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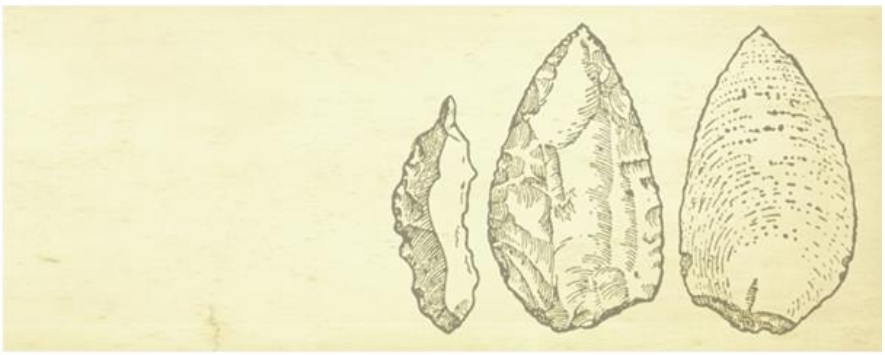

HERITAGE SCOPING REPORT RICHTERSVELD NO. 18 (GRASDRIFT) NORTHERN CAPE

HERITAGE BASELINE / SCOPING REPORT FOR THE PROPOSED MINING RIGHT APPLICATION FOR ALLUVIAL DIAMONDS ON THE REMAINDER OF THE FARM RICHTERSVELD NO. 18 (GRASDRIFT) LOCATED WITHIN THE |AI-|AIS/RICHTERSVELD NATIONAL PARK, RICHTERSVELD LOCAL MUNICIPALITY, NAMAKWA DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE.

(DMRE Ref. NCS 30/5/1/2/2/10211 MR)

PREPARED FOR:

NALEDZI ENVIRONMENTAL CONSULTANTS (PTY) LTD

PREPARED BY:

SKY-LEE FAIRHURST, HEIDI FIVAZ & JAN ENGELBRECHT
ELIZE BUTLER
UBIQUE HERITAGE CONSULTANTS

21 DECEMBER 2022

Web: www.ubiquecrm.com **Mail**: info@ubiquecrm.com
CSD Supplier Number MAAA0586123

CLIENT:	Naledzi Environmental Consultants (Pty) Ltd
CONTACT PERSON:	Marissa Botha E-mail: botham@naledzi.co.za
HERITAGE CONSULTANT:	UBIQUE Heritage Consultants www.ubiquecrm.com info@ubiquecrm.com
CONTACT PERSON:	Heidi Fivaz (archaeologist) Member of the Association of Southern African Professional Archaeologists: Member number: 433 Email: heidi@ubiquecrm.com Jan Engelbrecht (archaeologist and lead CRM specialist) Member of the Association of Southern African Professional Archaeologists: Member number: 297 Email: jan@ubiquecrm.com Sky-Lee Fairhurst (archaeologist) Member of the Association of Southern African Professional Archaeologists: Member number: 541 Email: sky@ubiquecrm.com

Declaration of independence:

UBIQUE Heritage Consultants hereby confirm our independence as heritage specialists and declare that:

- We are suitably qualified and accredited to act as independent specialists in this application;
- we do not have any vested interests (either business, financial, personal or other) in the proposed development project other than remuneration for the heritage assessment and heritage management services performed;
- the work was conducted objectively and ethically, per a professional code of conduct and within the framework of South African heritage legislation.

Signed: **Date: 2022-12-21**

J.A.C. Engelbrecht, H. Fivaz & S. Fairhurst

UBIQUE Heritage Consultants

EXECUTIVE SUMMARY

Project description

UBIQUE Heritage Consultants were appointed by Naledzi Environmental Consultants (Pty) Ltd as independent heritage specialists in accordance with Section 38 of the NHRA and the National Environmental Management Act 107 of 1998 (NEMA) to conduct a cultural heritage screening assessment to determine the impact of the proposed mining right application for alluvial diamonds on the remainder of the farm Richtersveld No. 18 (Grasdrift) located within the |Ai-|Ais/Richtersveld National Park, Richtersveld Local Municipality, Namakwa District Municipality, Northern Cape Province, on any possible sites, features, or objects of cultural heritage significance.

