementation practices, could potentially lead to significantly reduced impacts. Despite all of this, the risk the project poses still remains high.

The Orange River System is extremely ecologically important and sensitive. The proposed prospecting and bulk sampling activities poses a very significant risk to the system. It is thus deemed essential that all aspects of the proposed prospecting and bulk sampling activities are considered in extensive detail, and all aspects are exceptionally well planned and executed. It must also be noted from the outset that significant constraints are likely to be placed on the activity to conserve the environment, as a minimum, if the development is authorised to proceed at all.

## 1.7 Terrestrial Biodiversity

SAS has also compiled a Terrestrial Biodiversity Scoping Report (Appendix 5) in support of both Samara's prospecting right applications. A short summarised description has been abstracted from the report and included below. Please refer to the full report for all-inclusive details, maps and figures.

### 1.7.1 Vegetation

According to the Northern Cape Critical Biodiversity Area Plan (2016) the PRAA 1 and prospecting pockets 1, 2, 3A and 3B fall within areas categorised as a Critical Biodiversity Area 1, in which further expansion of surface-mining is prohibited (refer to Figure 18). Moreover, according to the Mining and Biodiversity Guideline (2013) prospecting pockets 2, 3A and 3B are located within an area identified as Highest Biodiversity Importance, and therefore mining poses a high risk to the sensitive habitat and associated floral and faunal species within these areas (refer to Figure 19). It is deemed likely that these areas could also be considered no-go areas from a biodiversity perspective due to the high impact and potential loss of irreplaceable habitat. The prospecting focus area is further location within 10km of a national park.

Prospecting pockets 1, 2, 3A, 3B fall largely within the Lower Gariep Alluvial Vegetation type (encompassing most of each prospecting pockets area), with small sections of each prospecting pocket bordering the Western Gariep Hills Desert vegetation type (see Figure 23).

#### **Lower Gariep Alluvial Vegetation (pockets 1, 2, 3A & 3B)**

This vegetation type is a nationally endangered ecosystem (National List of Threatened Ecosystems, 2011) and about 6% is statutorily conserved in the Richtersveld and Augrabies Falls National Parks. Some 50% transformed for agricultural purposes or alluvial diamond mining. Vegetation features include flat alluvial terraces and riverine islands supporting a complex of riparian thickets (dominated by *Ziziphus mucronata*, *Euclea pseudebenus* and *Tamarix usneoides*), reed beds with *Phragmites australis* as well as flooded grasslands and herblands populating sandbanks and terraces within and along the river.

#### **Western Gariep Hills Desert (pockets 1, 2, 3A and 3B border this vegetation type)**

It is 11% statutorily conserved in the Richtersveld National Park. About 1% transformed by several active and historical mines. The unit has a high conservation value due to its endemic and other localised species and recommendations have been made to SANParks to incorporate most of it into the Richtersveld National Park. Elsewhere within the unit, Cornellskop has been declared a Natural Heritage Site. The unit also occurs at least to some extent in Namibia where most of it is protected within the Sperrgebiet National Park. Very heterogeneous broken landscape, mostly hilly but including some smaller and larger plains. Some of the plains are covered by quartz gravel, others by loamy sand or by gravel from different rocks, with strong contrasts between different mosaic elements. The main vegetation unit includes quartz fields, which are covered by dwarf cushions of the *Brownanthus pubescens* community and the *Hartmanthus pergamentaceus* community (Jürgens 2004), the latter being restricted to this unit. The undulating hills, especially on southwestern slopes, are covered by the *Ruschianthemum gigas* desert shrubland community (Jürgens 2004), while rocky outcrops sometimes support populations of the spectacular *Aloe pillansii* (e.g. Cornellskop).

Please refer to a full description of the vegetation types included as Appendix E to the Biodiversity Scoping Report.



PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province

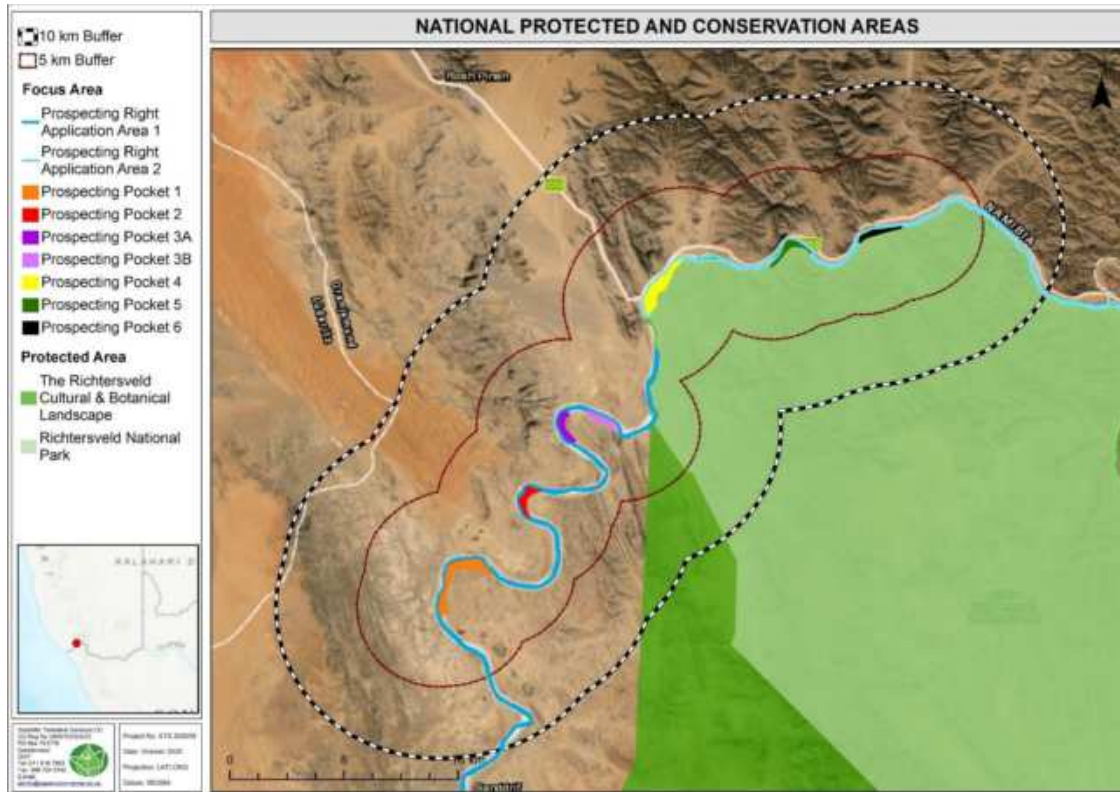


Figure 22: Protected areas within a 5km and 10km radius of the focus area (SAPAD, SACAD, 2019; NPAES, 2019) (SAS, 2020)

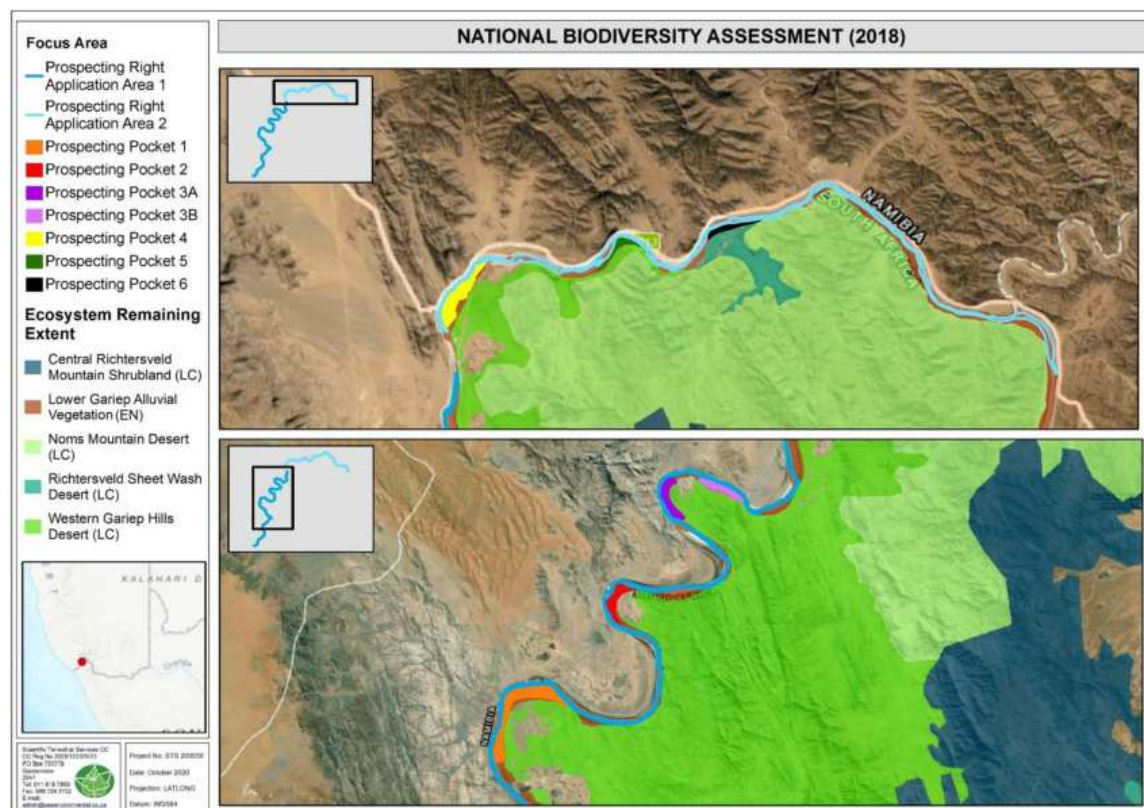


Figure 23: The remaining extent of vegetation types associated with the focus area, according to the National Biodiversity Assessment (2018) (SAS, 2020)

According to the Northern Cape Spatial Development Framework, 2019 the prospecting focus area is located in the Gariiep Centre of plant endemism which covers the Richtersveld and extends northwards into the Namibia Speredebiet and supports roughly 355 endemic plant species, several of which are protected under Schedule 2 (Protected Species) of the Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009). The prospecting focus area does not fall within a development corridor as set out in the SDF. Refer to Figure 8 in the Biodiversity Scoping Report.

The study site is not located in an Important Bird Area (IBA), or within 10km from an IBA. It is also not located in a Strategic Water Source Area for Surface Water.

### 1.7.2 Floral Species

Several floral species (e.g. *Astridia herrei* (a critically endangered endemic) and *Conophytum bilobum* (a near threatened endemic) that are protected under Section 2 (Protected Species) of the Northern Cape Conservation Act, 2009 (Act No. 9 of 2009) have the potential to be located within the focus area and within all the prospecting pockets. A full list of species can be viewed in Table F1 (Appendix F of the Biodiversity Scoping Report). It is important that a comprehensive field assessment be undertaken to determine the presence and the possibility of occurrence for all protected species.

Several protected tree species, *Boscia albitrunca*, *Vachellia erioloba* and *Euclea pseudobenus*, according to the National Forest Act, 1998 (Act No. 84 of 1998) are likely to be located throughout the focus area and within the prospecting pockets. In terms of this act, protected tree species may not be cut, disturbed, damaged or destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold - except under licence granted by the DEFF, or a delegated authority.

### 1.7.3 Faunal Species

Several faunal SCC such as *Cistugo seabrae* (Angolan Hairy Bat, NT) *Torgos tracheliotos* (Lappet-faced Vulture, VU), *Phoeniconaias minor* (Lesser Flamingo, NT), *Otocyon megalotis* (Bat-eared Fox), *Parahyaena brunnea* (Brown Hyaena, NT), *Aonyx capensis* (Cape Clawless Otter, NT), *Equus zebra hartmannae* (Hartmann's Mountain Zebra, VU), *Panthera pardus* (Leopard, VU) have been recorded within the Richtersveld National Park, whilst some of these species may also occur outside of the park along the Orange River. Many of these species are endemic to the region, thus their restricted distributions and movement may be threatened by fragmentation and habitat destruction resulting from prospecting and bulk sampling activities. It is important that a comprehensive field assessment (preferably within all seasons) be undertaken to determine the presence and the possibility of occurrence for all protected species. A full list of species can be viewed in Table G1 (Appendix G of the Biodiversity Scoping Report).

### 1.7.4 Implications of prospecting/ mining from a biodiversity point of view

The prospecting pockets fall within the endangered Lower Gariiep Alluvial Vegetation type which is poorly protected. According to the Northern Cape Critical Biodiversity Areas (2016) database, the focus area was identified as falling within a Critical Biodiversity Area 1, whereas PRAA 2 (prospecting pockets 4, 5, and 6) are located within a protected area. Protected and CBA1 areas consist of intact, undisturbed ecosystems. According to Namakwa Bioregional Plan in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), strictly no mining is allowed within these regions.

All the prospecting pockets are associated with the endangered Lower Gariep Alluvial vegetation type which is already to a large degree transformed, with a remaining 47% of natural vegetation left. Some 6% of this vegetation type is protected within two protected areas (Augrabies Falls National Park, Richtersveld National Park). The pockets pose a threat to this vegetation type. Loss of habitat within this endangered ecosystem will further impact on the floral and faunal communities within the ecosystem. An estimated 11 endemic species are found within the lower Gariep Alluvial Vegetation, which having already restricted distributions will be at further risk of fragmentation especially as the prospecting pockets will pose potential barriers to the dispersal of such species throughout the vegetation type.

The ecosystem is extremely ecologically important and sensitive and the proposed prospecting and bulk sampling activities pose a very significant risk to the ecology and biodiversity of the area. It is essential that all aspects of the proposed prospecting and bulk sampling activities are considered in extensive detail and all aspects are exceptionally well planned and executed. It must also be noted from the outset that significant constraints are likely to be placed on the activity to conserve the environment, as a minimum, if the development is authorised to proceed at all.

### **1.8 Visual aspects**

Prospecting pockets 1, 2, 3A and 3B are located below the 1: 100 year flood line of the Orange River within the vicinity of existing diamond mining operations. Diamond mining is located on the Namibian and South African side of the Orange River. The workings are visible to anyone travelling down the Orange River and to the occasional persons on the Namibian side of the Orange River.

Scientific Aquatic Services, has prepared a VIA Scoping Report for the PRAA 1 and PRAA 2 to screen the potential visual impacts from the prospecting and sampling activities on sensitive receptors (see Appendix 5). According to the report the prospecting focus area is situated on flat alluvial terraces and on the Orange River bed, surrounded by mountainous terrain in the greater region. There are limited sensitive receptors situated within a 5km radius of the focus area namely settlements including Klipheuwel, Sendelingsdrift, Auchas, Sanddrift and Skilpad.

There are limited roads on the South African side of the Orange River, yet several roads are present on the Namibian side of the river, namely Deboras Pass, Auchas Pass, Niklaas Pass and the formalised C13 Road running along the Orange River.

The Richtersveld National Park has significantly high eco-tourism aspect including, indigenous culture, rich biodiversity, river rafting, the Fish River Canyon hike, sport fishing along the Orange River., birdwatching and desert living. The Orange River is an established, world-renowned area for sport fishing and river rafting. The Orange River is considered a very highly sensitive receptor.

The area surrounding the prospecting focus areas is characterised by deep canyons, jagged mountains, vivid landscapes of unusual colours of rocks and soils, of extremely rare succulent plants and languid stretches and white water rapids of the Orange River. The quality of the landscape is considered very high and the sense of place provide a feeling of becoming one with nature.

The greater region surrounding the focus area comprises natural and undisturbed land, thus limited anthropogenic structures are present in this region. The area is intrinsically dark with limited to no sources of night time-lighting. The prospecting and bulk sampling activities could have a negative impact on the landscape character, sense of place and visual quality of the area.

According to the viewshed analysis (Figure 24), it is evident that the prospecting and bulk sampling activities (PRAA 1 and PRAA 2) will most likely be observed from sensitive receptors within 1km of the prospecting pockets. Limited portions of the Richtersveld National Park will observe the prospecting and bulk sampling activities. However, this area includes camping sites, and the project may have a potentially very significant negative visual impact on the camping sites.

Additionally, the Richtersveld National Park was declared a UNESCO World Heritage Site in 2007 and is one of South Africa’s most important conservation areas. There are several possible camping and picnic sites within the park. Despite the project being in a remote area, visitors and international tourists visit the Richtersveld National Park. The project is likely to have a high to very high visual impact on the overall landscape character of the area.

There are significantly high visual impacts associated with the project which will need to be assessed in detail in the EIA Phase. a VIA will be conducted to determine the potential impact of the prospecting and bulk sampling activities on the sense of place, landscape quality and character of the receiving environment.

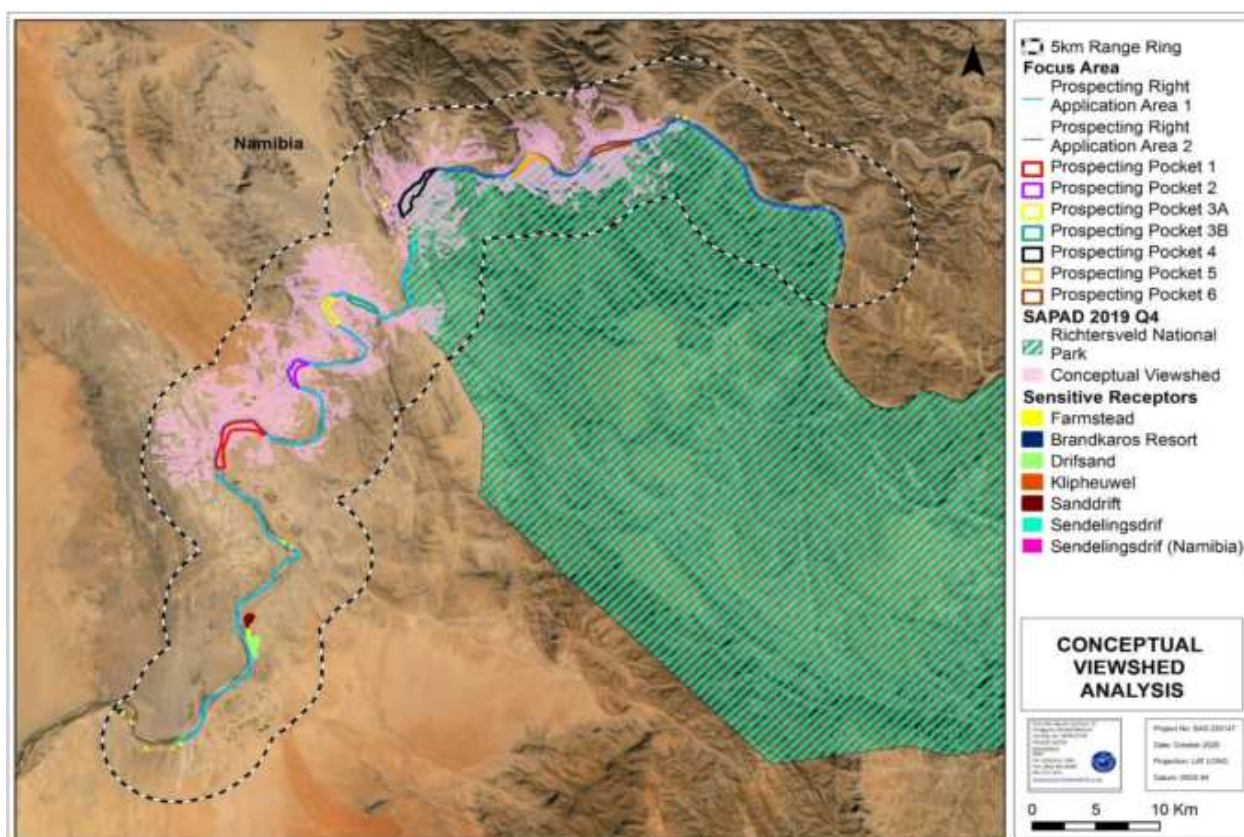


Figure 24: Viewshed analysis of prospecting focus area (SAS, VIA Scoping, 2020)

## 1.9 Air Quality

Ambient dust levels at PRAA 1 are expected to be moderate-low. The main sources are the existing diamond mining operations that dump overburden on a daily basis and vehicle entrained dust from travelling on unsurfaced roads in the area

Dust will be generated from the following activities to be undertaken during bulk sampling:

- Clearing of vegetation with a dozer

- Removal of topsoil,
- Excavation of trenches to collect bulk samples of diamondiferous gravels;
- Machinery/vehicles travelling on unsurfaced roads;
- Tipping of diamondiferous gravels into the Rotary Pan Plant (wet process and dust levels at the plant will be low);
- Backfilling of tailings and overburden into excavations;
- Removal of equipment and infrastructure during rehabilitation activities.

The prospecting pockets are located next to existing diamond mining operations and there are limited to no sensitive receptors in the direct area. The bulk sampling activities are expected to have a very low contribution to the current dust levels generated by the existing mines.

### **1.10 Noise**

The only noise sources in the area are from the existing mining operations. Noise sources at these mines include:

- Use and movement of vehicles along mine haul roads
- Operation of processing plants
- Potential blasting

Based on investigation of satellite imagery, the mining operations are remote from communities (Sendelingsdrif, Sanddrif) and any surrounding land uses. Ambient noise levels in the area are expected to be low.

The proposed prospecting, bulk-sampling and processing operations are expected to generate an increase in noise levels. The noise sources expected to contribute include:

- Use of machinery and heavy vehicles
- Operation of pumps in the River
- Operation of the Rotary Pan Plant

The increase in noise levels are however considered to be low since the prospecting pockets are situated next to existing diamond mining operations, also remove from communities and surrounding land uses.

### **1.11 Traffic**

The diamond prospecting and bulk sampling activities are expected to generate low traffic volumes since it will not produce a bulk ore product and a fly camp will be established at the prospecting pockets. The bulk sample will be reduced to small quantities of recovered alluvial diamonds and gravel material devoid of alluvial diamonds will be backfilled into trenches. Small volumes of traffic might be generated by:

- Bringing machinery and heavy vehicles to site during site establishment (once-off short-term impact per prospecting pocket)
- Prospecting related vehicles travelling on unsurfaced roads (low traffic)
- During rehabilitation, the equipment and heavy vehicles would need to be removed from site.

There are existing unsurfaced roads within the PRAA 1 that provide access to the existing mining diamond mining operations, therefore also the prospecting pockets.

## 1.12 Site of Cultural, Heritage and Palaeontological Importance

Millennium Heritage Group Pty Ltd has prepared a desktop Heritage (HIA) Scoping Report and Dr JF. Du Randt a Palaeontological Desktop Study to describe the cultural, heritage and palaeontological landscape of the prospecting focus area. The studies are attached under Appendix 5.

According to the HIA Desktop Study, prospecting pockets 1, 2, 3A and 3B all fall within 10km of the Richtersveld Cultural Botanical Landscape (UNESCO World Heritage Site) and the Richtersveld National Park. The Richtersveld was claimed by the Nama people as part of their traditional land and set up a conservancy for research and tourism purposes. The Nama people own the entire area, including the World Heritage Site and manage the Richtersveld National Park in conjunction with the SANPARKS and are entirely responsible for the management of the World Heritage Site. The Richtersveld Cultural Botanical Landscape was declared based on its outstanding Universal Value namely:

- The diverse botanical landscape of Richtersveld, shaped by pastoral grazing of the Nama (way of life persist many millennia over a considerable part of southern Africa and was significant state in history in area);
- Richtersveld is one of the few areas in southern Africa where transhumance pastoralism is still practised, as a cultural landscape it reflects the tradition of the Nama. Their seasonal pastoral grazing regimes which sustain the extensive biodiversity in the area are now vulnerable,

The Nama people continue to live and graze their livestock in the area. The community conservancy is bordered to the north by the National Park and unlike the park, the Richtersveld Community Conservancy, which forms the core zone of the World Heritage Site, is not subject to diamond mining and as a result is more pristine of the two areas. The Nama language has preserved here by the Nama communities. The Nama people made this part of the world their home about two millennia ago, and because no one else has been willing to survive in this landscape, their lifestyle has not changed much in that time (Dewar 2008).

Historical records depict the Nama landscape as populated by pastoralists whose livelihood depend on the Orange River as long as 2000 years ago. The river served as the only source of permanent water for themselves and their livestock. This attracted settlements which were recorded by early European explorers as dotted along the River.