Findings of Heritage Screener and Probable Impact on Heritage Resources

The scoping report discovered that several sites had been extensively studied in the region. In addition, well-known archaeological sites in the region that have been documented and excavated can be found on the SAHRA database, such as Jakkalsberg and Spitzkop.

Numerous impact assessments have reported lithic material in the Richtersveld region and surrounding landscape dating to the ESA, MSA and LSA. The significance ranges between low, medium and high significance. The Northern Cape is known for numerous Stone Age sites (many of which have been excavated/documented). Therefore, the possibility of open-air Stone Age sites/occurrences in the development area should not be disregarded.

Additional sensitive archaeological features are rock art, specifically the rock engravings in the broader region. An abundant amount of rock engravings have been recorded at sites such as, but not limited to, Bloeddrift, Jakkalsberg and Nxopdap. The engravings are generally found near rocky outcrops and are often chipped into the dolomite rocks. The Richtersveld Cultural Landscape is also known for rock engraving along water courses as well as the general vicinity of the Orange River. The probability of such sites being located in the development area should not be overlooked.

Furthermore, the area has been utilised by herders and pastoralists for the last 2000 years. A site like Jakkalsberg has cultural resources dating to the 7th and 8th centuries. Therefore, cultural resources relating to early pastoralists could be present within the development footprint.

Several reports have noted informal and formal graves in the region. During the preliminary site visit, stone-packed graves were observed. Graves and informal cemeteries can be expected anywhere in the landscape. Thus the possibility of additional graves within the development footprint should not be ignored.

The area is known for its living heritage. The desktop study revealed that the Nama-speakers (descendants of the Khoekhoen pastoralists) still inhabit the area today, practising transhumance pastoralism. Several impact assessments have noted stock posts that the Nama still uses. The Nama and South African National Parks manage the Richtersveld Park, while the Nama manages the World Heritage Site bordering the park.

Quaternary alluvium, Diamondiferous Orange River Terrace Gravels, and the Dwyka Group underlie the proposed development. Updated geology (Council for Geosciences, Pretoria) indicates that the Dwyka Group underlies the development with only a small patch underlain by the De Hoop Subgroup. According to the South African Heritage Resources Information System, the Palaeontological Sensitivity of the Quaternary alluvium and Dwyka Group is Moderate. At the same time, that of the Diamondiferous Orange River Terrace Gravels is unknown. Therefore, a Low Palaeontological Significance has been allocated to the proposed development area (Butler 2022).

Limitations of this heritage screener are determined by the amount of information available on the South African Heritage Resources Information System (SAHRIS) and the clarity of satellite imaging. Archaeological features like surface artefact scatters, middens, overgrown foundations and graves will not appear in a digital survey. Surface or sub-surface archaeological sites, graves and informal cemeteries could be directly impacted during the mining activities. The minimal number of surveys done in the general area means that we do not have an adequate baseline from which to assess the impact on heritage resources within the area thoroughly, and it is, thus, recommended that a field study should be done.

Based on the Baseline Assessment Report and the initial site visit on the 18th of November 2022, it has been concluded that the development area has an overall heritage sensitivity of ***High Cultural Heritage Significance.***

Recommendations

This scoping study has discovered that a range of heritage sites occur in the wider region, and similar sites should be anticipated within the study area. Every site is relevant to the Heritage Landscape, but it is projected that only a few sites in the study area could have conservation value. These recommendations are based on studies undertaken in the broader area of the proposed development. The following conclusions apply:

1. The scoping report has revealed several Stone Age occurrences/sites recorded in the region. No studies have been conducted on the property in the development footprints' immediate vicinity (less than a 10 km radius). Therefore, the possibility of open-air Stone Age sites/occurrences in the development area is highly probable. However, we expect occurrences to be low to medium significance based on evidence from the

region. We recommend that a field study should be undertaken to ground-truth our findings.

2. Numerous rock engravings have been reported in the wider region. Some of these are present near areas with dolomite and water sources. Due to the substantial amount of rock engravings in the wider region and the proposed development near the Orange River, a field study should be undertaken to confirm such engravings' presence.