The period 1996 and 2020 saw Trans Hex Mining commission several archaeological surveys on areas the company proposed to mine for alluvial diamond mining in the Richtersveld. The southern bank (left bank) of the Orange River was surveyed (between Sendelingsdrif and Baken) revealing numerous Early, Middle and Late Stone Age sites. In 2001 the UCT Archaeology Contracts Office excavated four Later Stone Age sites on the southern bank of the Orange River (near Sendelingsdrif and just east of Jakkelsberg. More recently, Dewar and Stewart (2011) uncovered Early Stone Age sites whose antiquity of occupation dates back almost a million years ago.

Numerous Stone Age Sites were uncovered by Lita Webley along the banks of the Orange River in the Richtersveld showing deep past of the Namaqualand (Webley 1992), i.e. Two dense archaeological sites at Jakkalsberg (near Sendelingsdrif) (close to prospecting pockets 3A and 3B). The sites contained a unique collection of artefacts attributed to ancestors of Nama herders. Jakkalsberg, an open site on the banks of the Orange River, has been dated between the 7<sup>th</sup> and 8<sup>th</sup> centuries AD. Please refer to the HIA Scoping for further details. The archaeology of Namaqualand is characterised by the following presented in Table 4.

**Table 4: Archaeological Sites of Namaqualand**

Early Stone Age Sites	Found on river flood plains and some considerable distance from the rivers.	Source
Middle Stone Age Sites	Sites including material remains are usually found scattered on river terraces, on ridges overlooking the river as well as on the higher slopes of hills.	Robertshaw 1978; Smith 1995; Webley 1992; Halkett 1999, 2003; Orton et al 2005 Dewar 2008
Late Stone Age Sites	Mostly confined to riverine silt bodies. A number of herder sites were located, some of which have now been radiocarbon dated and sampled. Also present are Mid-Late Holocene sites, one of which contain a microlithic industry and have been radiocarbon dated to circa 3000 BC.	Robertshaw 1978; Smith 1995; Webley 1992; Halkett 1999, 2003; Orton et al 2005 Dewar 2008
Rock engravings	Are prolific within the river valley and tributaries. Most of these are Usually they are etched onto blue dolomite. The designs tend to be abstract, yet consistent. Human and animal figure are rare but present. The age of the engravings is unknown in most cases. Some appear to be fairly fresh while others are so worn and patinated that they must be of considerable age – possibly some thousands of years. The meanings of the enigmatic designs remain unknown and their significance is unclear.	Robertshaw 1978; Smith 1995; Webley 1992; Halkett 1999, 2003; Orton et al 2005 Dewar 2008
Historic sites	Usually include the foundations of colonial buildings such as mission churches, places on the river where early copper mines in the Richtersveld shipped copper ore onto river barges for transport downriver. These also include the stone burial mounds of Nama herders.	Robertshaw 1978; Smith 1995; Webley 1992; Halkett 1999, 2003; Orton et al 2005 Dewar 2008
Ethnographic sites	Consist of remains of herder encampments that are not necessarily protected by heritage legislation but are important, as they are the last physical remnants of a traditional lifestyle that is thousands of years old and rapidly changing in the 21st century. These sites are of interest to anthropologists, ethnoarchaeologists and architects who have mapped and documented the layout of these encampments in attempts to understand changes and traditional values within Nama society.	Robertshaw 1978; Smith 1995; Webley 1992; Halkett 1999, 2003; Orton et al 2005 Dewar 2008

Several archaeological sites dating to the Stone Age to recent past structures have been identified. There are probably a few more sites that could not be located from the desktop study. Most of the

archaeological sites well presented by stone tool sites scattered along the Orange River banks are likely to be impacted by the proposed alluvial diamond prospecting and sampling activities.

According to the HIA Scoping, heritage sites are fixed features in the environment occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. The identified sites do not present much of the problem, as current legislation allows for mitigation measures to be implemented. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated/ recorded, and a management plan can be developed for future action. Those sites that are not impacted can be written into the management Plan.

Due to the proposed work near or inside a National and World Heritage site it is felt that an approval from SAHRA would be prudent before prospecting and bulk sampling activities proceed. Stakeholder engagement will be a key element on a continuous basis for the duration of the project. Key government agencies and stakeholders to be engaged and consulted for review of the heritage report and approval of the project include:

- South African Heritage Resources
- Namibia Heritage Council
- UNESCO

### **Palaeontological Importance**

According to the Palaeontological Desktop Study compiled by Dr. J.F. Du Randt the proposed prospecting will take place in an area considered to have moderate to low, to insignificant Palaeontological Sensitivity. Although fossils are scarce in the Quaternary sand and sandy soils that dominate the study site, the possibility of finding any in the study area should not be dismissed.

The rocks of the Gariiep Supergroup that underlie the sediments in the western part of the study site may contain stromatolites.

The ECO should take responsibility of monitoring the excavations and development onsite. If a significant find is made the procedure stipulated under Procedure for Chance Palaeontological Finds should be followed which includes the safeguarding of the exposed fossils and the contacting of a palaeontologist for further advice.

### **1.13 Regional Socio-Economic Environment**

The prospecting focus area is located in Ward 1 and 2 of the Richtersveld Local Municipality situated in the Namaqua District Municipality of the Northern Cape Province. The regional centre of Namaqualand is in Springbok and the headquarters of the Richtersveld Local Municipality is in Port Nolloth. Port Nolloth has fishing and marine diamond mining as its economic base. Alexander Bay is an existing diamond mining town.

#### **Population**

Springbok has a population of 10 000 and the overall Namaqua region has a population of 43 000 persons (Richtersveld and Nama Khoi). Overall 10.8 % of the total population of the Namaqua District reside in the Richtersveld. The municipal region had a total population of 12 487 in 2016 of which 53.1% are male and 46.9% are female. Refer to Table 5 for the Population by group type for 2016).



**Table 5: Population by group type, 2016 for Richtersveld Local Municipality**

Race	2016	Percentage distribution
Black African	1 173	9.4%
Coloured	10 347	82.9%
Indian	50	0.4%
White	917	7.3%
<b>Total</b>	<b>12 487</b>	<b>100%</b>

### **Rural areas**

Ward 1 includes rural areas namely Sendelingsdrif (Reuning), Kuboes, Eksteenfontein and ward 2 includes Alexander Bay, Sanddrif and Beauvallon. The Sendelingsdrif (Reuning) and Sanddrif fall within the prospecting focus area.

### **Dominant Economic Activity**

Mining is the dominant economic activity followed by conservation in-focus area. The conservation area attracts thousands of tourists, and the mining industry employs many disadvantaged communities who rely on income from the industry.

The municipality experiences relatively high levels of unemployment and crime. Recent mine closure at Trans Hex Operations in Ward 2 has negatively impacted on the economic activities and income of people.

Other current employers in the Namaqualand include:

- Lower Orange River Diamonds (major)
- Richtersveld National Park and Orange River recreation tourism industry
- Alexander Bay coastal diamond mining
- Port Nolloth marine diamond mining
- Port Nolloth fishing industry
- Lekkersing quartzite tile mining
- Ailing copper mining industry in Springbok
- Dimension stone industry in the Springbok area

### **Unemployment**

According to the Namakwa District Municipality IDP (2020/2021) there were a total number of 12 000 people unemployed in Namakwa in the year 2018, which is an increase of 1 760 from 10 200 in 2008. The total number of unemployed people within Namakwa is 9.4% (people seeking work). Namakwa experiences an annual average increase of 1.6% in the number of unemployed people.

Kuboes, Sanddrif and Lekkersing have an unemployment rate of between 54% and 76%.

**Table 6: Number of Households, Population and Unemployment within the study site rural areas**

Town	Households	Population	Unemployment
Kuboes	235	823	150
Eksteenfontein	125	719	41

Lekkersing	118	765	87
Sandrif	260	858	183
Alexander Bay	411	1760	55
Port Nolloth	3405	7562	610
Sendelingsdrif (Reuning)	130	224	16
Baken	Unknown	491	9

### **Water Supply (Domestic)**

Richtersveld Local Municipality is an accredited Water Services Authority and provides potable water to Lekkersing, Eksteenfontein and Port Nolloth (Richtersveld IDP, 2020). Lower Orange River Diamonds Pty Ltd provides potable water to Reuning (Sendelingsdrif) and Baken towns and to its mines from pump stations on the Orange River which feed purification works at each of Baken and Reuning while further pump station at Baken provides water to Kuboes via a Kuboes pumping line on which the Kuboes purification works is located. (Draft Scoping Report, Lower Orange River Diamonds, Site Planning, 2020)

### **Electricity Supply**

Electricity distribution in Richtersveld municipal area is done by the Richtersveld Municipality and Eskom respectively as per Table 7 below. (Richtersveld IDP, 2020)

Power supply to the West Richtersveld is by Eskom 66kV grid which feeds from the Beesbank substation in the south via the Bloeddrif substation (which supplies Bloeddrif mine and Baken mine with 22kV supply). The main Eskom line continues north-ward as a 66kV line past the Octha Substation (which supplies Reuning mine with 22kV supply) to Rosh Pinah in Namibia. (Draft Scoping Report, Lower Orange River Diamonds, Site Planning, 2020)

**Table 7: Electricity Provision in Richtersveld**

<b>RICHTERVELD LOCAL MUNICIPALITY</b>	<b>ESKOM</b>
Port Nolloth Town	Alexander Bay
Nollothville	Eksteenfontein
McDougalls Bay	Kuboes
	Lekkersing
	Sizamile
	Sanddrif

### **b) Description of the current land uses**

According to the 2014 National Land Use Cover Map the prospecting pockets correspond to the following land cover:

- Thicket/Dense bush
- Low Shrubland
- Bare-no vegetation
- Mine – bare
- Water (permanent)

PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province

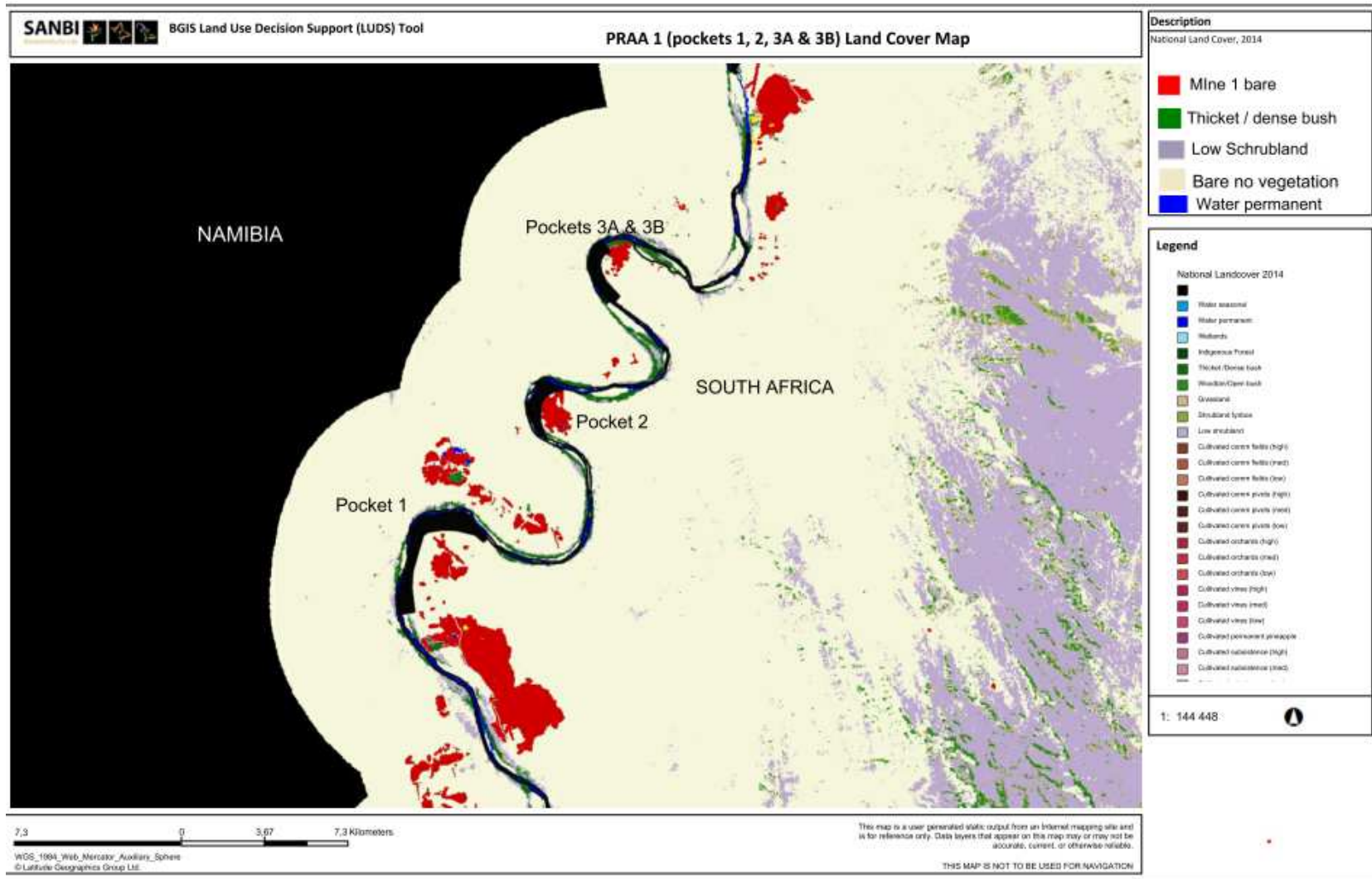


Figure 25: 2014 National Land Cover Map showing land use cover relevant to the prospecting focus area

The current surrounding land uses to be considered include:

- Diamond Mining - Lower Orange River Diamonds Mineral Lease Area and operations
- Orange River flood plain and riparian vegetation
- Orange River active channel
- Alluvial gravel terraces
- Goat grazing - livestock of the Nama people

All four (4) prospecting pockets (pockets 1, 2, 3A and 3B are located directly adjacent to existing diamond mining operations. The existing diamond mining operations are taking place above the Orange River flood line and the proposed prospecting and bulk sampling will take place below the river flood line.

The proposed prospecting and bulk sampling activities will have the potential to have a significant impact on the ecotourism activities conducted along and on the Orange River.

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

#### **Specific Environmental Features**

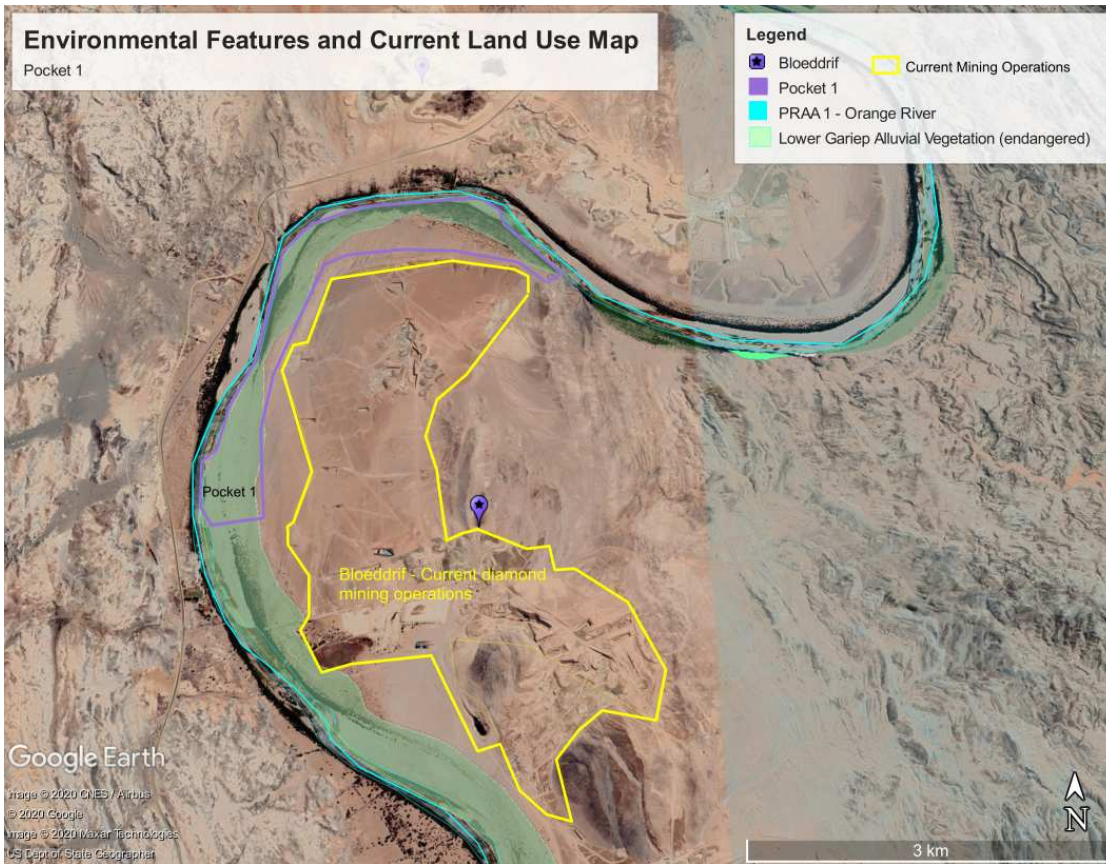
- According to the Northern Cape Critical Biodiversity Areas (2016) database, the focus area was identified as falling within a Critical Biodiversity Area 1.
- Prospecting focus area is located in the Gariiep Centre of plant endemism;
- All of the prospecting pockets are associated with the endangered Lower Gariiep Alluvial vegetation type, which is listed as a Nationally Threatened Ecosystem, 2011;
- Prospecting and bulk sampling will be undertaken below the Orange River 1: 100-year flood line;
- Namaquacypris hospes, a fish species, is known only from the section of the Orange River below Augrabies Falls, it prefers rocky and cobble habitat. The mobilisation of sediment from the proposed prospecting and bulk sampling activities has the potential to result in habitat smothering and has the potential to have a significant impact on this species as well as the Labeos sp (mudfishes). and Labeobarbus sp. (yellowfishes) from within the river that also have the same habitat preference.
- Several protected tree species, *Boscia albitrunca*, *Vachellia erioloba* and *Euclea pseudebenus*, according to the National Forest Act, 1998 (Act No. 84 of 1998) are likely to be located throughout the focus area and within the prospecting pockets.
- Several floral species (e.g. *Astridia herrei* (a critically endangered endemic) and *Conophytum bilobum* (a near threatened endemic) that are protected under Section 2 (Protected Species) of the Northern Cape Conservation Act, 2009 (Act No. 9 of 2009) have the potential to be located within the focus area and within all the prospecting pockets.
- Potential existence of stone tool sites scattered along the Orange River banks.

#### **Infrastructure on site**

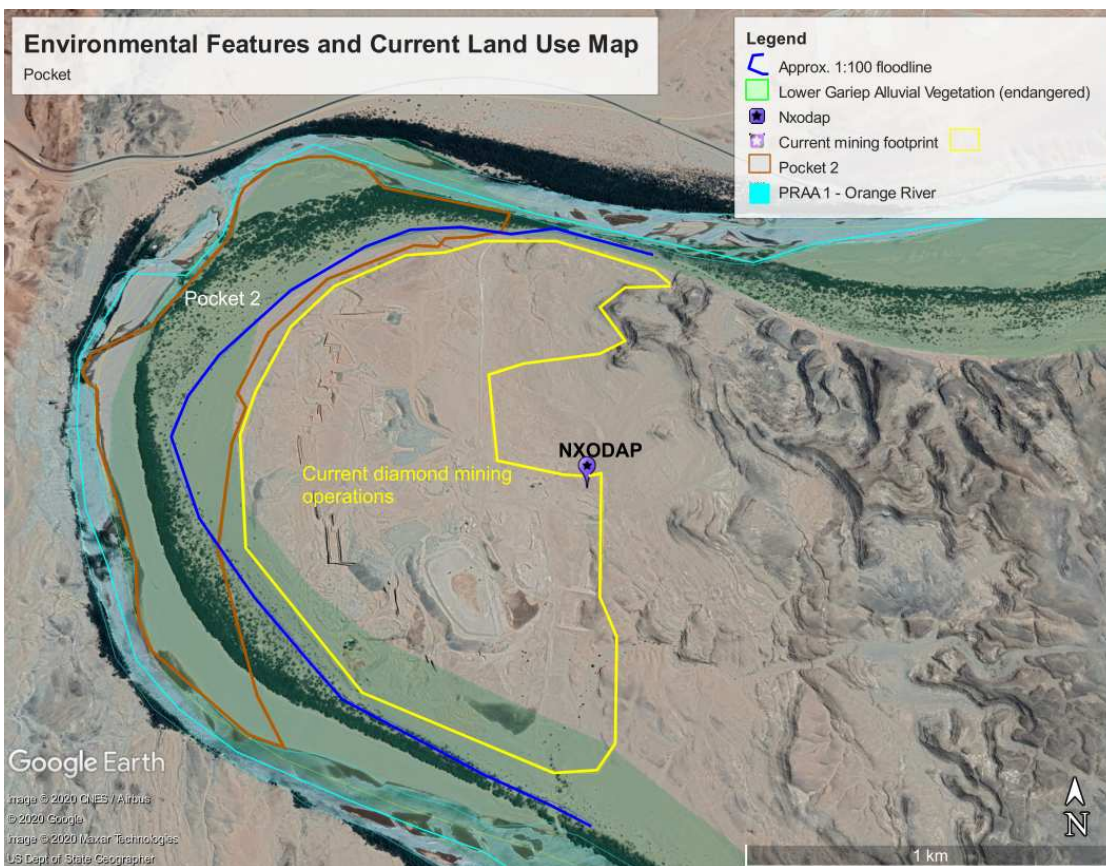
- All prospecting pockets fall within the Lower Orange River Mineral Lease Area or either next to the lease area.
- Pocket 1, 2 and 3A & 3B are directly adjacent to existing diamond mining operations at Bloeddrif, Nxodap and Jakkalsberg.
- The above mentioned current diamond mining activities take place above the Orange River 1:100 year flood line and prospecting and bulk sampling will take place below the flood line.

**d) Environmental and current land use map**

(Show all environmental and current land use features)



**Figure 26: Environmental Feature and Land use Map - Pocket 1**



**Figure 27: Environmental Feature and Current land use map - Pocket 2**

PRAA 1 – 12664 PR - Prospecting Right Application including Bulk Sampling (trenching) for alluvial diamonds on the left bank of the Orange River, boundary to Portion of the Remainder of the Farm Richtersveld No. 11, Namaqualand, Northern Cape Province