3. Formal and informal graveyards, including pre-colonial graves, occur widely across southern Africa. It is commonly recommended that these sites are preserved from development. The presence of any grave sites must be confirmed during a field survey and public consultation. Any graveyard(s), grave(s) or burial(s) found close to the proposed development footprint would likely be of High Local Significance.

4. Should it be impossible to avoid graveyard(s), grave(s) or burial(s) sites during development, mitigation in the form of grave relocation could be undertaken. This is, however, a lengthy and costly process. Grave relocation specialists should be employed to manage the liaison process with the communities and individuals who, by tradition or familial association, might have an interest in these graves or burial grounds, as well as manage the permit acquisition from the SAHRA Burial Grounds and Graves (BGG) Unit and the arrangements for the exhumation and re-interment of the contents of the graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

5. Due to the low palaeontological significance of the area, it is considered that the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area. (Butler 2022).

6. Several no-go zones have already been identified (Figure 1). The No-go zones are identified along the floodplain. **Any development in these areas may result in the loss of heritage resources; thus, development, associated activities, infrastructure etc., should be avoided.**

7. This scoping report estimates the probability of heritage sites/artefacts located on/near the development footprint based on available data. Due to the wide range of heritage resources within the region, the likelihood of archaeological sites/occurrences in the development area is highly probable. **Therefore, ground-truthing the BAR with a field survey of the area before the commencement of construction activities is highly recommended.**

8. This scoping report reflects the specialists' estimation of the likely impacts that may occur on said resources by the proposed MRA. The extent and significance of identified probable resources are unknown. **The final decision on whether a complete impact assessment submission is required lies with the responsible heritage resources authorities. The South African Heritage Resources Agency (SAHRA) & Northern Cape Provincial Heritage Resources Agency -** if there is reason to believe that heritage resources will be affected by construction activities and events.

9. Hidden or sub-surface sites may exist in the area. No sub-surface testing may be conducted without a permit. Therefore, sites may be missed during the field assessment. We recommend that if any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are uncovered during mining, SAHRA APM Unit must be alerted as per section 35(3) of the NHRA. If unmarked human burials are discovered, the SAHRA Burial Grounds and Graves (BGG) must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist or palaeontologist must be contracted as soon as possible to inspect the findings. If the newly unearthed heritage resources are of high significance, a Phase 2 rescue operation may be required with permits issued by SAHRA. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or costs incurred due to such oversights.