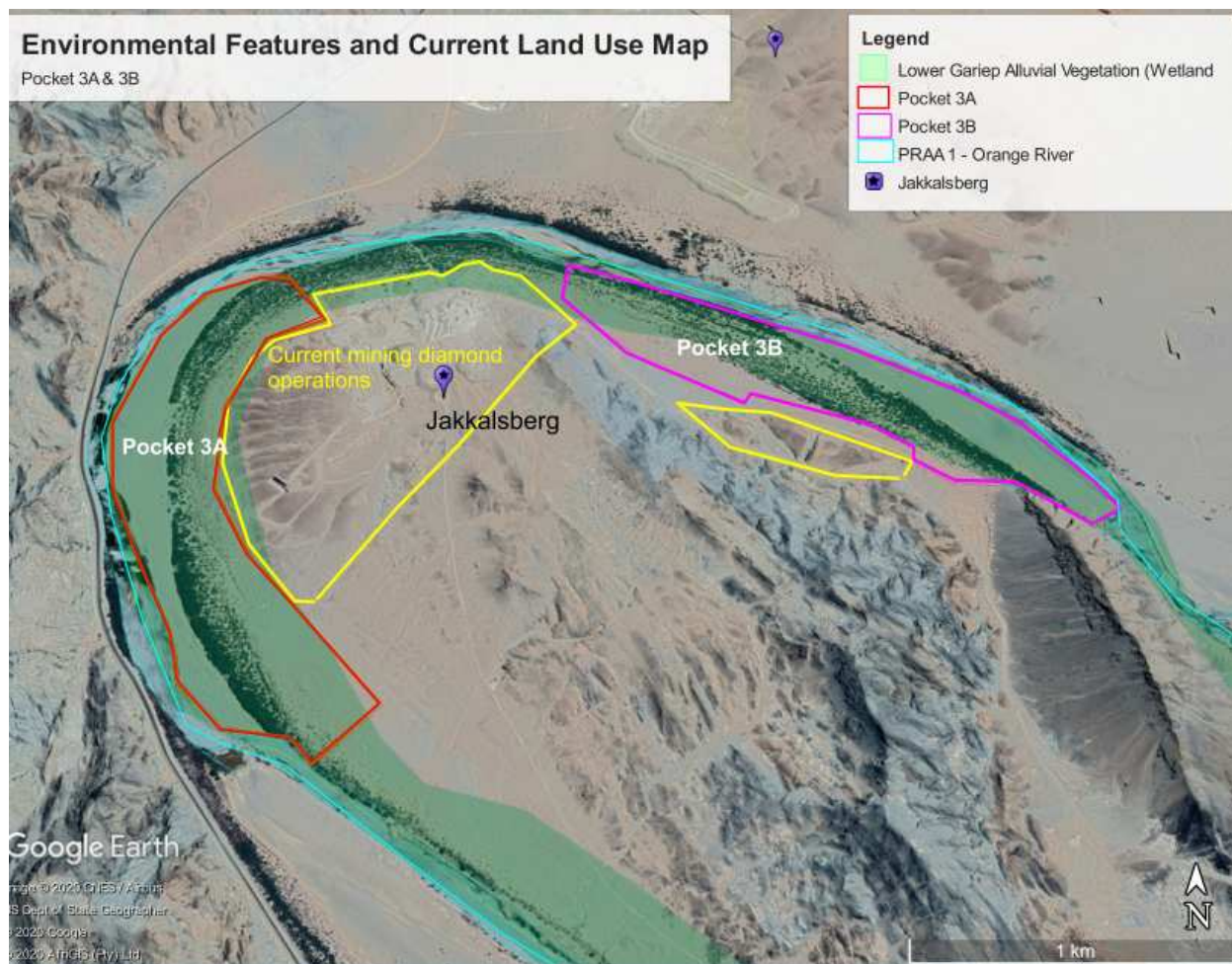


Figure 28: Environmental Feature and Current Land Use map - Pockets 3A & 3B

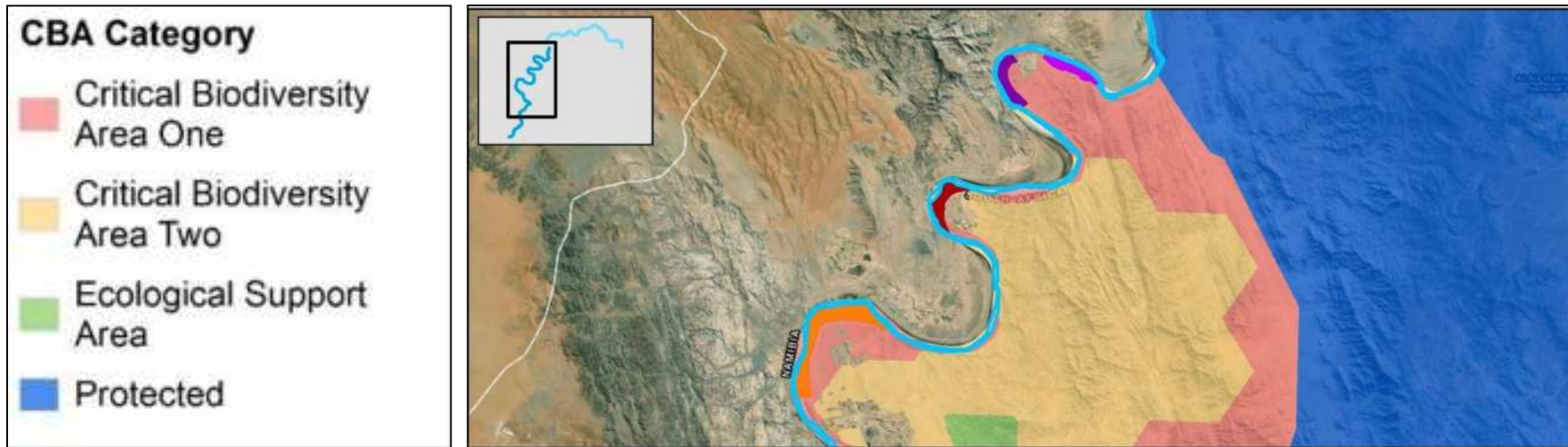


Figure 29: Northern Cape Critical Biodiversity areas associated with the focus area and the associated infrastructure. (SAS, 2020)

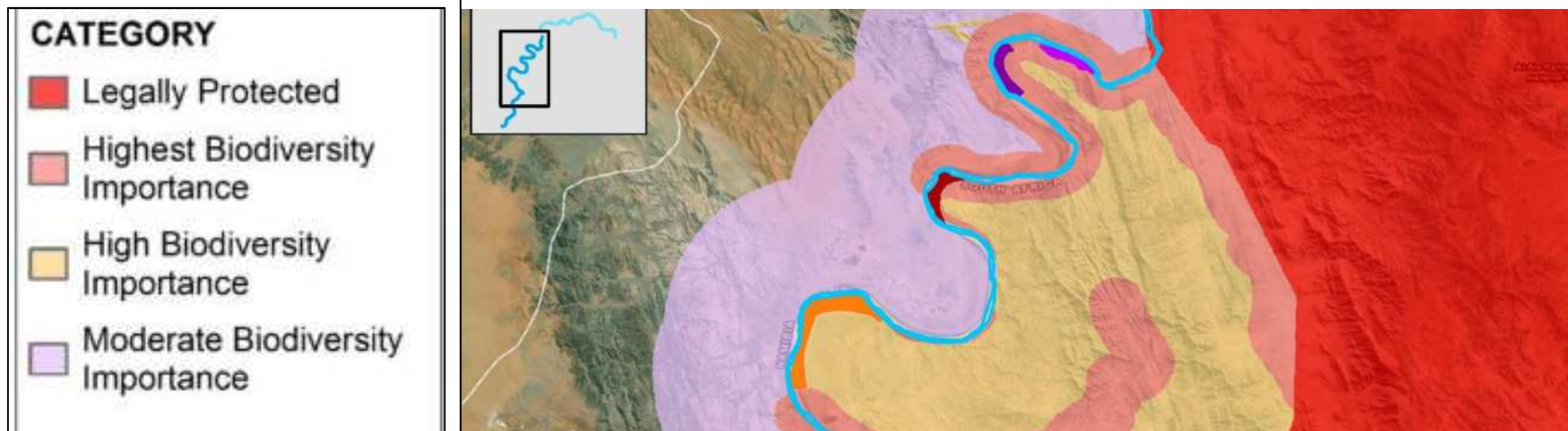


Figure 30: Biodiversity importance of the focus area according to the Mining and Biodiversity Guidelines (2013). (SAS, 2020)

## v. Impacts Identified

The NEMA Scoping Report template of the DMR requests that potential impacts are listed for the activity based on the initial site layout as informed by typical known impacts of activities, informed by the consultations with affected parties including as specified by a specialist. The significance, probably and duration of an impact should be gauged.

The Draft Scoping Report lists the potential impacts identified from typical impacts known for such prospecting and bulk sampling activities, environmental attributes of the site and initial specialist inputs (Appendix 5). All research and screening of potential impacts including significance rating are based on desktop investigations. The list of potential impacts is still subject to further public participation to identify any additional impacts.

The list of potential impacts is therefore considered as informed by:

- Informed by known typical impacts
- As identified by a Specialist

**Table 8: Identified Impacts (screening assessment)**

				SIGNIFICANCE						
Activity	Aspect	Possible impact	Informed by Known/I&AP/Specialist	Status	Probability	Extent	Duration	Intensity	Significance Score	Rating
<b>Non-Invasive Prospecting Activities (Desktop Study and Geological Mapping)</b>	Selection of bulk sampling trench positions and location of fly-camp (per pocket)	Optimal planning of trenching locations within the identified prospecting pockets to avoid impact on existing mineral lease areas and unnecessary alternations to river active channel.	Known, Specialists	Positive	3	1	1	3	15	Moderate
<b>Invasive Bulk Sampling Activities</b>										
<b>Bringing machinery , equipment and heavy vehicles to site during site establishment</b>	Traffic	Increased vehicle movement along existing unsurfaced roads	Known	Negative	3	3	1	2	18	Moderate



<b>Clearing of vegetation and removal of topsoil, overburden during site establishment</b>	Impact on Terrestrial Fauna and Flora	Habitat destruction, loss of floral and faunal communities, consequently impacting on faunal and floral biodiversity within the focus area, impacting on overall conservation targets for defined CBA's and protected areas	Known, Ecological Specialist	Negative	3	3	5	3	33	High
	Impact on Air Quality	Increased dust levels along Orange River may pose a nuisance to ecotourism activities (river rafting, fishing, bird-watching) and motorists/tourists along Namibia C13 road alongside Orange River)	Known	Negative	2	1	2	2	10	Low
	Visual Impact	Impact on visual exposure and visibility (perception of sensitive receptors) due to vegetation clearance for physical infrastructure, erosion and alteration to local topography add to contrast in the landscape and will be visible to receptors	Visual Specialist	Negative	3	2	2	3	21	Moderate
<b>Stockpiling of topsoil and overburden during site establishment and bulk sampling</b>	Soil	Loss of topsoil resource (wind-erosion, scouring by concentrated run-off)	Known	Negative	2	1	5	2	16	Moderate
	Surface Water Quality	Stockpiling of topsoil and overburden to be used as part of 'temporary' stormwater management infrastructure upgradient of the workings may result in erosion, increased sediment load during rainfall events, change the paths of local water flow		Negative	3	1	2	2	15	Moderate
<b>Establish, develop and maintain access roads, temporary roads to pockets, parking, offices, ablution facilities, storage facilities, fences and process plant site</b>	Impact on Surface Water	Vegetation clearing, soil compaction, erosion, contamination and pollution of the local environment (including surface and groundwater	Hydrological Specialist	Negative	3	1	1	4	18	Moderate
	Impact on Aquatic Ecology (Orange River)	Soil compaction, damage/ or removal of vegetation and altered runoff	Aquatic Specialist	Negative	3	1	5	3	27	High

<b>Construction of small temporary diversion in Orange River and impeding of water flow to limit ingress of water to bulk sampling trenches</b>	Impact on biodiversity	Diversions and/or destruction within and around the Orange River will result in the significant loss of surrounding landscape features, and faunal habitat, impacting upon faunal species diversity and abundance;	Aquatic Specialist	Negative	3	3	5	4	36	High
	Impact on aquatic biota and community structure of Orange River	Alter aquatic habitats for aquatic macro-invertebrates and fish, and will have an impact on flow dependant species;	Aquatic Specialist	Negative	2	3	3	3	18	Moderate
		Increased sedimentation within Orange River will affect habitat integrity and aquatic biota (biota reliant on clear fast-flowing water, fish community rely on deeper refugia which can be silted up if disturbed or not managed).	Aquatic Specialist	Negative	3	3	2	4	27	High
	Impact on surface and groundwater	Alter the river course and flow characteristics, increased sedimentation, increased water flow velocity and or reduced river flow volume.	Hydrological Specialist	Negative	3	2	2	3	21	Moderate
<b>Bulk Sampling, trenching, processing and operation of onsite infrastructure, Rotary Pan Plant</b>	Surface Water Quality	Operation of plant for screening, concentration, processing may cause pollution (including Petro-chemicals, erosion, increased sediment load during high rainfall events)	Hydrological Specialist	Negative	3	2	2	2	18	Moderate
		Altering the bed, banks and characteristics of the watercourse, increase in sediment load during high rainfall events (elevated TSS)		Negative	3	3	2	3	24	Moderate
	Impact on Air Quality	Vehicle, equipment and machinery entrained dust, wind-erosion from exposed surfaces (high wind speeds in Richtersveld)	Known, desktop research	Negative	3	2	2	2	18	Moderate
	Impact on Biodiversity	Prospecting areas recorded to support several threatened species (floral and faunal). Prospecting activities will pose a risk to those species stemming from loss of both loss of suitable habitat and loss of	Ecological Specialist	Negative	3	1	5	3	27	High

	species within prospecting focus areas and adjacent areas.										
	Loss of habitat, increased erosion, leading to poor growth and establishing conditions for floral species and consequently, providing sub-optimal habitat conditions for faunal species due to movement and use of machinery, vehicles and equipment onsite	Ecological Specialist	Negative	2	3	2	3	16	Moderate		
	Loss and fragmentation of already range-restricted species		Negative	2	6	5	4	30	High		
	Fragmentation and habitat loss (floral and fauna species). Permanent surface scarring from bulk sampling will reduce favourable habitat for floral and faunal species		Negative	3	3	5	2	30	High		
	Bulk sampling within the river and riparian zone lead to loss of favourable foraging habitat for avifauna and bats both in and adjacent to the prospecting areas		Negative	2	3	5	3	22	Moderate		
	Impact on both in and downstream of the pockets on fauna species which are reliant on in-stream habitat and food resources		Negative	3	3	3	3	27	High		
	Increased runoff and erosion resulting in a further loss of faunal and floral habitat and increased sedimentation of the Orange River		Negative	3	3	2	3	24	Moderate		
	Risk of discharge of contaminated water from prospecting operations has a high likelihood of causing some degree of contamination to the receiving environmental including the Orange River leading to altered floral and faunal habitat		Negative	2	3	2	3	16	Moderate		



	Dumping of waste materials in the surrounding habitat will result in loss of floral and faunal habitat including potential impacts on the surrounding habitat, likely to push faunal species out of their current home ranges, resulting in increased competition for space and resources within the focus area and in surrounding area;		Negative	2	3	2	2	14	Moderate
Impact on Aquatic Ecology (Orange River) - Fish species	Mobilisation of sediment from the proposed prospecting and bulk sampling activities will result in habitat smothering and have a significant impact on Namaquacypris hospes as well as the Labeo sp. (Mudfish) and Labeobarbus spp. (Yellofishes) from within the river that also have this habitat preference;	Aquatic Ecologist	Negative	3	3	3	4	30	High
	Spread of alien invasive species due to edge effects caused by the clearing of vegetation for roads, prospecting, bulk sampling activities		Negative	2	3	2	3	16	Moderate
	Soil and water contamination from oils and hydrocarbons		Negative	3	2	2	2	18	Moderate
	Impact on functioning of weirs in the Orange River and affect their accuracy		Negative	2	6	3	4	26	High
	Contamination of soil and surface water and removal of vegetation leads to inability to support biodiversity		Negative	2	3	2	2	14	Moderate
	Clearing of vegetation results in exposure of soil which lead to increased runoff and erosion and ultimately increased sedimentation and changes to the geomorphological processes and sediment balance		Negative	3	3	3	4	30	High

Impact on Aquatic Ecosystem - downstream Orange River Estuary (RAMSAR Site)	Sedimentation will affect the estuary function at Alexander Bay, resulting in it possibly closing if there is too much sediment deposition within the estuary		Negative	2	6	5	4	30	High
Visual Impact	Impact on landscape and visual character of the region and sense of place associated with surroundings	Visual Specialist	Negative	3	2	2	3	21	Moderate
	Indirect visual exposure through fugitive dust generated by bulk sampling, processing and vehicle movement on unsurfaced roads		Negative	3	1	2	3	18	Moderate
	Direct visual exposure will take place due to prospecting infrastructure visible to residents in immediate vicinity and tourists visiting the Richtersveld National Park		Negative	3	2	2	3	21	Moderate
	Impact on sense of place of Orange River (impact on views of unimpacted floodplain, the appearance of the area, riparian vegetation appearance, water clarity and instream habitat)		Negative	3	2	2	4	24	Moderate
	Lighting Pollution - Lighting visible during day and night likely to cause adverse impact during night. Contribute significantly to sky flow and further reduce night sky quality		Negative	3	2	2	4	24	Moderate
Impact on Air Quality	Increased dust levels due to vehicle entrained dust along unsurfaced roads	Known	Negative	3	1	2	2	15	Moderate
	Low increase in dust due to tipping of gravels into Rotary Pan (wet process)		Negative	3	1	2	1	12	Low
Impact on ambient noise levels	Increased noise levels due to use of machinery, heavy vehicles, operation of pumps in the river and operation of Rotary Pan Plant	Known	Negative	3	1	2	1	12	Low

	Impact on Heritage and Palaeontological Resources	Potential impact on stone tool sites along the Orange River banks during bulk sampling, river diversions, creation of new access roads to prospecting pockets along river bank.	Archaeologist	Negative	2	5	5	2	24	High
		Although fossils are scarce in the Quaternary sand and sandy soils that dominate the study site, the possibility of finding any in the study area should not be dismissed. Potential impact on stromatolites.	Palaeontologist	Negative	1	1	5	4	10	Low
	Socio-Economic Impact	Bulk sampling activities may impact on the Orange River ecotourism (river rafting, sport fishing bird watching)	Visual Specialist, Aquatic Specialist	Negative	2	5	2	4	22	Moderate
		Machines, equipment, fuel, oil and batteries will be stored onsite. These resources attract thieves and thus pose a security risk.	Known	Negative	2	2	2	2	12	Low
		Increase in job opportunities in the local area	Known	Positive	3	3	2	1	18	Moderate
<b>Abstraction and filtration of sediment-laden water from the excavations to be used in the plant with the release of filtered/clarified water back to the river channel downstream of the workings</b>	Impact on surface water quantity and quality	Reduction of river flow volume, changes in water quality (decreased Total Suspended Solids - TSS)	Hydrological Specialist	Negative	3	3	2	3	24	Moderate
<b>Stockpiling of diamond depleted material from the processing plant (waste material) to be used for concurrent rehabilitation of mined-out areas</b>	Impact on surface water	Erosion, increased sedimentation load during rainfall events, change in paths of local water flow	Hydrological Specialist	Negative	3	1	2	2	15	Moderate
<b>Ablution, fuel storage</b>	Impact on surface and groundwater quality	<ul style="list-style-type: none"> <li>▪ Possible e-coli contamination from on-site sanitation</li> <li>▪ Possible Petro-chemical contamination from machinery</li> <li>▪ Increased risk of erosion and sediment load</li> </ul>	Hydrological Specialist	Negative	2	3	2	3	16	Moderate

<b>Use and movement of vehicles along access roads</b>	Impact on biodiversity	Loss of habitat, increased erosion, leading to poor growth and establishing conditions for floral species and consequently, providing sub-optimal habitat conditions for faunal species	Ecological Specialist	Negative	2	3	2	3	16	Moderate
	Traffic impact	Increased vehicle movement along unsurfaced roads	Known	Negative	3	2	2	1	15	Moderate
<b>Decommissioning and Final Rehabilitation</b>										
<b>Backfilling and rehabilitation of trenched areas in Orange River and removal of equipment and infrastructure</b>	Impact on Orange River ecosystem	Increased sedimentation by backfill material, soil and surface water contamination from hydrocarbons	Aquatic Ecologist	Negative	3	3	2	3	24	Moderate
	Impact on biodiversity (Flora)	Establishment of alien vegetation during revegetation of disturbed areas	Known	Negative	2	2	3	2	14	Moderate
	Impact on Surface Water	Erosion, increased sediment load, alteration of the watercourse	Hydrological Specialist	Negative	3	3	2	2	21	Moderate
		Potential contamination of surface water from hydrocarbon spillages, dismantling of fuel storage, waste disposal practice		Negative	2	2	1	2	10	Low
		Increased risk of erosion and sediment load if there is a degrading of the rehabilitation areas		Negative	2	3	2	3	16	Moderate
	Impact on Air Quality	Increased dust levels along existing mining operations due to backfilling including vehicle entrained dust from unsurfaced roads	Known	Negative	3	1	2	1	12	Low
Increase noise levels	Use of machinery to backfill excavations, heavy vehicles to remove infrastructure from site	Known	Negative	3	1	1	2	12	Low	



	Traffic Impact	Increased vehicle movement unsurfaced roads	Known	Negative	3	2	1	1	12	Low
	Socio-Economic Impact	Loss of job opportunities due to cessation of prospecting and bulk sampling (few jobs created and lost)	Known	Negative	2	1	2	3	12	Low
On-going sampling and monitoring of groundwater, surface water and water quality	Ground and Surface water	Degrading of rehabilitation site, increased erosion, increased sediment load, long-term alteration of watercourse	Hydrological Specialist	Negative	3	3	2	1	18	Moderate

**vi. Methodology used in determining significance of impacts**

Based on the NEMA Scoping Report template of the DMR it requests that potential impacts are listed for the activity based on the initial site layout based on the following:

- As informed by both typical known impacts of activities and informed by the consultations with affected parties or specified by a specialist
- Significance of impact
- Probability of impact
- Duration of impact

Informed is therefore considered as:

- Informed by known typical impacts
- As identified by Interested and Affected Parties
- As identified by a Specialist

The list of identified impacts for the Samara project have be evaluated by considering several rating scales as provided under Section 3 (iv) of this report. These ratings include: extent, duration, intensity, significance, status of impact, probability. The significance of impacts has been calculated as follows:

**Significance = (Extent + Duration + Intensity) X Probability**

The preliminary rating of these impacts will be refined during the EIA Phase.

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

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

This is not applicable yet since the draft Scoping Report is still subject to its 30 days public review and comment until 14 December 2020.

**viii. Possible mitigation measures that can be applied and the level of risk**

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

This is not applicable yet since the draft Scoping Report is still subject to 30 days public review and comment until 14 December 2020.

I&APs must still be engaged during the public review period.

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

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

The process of consultation with I&APs is still in session. No final site layout plan has been reached.

Given the site sensitivity, the prospecting focus area within PRAA 1 has been confirmed on a **Site Plan attached as Appendix 4**. The location of processing infrastructure must still be finalised based on the recommendations to be made by specialists in the field of freshwater, biodiversity, visual, hydrological and geohydrological in order to avoid/minimise impacts on the riverbed, embankments and active channel. A more detailed Site Plan illustrating the prospecting focus area and location of processing infrastructure will be included in the draft Environmental Impact Report for the application. I&APs will have the opportunity to comment on the Site Plan during the Draft Environmental Impact Report and Environmental Management Programme 30 public review and comment period.

The finalised Site Plan will subsequently be included in the Final EIR & EMPr submitted to the DMR for approval.

**x. Motivate why no alternative sites were considered**

The location of the prospecting pockets is based on the location of the known alluvial gravel pockets on the Orange River bed, bank and active channel. No property alternatives have been considered since historical data and current diamond mining confirms the presence of alluvial deposits on the property.

Alternative positions will be considered for the processing infrastructure based on the outcome of freshwater, biodiversity, visual, hydrological and geohydrological specialist investigations in order to avoid/minimise impacts on the riverbed, embankments and active channel.

Given the sensitive nature of the Orange River, it is imperative to first collect enough physical field data through specialist investigations to ensure that all planning of the proposed development is cogently considered and all project plans and designs adequately consider the characteristics of the river system.

**xi. Statement motivating the preferred site**

Provide a statement motivating the final site layout plan proposed.

Please refer to section xi. above. Only the positions of the target prospecting pockets have been confirmed. The site layout plan has not been finalised since it is still subject to recommendations from specialists.

**(i) Plan of Study for Environmental Impact Assessment Process**

**i. Description of alternatives to be considered including the option of not going ahead with the activity**

The following alternatives will be considered during the EIA Phase:

- Location alternatives will be considered for processing infrastructure including site camp (whether full established camp or fly camp);
- Design and layout alternatives will be considered for the processing infrastructure;

- Operational aspects of the activity (clarified water released back into river or either supply communities with water by pumping it into municipal reservoirs);
- No-go alternative – This alternative will only be considered based on confirmed significant-high impacts post the EIA site investigations. This alternative becomes particularly important when an activity poses several negative environmental impacts of high significance. Currently the Scoping Report is based on desktop analysis.

## ii. Description of aspects to be assessed as part of the Environmental Impact Assessment

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

See Section 3(v)(viii) for aspects to be assessed as part of the EIA Phase. Specialist studies will be commissioned to investigate the impacts of bulk sampling activities on the following environmental attributes:

- Visual Impact
- Surface and Groundwater
- Terrestrial Biodiversity (Fauna, Flora and Avifauna)
- Aquatic Ecology (Orange River and associated flood plain)
- Heritage Impact Assessment and Palaeontological Impact Assessment

The EAP will investigate the impacts on:

- Ambient noise;
- Ambient air quality;
- Traffic;
- Socio-Economic Impact.

## iii. Description of aspects to be assessed by specialists

Specialists have already been involved since the Scoping Phase to screen potential impacts from the project on environmental aspects. These specialist Scoping Reports are included under Appendix 5. Each specialist scoping report details the aspects to be assessed and Terms of Reference for the EIA Study (description of aspects to be assessed). The specialists will conduct field investigations during January 2021 and produce Impact Assessment reports by March 2021. The outcome of the specialist investigations will be used as input in the preparation of the EIR & EMP. The list of aspects to be assessed and relevant appointed specialists are included in Table 8 below.

### Table 9: Aspects to be assessment by Specialists

No.	Aspect	Specialist	Company	Specialist Study
1	Terrestrial Biodiversity (Fauna, Flora, Avifauna)	Stephen van Staden Kim Marais S.L Daniels	Scientific Terrestrial Services (SAS)	Terrestrial Biodiversity Impact Assessment
2	Aquatic Ecosystems including Wetland	Stephen van Staden Kim Marais Leandra Jonker	Scientific Aquatic Services (SAS)	Freshwater Ecosystem Impact Assessment Study
3	Cultural, Heritage important resources including Palaeontology	Eric Mathoho Dr J. Du Randt Neels Kruger	Millenium Heritage Dr. J Du Randt Exigo Sustainability	Heritage and Palaeontological Impact Assessment
4	Surface and Groundwater	Robert Crosby	AGES (Pty) Ltd	Hydrological and Hydrogeological Impact Assessment
5	Visual	Stephen van Staden Sanja Erwee	Scientific Aquatic Services (SAS)	Visual Impact Assessment

**iv. Proposed method of assessing the environmental impacts including the method of assessing alternatives**

After a list of potential impacts has been identified the aim of the EIA process is to predict the nature of the impact, rank and quantify it. From the rating system, the impacts of most significance can be highlighted. The list of impacts will be further assessed and developed based on engagement and comments solicited from I&APs and recommendations by specialist investigations.

According to the EIA Regulations of 2014 a **significant impact means:**

*“an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds, targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence”.*

The list of identified impacts for the Samara project will be evaluated by considering several rating scales as listed below. These ratings include: extent, duration, intensity, significance, status of impact, probability. The significance of impacts will be calculated as follows:

**Significance = (Extent + Duration + Intensity) X Probability**

The rating system is described below.

“Extent” defines the physical extent or spatial scale of the potential impact

**Table 10: Assessment Methodology**

Criteria: EXTENT		
“Extent” defines the physical extent or spatial scale of the potential impact		
RATING	DESCRIPTION	
1	Site specific	Impacts extending only as far as the activity, limited to the site and its immediate surroundings

2	Local	Impacts extending within 5km from site boundary
3	Regional	Impacts extending to the district (20km from boundary of the site)
4	Provincial	Impacts extending to provincial scale eg. Northern Cape
5	National	Impacts extending to within the country i.e. South Africa.
6	International	Impacts extending beyond international border / the borders of South Africa/Namibia

**Criteria: DURATION**

"Duration" defines the temporal scale

RATING		DESCRIPTION
1	Immediate	Less than 1 year
2	Short term	1-5 years
3	Medium term	6-15 years
4	Long term	Between 16 – 30 years
5	Permanent	Over 30 years. Where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient.

**Criteria: INTENSITY**

"Intensity" establishes whether the impact would be destructive or benign.

Status	RATING		DESCRIPTION
<b>Negative</b>	0	Negligible	Where impacts do not really affect the environment and no mitigation is required
	1	Low	Where impacts will result in short term effects on the social and/or natural environment. These impacts are not deemed largely substantial and are likely to have little real effect. (marginally affected)
	2	Medium	Where impacts will result in medium-term effects on the social and/or natural environment. These impacts will need to be considered as constituting a fairly important and usually medium term change to the environment, these impacts are real but not substantial. Impacts are fairly easy to mitigate
	3	High	Whereby effects will be long term on social, economic and/or biophysical environment. These will need to be considered as constituting usually long term change to the environment. Mitigation is considered challenging and expensive
	4	Very High	Where impacts should be considered as constituting major and usually permanent change to the environment, and usually result in severe to very severe effects. Mitigation would have little to now effect on irreversibility

**Criteria: INTENSITY**

Status	RATING		DESCRIPTION
<b>Positive</b>	0	Negligible	Where impacts affect the environment in such a way that natural, cultural and social functions and processes are not greatly and in instances no mitigation measures will be required. (environment not really affected)
	1	Low	Minor improvement is anticipated over a short term on the social and/or natural environment.
	2	Medium	Where moderate improvements are anticipated over a medium- to long-term on the social and/or natural environment.
	3	High	Where large improvements are anticipated over a long term on social, economic and/or bio-physical environment.
	4	Very High	This results in permanent improvements of the social/or natural environment.
<b>Criteria: STATUS</b>			
“Status of impact” - describes whether the impact would have a negative, neutral or positive effect on the affected environment			
<b>RATING</b>		<b>DESCRIPTION</b>	
+	Positive	Benefit to the environment	
=	Neutral	Standard / impartial	
-	Negative	cause damage to the environment	
<b>Criteria: PROBABILITY</b>			
“Probability” describes the likelihood of the impact occurring.			
<b>RATING</b>		<b>DESCRIPTION</b>	
0	Improbable	Where the possibility of the impact occurring is low.	
1	Probable	Where there is a distinct possibility that the impact will occur.	
2	Highly probable	Where it is most likely that the impact will occur.	
3	Definite	Where the impact will occur regardless of any prevention measures.	
<b>vi) The proposed method of assessing duration significance</b>			
<b>Criteria: SIGNIFICANCE</b>			
“Significance”- attempts to evaluate the importance of a particular impact with mitigation measures included and also excluded. The significance was calculated using the following formula: <b>Significance = (Extent + Duration + Intensity) X Probability</b>			
<b>RATING</b>		<b>DESCRIPTION</b>	
0-4	Very Low	Where the impacts will not influence the development, social, cultural or natural environment	

5 -12	Low	Where impacts will result in short term effects on the social and/or natural environment. The impacts merit attention however are not deemed largely substantial are likely to have little real effect
13-25	Medium	Where impacts will have a medium-term effect on the social and/or natural environment. These impacts need to be considered as constituting a fairly important and usually medium-term change to the environment, these impacts can be mitigated by implementing effective mitigation measures.
26-44	High	Whereby effects will be long term on social economic and or biophysical environment. The impacts could have a major effect on the environment. This may bring forth the consideration of no-go areas/open areas on the development land regardless of mitigations implemented. Mitigation is however possible.
45	Very High	Whereby effects will be permanent on the social-economic and or biophysical environment. Such impacts cannot be mitigated.

**v. Proposed method of assessing duration significance**

Refer to Section iv) above.

**vi. The stages at which the competent authority will be consulted**

- Draft reports (Scoping Report, Environmental Impact Report & Environmental Management Programme) will be submitted to organs of state for review and comment.
- The Competent Authority DMR will be consulted on various stages of the EIA process.
- Submission of a Scoping Report to DMR: Springbok for decision making which has been subjected to a 30-day public review and comment period;
- After acceptance of the Scoping Report,
- Submission of an Environmental Impact Report & Environmental Management Programme to DMR: Springbok for decision making which has been subjected to a 30-day public review and comment period.
- Potential site inspection with the DMR: Springbok, if requested by the competent authority.
- DMR will reach a decision on the application and notify the applicant and EAP.

**vii. Particulars of the public participation process with regard to the Impact Assessment Process that will be conducted**

**1. Steps to be taken to notify I&APs**

- Hand delivering, emailing notification letters to pre-identified and registered interested and affected parties ranging from stakeholders, organs of state, local and district authorities including ward councillors;
- Hand delivering letters to the registered landowner, lawful occupiers of land (alternatively via WhatsApp, email);
- I&APs will be provided with an opportunity to register on the project database and obtain project information;



- Placing a newspaper advertisement in the Plattelander and Gemsbok newspapers to announce the start of the EIA Phase and availability of the draft EIR &EMPR for comment including scheduled public engagements;
- Placing site notices in the application area and within public frequented areas;
- Environmental reports prepared as part of the EIA process will be made available for public review and comments through hard copy distribution and availability on the Naledzi website [www.naledzi.co.za/public-documents.naledzi](http://www.naledzi.co.za/public-documents.naledzi);
- Comments and inputs on environmental reports will be facilitated by conducting public engagements (virtual meeting/ focus group meetings/public meetings). During such meetings the findings of the EIA study and significant environmental impacts will be discussed;
- Interested and Affected Parties will be notified of the decision made by DMR on the application for environmental authorisation for the project.

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

During the draft EIR & EMPR report public review and comment period public engagements will be scheduled and undertaken as follows:

- Emailed notifications of the availability of draft EIR & EMPR reports this will be augmented by WhatsApps, SMS's where required;
- Newspaper advertisements will announce the availability of draft EIR & EMPR reports to I&APs. Copies of the reports will be placed at public libraries in the area and will be available for download from the Naledzi website.
- Telephone, email and WhatsApp engagements will take place to schedule public engagements with key stakeholder groups;
- Several engagements will be undertaken with DWS: Upington (Orange-Proto) (site inspections, virtual meetings);
- Government departments will be contacted via telephone, email and or virtual meetings;
- One on one consultation/meeting with affected communities, Richtersveld Sida Hub CPA with the presence of SANPARKs
- Focus Group Meeting with SANPARKs and Department of Public Works
- X 1 Virtual Focus Group Meeting (virtual via Zoom) with surrounding mine owners (African Star Minerals, Lower Orange River Diamonds)
- X 1 Focus Group Meeting with local, district authorities include ward councillors
- X1 Key Stakeholders Workshop (virtual via Zoom) will be scheduled with the Lower Orange River Stakeholders Forum, organisations
- X 1 Focus Group Meeting with organs of state and authorities
- Two public engagement meetings will be held. One meeting will be held in Sendelingsdrif and one in Sanddrif..

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

I&APs will be provided with the draft EIR & EMPr reports and supporting documentation for the prospecting right applications. The EIR & EMPr will communicate the findings of the EIA Study

with I&APs. The EIR & EMPr's will be subject to a 30 day public review and comment period. The public and registered I&APs will be notified of the availability of the reports for comment and electronic and hard copies of the reports will be made available to organs of state, key stakeholders and registered I&APs.

The final Site Plan, competent authority recommendations and all the specialist investigation reports will be included as part of the EIR & EMPr reports supporting information. The details of engagements with the DWS and details of the Water Use License Application will also be communicated to I&APs.

The findings of the EIR & EMPR will also be presented to I&APs in layman's language through virtual public engagement meetings / one-one discussions and or key stakeholders workshop.

#### **viii. Description of tasks that will be undertaken during the environmental impact assessment process**

- I&APs will be notified via email of the outcome of the DMR: Springboks decision to either accept or reject the two Samara prospecting right application Scoping Reports and commencement of the EIA Phase.
- Specialist field investigations will be conducted in January 2021 after which Specialist Investigation reports will be produced;
- The Environmental Impact Assessment Report & Environmental Management Programme and Closure & Rehabilitation Plan will be prepared for each application;
- **Round 2 of the public participation process will be undertaken:**
  - The draft EIR & EMPR reports will be made available for a 30-day public review and comment period;
  - Advertise the availability of the draft EIR & EMPR reports for public review in the Plattelander and Gemsbok newspapers;
  - The EIR & EMPr's will be placed on the Naledzi website for download and review, placed at public venues and distributed in hard/soft copies to entities and organs of state ;
  - A notification letter will be sent to registered I&APs to notify them o the availability of the draft EIR and EMPrs for public comment (via email, WhatsApp, SMS's)
  - Public engagements will be held with stakeholders to present the findings of the EIR & EMPr reports and solicit comments for inclusion in the Final EIR & EMPr reports (presentations, minutes and attendance registers will be included in the final EIR & EMPr reports).
  - The consolidated Issues and Response Report (IRR) will be updated to capture all comments, objections and issues from I&APs, organs of state and key stakeholders and responded to in the IRR.
- **Final EIR & EMPR Reports**
  - The EIR & EMPR reports will be finalised, and public inputs will be included;
  - The finalised EIR & EMPr will be submitted to the DMR within 106 days from Scoping Report acceptance. One (1) hard and soft copy (flash drive) will be submitted for each application to the DMR: Springbok
  - A site inspection with the DMR is envisaged to the PRAA 1 and PRAA 2 sites before a decision is issued

- I&APs will be notified by email, WhatsApp, SMS's that the final reports have been submitted to the DMR for decision making. The final reports will be made available to I&APs on the Naledzi website.
- I&APs will be provided access/ notified of the DMR's decision on the applications within 14 days of the decision;
- A newspaper advertisement will be published in the Plattelander and Gemsbok newspaper and a letter will be sent to I&APs to notify them of the DMR's decision and opportunity to lodge an appeal against the decision.

**ix. Measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of residual risks that need to be managed and monitored**

<b>ACTIVITY</b> Whether listed or not listed.  (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).	<b>POTENTIAL IMPACT</b>  (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)	<b>MITIGATION TYPE</b>  (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)  E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation..	<b>POTENTIAL FOR RESIDUAL RISK</b>
<b>Non-Invasive Prospecting activities</b>			
<ul style="list-style-type: none"> <li>• Desktop Study or remote sensed data</li> <li>• Site Geological Map</li> <li>• Determine/confirm bulk sample location</li> </ul>	Optimal planning of trenching locations within the identified prospecting pockets to avoid impact on existing mineral lease areas and unnecessary impact to and alterations to river active channel.		
<b>Invasive Bulk Sampling</b>			
<b>Bringing machinery, equipment, heavy vehicles to site during site establishment</b>	<b>Traffic impact</b> – increased vehicle movement on unsurfaced roads	None	No
	<b>Impact on Air quality</b> – vehicle entrained dust	Dust control	No
<b>Clearing of vegetation and removal of topsoil, overburden during site establishment</b>	<b>Impact on Fauna, Flora</b> – habitat destruction, loss of floral and faunal communities, impact on overall conservation targets of CBA's	<b>Remedy</b> -rehabilitation, obtain permits for removal of protected species/remove, keep in nursery onsite and restore during concurrent rehabilitation.	Moderate risk Species will take time to recover/ Poor recovery.
	<b>Impact on air quality</b> – Increased dust from dozing off of vegetation, topsoil, overburden	Dust control measures	No
	<b>Visual impact</b> – visual exposure and visibility (sensitive receptors of cleared areas, altered landscape, erosion.	Remedy – rehabilitation Control – storm water control,	Low risk
<b>Stockpiling of topsoil and overburden during site establishment and bulk sampling</b>	<b>Impact on soil</b> - Loss of topsoil resource	Control - storm water management Prevent/ stop – protect from wind erosion	Low

	<b>Surface Water Quality</b> – Erosion, increased sediment load into river, change in path of local water flow	<b>Control</b> – stormwater management control and plan Control - Design measures (use coarse gravel as erosion protection) Prevent - place– correct erosion damage Remedy -rehabilitate eroded areas	Moderate Risk
<b>Access road</b> - Establish, develop and maintain access roads, temporary roads to pockets, parking, offices, ablution facilities, storage facilities, fences and process plant site	Surface Water Impact	Stormwater control Avoidance Remedy – immediate spill clean up	Low
	Impact on Aquatic ecology (Orange River)	Remedy - rehabilitation	Moderate
<b>Small temporary diversions, realignment of the watercourse to gain access to alluvial material for excavation</b>	Impact on Terrestrial Ecology	Remedy- rehabilitation Modify – small diversions (limit scale)	Low risk
	Impact on Aquatic Ecology	Remedy- rehabilitation Modify – small diversions (limit scale) Erosion control Control – Trapping of sediment	Due to scale, low
	Impact on surface and groundwater	Remedy- rehabilitation Design measures on diversion structures to allow adequate flow Modify – small diversions (limit scale) Erosion control Control – Trapping of sediment	Low
<b>Excavation of ten (10) trenches from Orange River bed, banks and active channel (1: 100 flood line) and operation of onsite infrastructure, Rotary Pan Plant, ablution, office, parking etc</b>	Impact on surface water quality	Avoidance Design measures (bundling) Control erosion, trap sediment Stormwater control	Low-moderate
	Impact on air quality	Dust control at Rotary Pan Plant, excavations (water sprayers- generally wet process)	No
	Impact on Terrestrial Ecology	<b>Remedy</b> - obtain permits for removal of protected species/remove, keep in nursery onsite and restore during concurrent rehabilitation. Control through continuous monitoring Alternative site plan <b>Modify</b> – limit scale Erosion control measures <b>Remedy</b> through full rehabilitation	Moderate
	Impact on Aquatic Ecology	<b>Stop</b> – obtain necessary authorisation prior	Low

	(Orange River, potentially the Orange River Mouth which is a RAMSAR site already experiencing degradation due to current diamond mining)	to activities in 1:100 year flood line Prevent Rigorous erosion and sediment control Continuous monitoring Avoid contamination, littering Control – alien invasive species management plan	
	Visual impact	Dust control Remedy through rehabilitation Modify through design measures	Low
	Impact on ambient noise levels	Noise control (limit to day time operations)	
	Impact on Heritage and Paleontological Resources	Avoid Control - ECO monitor excavations Remedy – follow chance finds protocol, obtain permits for removal/relocation	Low
	Socio-economic impact	Security control Control – keep operations small (limit scale of open excavations)	Low
<b>Abstraction and filtration of sediment-laden water from the excavations to be used in the plant with the release of filtered/clarified water back to the river channel downstream of the workings</b>	Impact on surface water quantity and quality (reduction in river flow volume, decreased Total Suspended Solids)	Remedy – obtain license from DWS	Low
<b>Stockpiling of diamond depleted material from the processing plant (waste material) to be used for concurrent rehabilitation of mined-out areas</b>	Impact of surface water (erosion, sedimentation load into river, path of local water flow)	Erosion control Stormwater management Control sediment	Moderate
<b>Temporary access roads (and movement along existing unsurfaced roads)</b>	Impact on Terrestrial Ecology	Erosion control Remedy – through rehabilitation Conservation of topsoil for successful rehabilitation	Moderate
	Surface water impact		Moderate
	Traffic impact	N/a	No
	Impact on air quality	Dust control	No
<b>Ablution, fuel storage</b>	Impact on surface and groundwater quality	Stop/Prevent through design measures, Avoidance - placement outside 1:100 yr flood line. Pollution control, Control through management and	Low

		monitoring Remedy – immediate spill clean-up Stormwater control and management Erosion control Control sediment by trapping	
<b>Final Rehabilitation</b> (Backfilling and rehabilitation of trenches and removal of equipment and infrastructure)	Impact on Aquatic Ecology	Erosion control Control sediment by trapping Avoidance of contamination, Remedy- immediate clean-up	Low
	Impact on Terrestrial Ecology (Flora)	Control – alien invasive species management plan, monitoring	Further spread of alien invasive species if not controlled.
	Impact on Surface water	Control – stormwater management, including monitoring and assessment of changes in water levels and water quality. Erosion and sediment control Spills to be avoided and / remedied ( immediate clean up) Remedy – comprehensive remediation in full compliance with environmental guidelines. Control – Monitor rehabilitation success	Low
	Impact on air quality	Dust control	No
	Noise impact	Control – noise control	No
	Traffic	N/A	No
	Socio-economic (limited job losses)	N/A	N/A

### POTENTIAL FOR RESIDUAL RISK

The provisional planning is for full rehabilitation of the bulk-sampling excavations using the same material that was excavated. The rehabilitation will be according to the environmental guidelines and is to be properly filled and compacted to 'fully' restore the beds and banks of the watercourse. Good monitoring and management, good housekeeping on-site during all phases of the project, and diligent attention to details during rehabilitation could result in a fully restored site.

## **I) Other Information Required by the Competent Authority**

- i) Compliance with the provisions of Section 24(4)(a) and (b) read with Section 24(3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998), the EIA Report must include the

### **(1) Impact on the socio-economic conditions of any directly affected person**

Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as Appendix 3 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6. and 2.12. herein).

Although these matters are still being investigated as part of the Scoping Phase and public engagements, the initial screening has identified the below potential socio-economic impacts:

- **Impact on the Orange River ecotourism industry (river rafting, sport fishing, bird watching):**
  - Prospecting and bulk sampling activities have the potential to have a significant impact on the ecotourism of the Orange River. (biodiversity, river rafting, Fish River Canyon Hike, sport fishing).
- **Existing diamond mining operations:**
  - PRAA 1 prospecting pockets 1, 2, 3A and 3B are located on the limits of the Lower Orange River Diamonds Mineral Lease Areas and directly adjacent to current diamond mining operations. Prospecting and bulk sampling activities will take place within the flood line of the Orange River, and current diamond mining operations honour the regulated zone of the Orange River. Samara will need to negotiate or reach agreements with these mining operations for the placement of prospecting in fracture above the 1: 100-year flood line, i.e. ablution facilities, fuel storage, placement of prospecting laydown areas and contractors camp/fly camp might since this might/will encroach onto existing diamond mining operation. This will, however need to be determined during the Scoping Phase and engagements also to inform the final site plan.
- **Crime and Safety:**
  - Contractors/fly camps will need to be established for the proposed prospecting and bulk sampling activities. Machines, equipment, fuel, oil and batteries will be stored onsite. These resources attract thieves and thus pose a security risk. Samara will fence in the prospecting and bulk sampling activities and implemented access control including site security. Further management measures will be investigated in the EIA Phase.

### **(2) Impact any national estate referred to in Section 3 (2) of the National Heritage Resources Act**

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate



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

A Heritage and Palaeontological Scoping Report has been prepared and is included under Appendix 5.

Stone tool sites scattered along the Orange River banks are likely to be impacted by the proposed alluvial diamond prospecting and sampling activities. Any impact on these features will be permanent and non-reversible. The identified sites do not present much of the problem, as current legislation allows from mitigation measures to be implemented. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated/ recorded and a management plan can be developed for future action. Those sites that are not impacted can be written into the management Plan.

The Palaeontological Desktop Study revealed that prospecting would take place in an area considered to have moderate to low, to insignificant Palaeontological Sensitivity. Fossils are scarce in the Quaternary sand and sandy soils that dominate the study site, but the site might contain stromatolites. The specialist recommends that an ECO should take responsibility of monitoring the excavations and development onsite. If a significant find is made the procedure stipulated under Procedure for Chance Palaeontological Finds should be followed which includes the safeguarding of the exposed fossils and the contacting of a palaeontologist for further advice.

**m) Other matters required in terms of section 24 (4)(A) and (B) of the Act**

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

The specific prospecting pocket locations have been chosen based the location of the mineral resource thus making an alternative site selection null and void.

**PLEASE REFER TO NEXT PAGE FOR UNDERTAKING BY EAP.**

**I) UNDERTAKING REGARDING CORRECTNESS OF INFORMATION**

I Marissa Ilse Botha HEREWITH UNDERTAKE THAT THE INFORMATION PROVIDED IN THE FOREGOING REPORT IS CORRECT, AND THAT THE COMMENTS AND INPUTS FROM STAKEHOLDERS AND INTERESTED AND AFFECTED PARTIES HAVE BEEN CORRECTLY RECORDED IN THE REPORT.

**THE REPORT IS STILL SUBJECT TO PUBLIC REVIEW AND COMMENTS UNTIL 14 DECEMBER 2020. COMMENTS ARE YET TO BE INCORPORATED.**



\_\_\_\_\_  
SIGNATURE OF EAP:  
DATE: 2020/11/12

**m) UNDERTAKING REGARDING LEVEL OF AGREEMENT**

I Marissa Ilse Botha HEREWITH UNDERTAKE THAT THE INFORMATION PROVIDED IN THE REPORT IS CORRECT, AND THAT THE LEVEL OF AGREEMENT WITH THE INTERESTED AND AFFECTED PARTIES AND STAKEHOLDERS HAS BEEN CORRECTLY RECORDED AND REPORT HEREIN.

**THE REPORT IS STILL SUBJECT TO PUBLIC REVIEW AND COMMENTS UNTIL 14 DECEMBER 2020. COMMENTS ARE YET TO BE INCORPORATED.**



\_\_\_\_\_  
SIGNATURE OF EAP:  
DATE: 2020/11/12

# **APPENDIX 1 – EAP PROFESSIONAL REGISTRATION**

## **APPENDIX 2 – EAP CV**

## **APPENDIX 3 – REGULATION 2(2) LOCALITY MAP**

# **APPENDIX 4 – SITE PLAN, ROTARY PAN PLANT PROCESS FLOW CHART**

## **APPENDIX 5 – SPECIALIST INVESTIGATIONS**