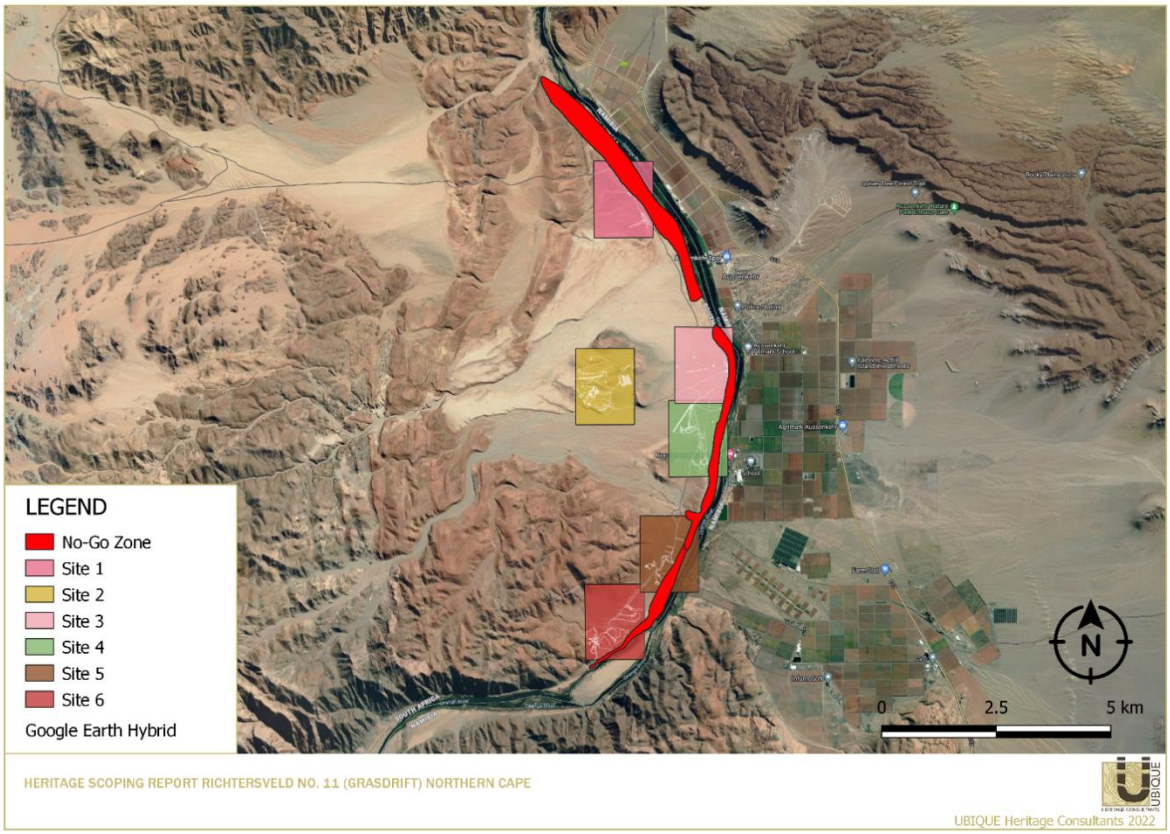

Figure 1 *Proposed No-Go Zones*

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ABBREVIATIONS

AIA:	Archaeological Impact Assessment
ASAPA:	Association of South African Professional Archaeologists
CRM:	Cultural Resource Management
EIA:	Early Iron Age
EMP:	Environmental Management Plan
ESA:	Earlier Stone Age
GPS:	Global Positioning System
HIA:	Heritage Impact Assessment
HWC:	Heritage Western Cape
IA:	Iron Age
IMP:	Integrated Management Plan
LSA:	Later Stone Age
MIA:	Middle Iron Age
MSA:	Middle Stone Age
NBKB:	Ngwao-Boswa Jwa Kapa Bokone (Northern Cape PHRA)
NHRA:	National Heritage Resources Act
PHRA:	Provincial Heritage Resource Agency
SADC:	Southern African Development Community
SAHRA:	South African Heritage Resources Agency
SAHRIS:	South African Heritage Resources Information System

GLOSSARY

Archaeological:	Material remains resulting from human activity in a state of disuse, older than 100 years, including artefacts, human and hominid remains and artificial features and structures.
Historic building:	Structures 60 years and older.
Heritage:	That which is inherited and forms part of the National Estate (historic places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).
Heritage resources:	Valuable, finite, non-renewable and irreplaceable resources that provide evidence of the origins of South African society
Mitigation:	Anticipating and preventing adverse impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.
'Public monuments:	All monuments and memorials, erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government; or

– which were paid for by public subscription, government funds, or a public-spirited or military organisation and are on land belonging to any private individual.

'Structures':	Any building, works, device or other facility made by people, and which are fixed to land, and include any fixtures, fittings and equipment associated therewith.

1. INTRODUCTION

1.1 Background

The project involves the proposed Mining Right Application (MRA) for alluvial diamonds on the southern (South African) bank of the Orange River, Richtersveld Local Municipality, Namakwa District Municipality, Northern Cape Province. A Registered Prospecting Right for Alluvial Diamonds on the Remainder of Farm No. 18 was issued in 2007. The new application covers the same area and falls in the Richtersveld National Park and World Heritage Site. The extent of the MRA area is approximately 2800 ha. UBIQUE Heritage Consultants were appointed by Naledzi Environmental Consultants Pty Ltd as independent heritage specialists in accordance with the National Environmental Management Act 107 of 1998 (NEMA) and in compliance with Section 38 of the National Heritage Resources Act 25 of 1999 (NHRA) to conduct a cultural heritage assessment (AIA/HIA) of the development area.

1.2 Scope of study

The assessment aims to identify any possible heritage resources that may fall within the development footprint; to determine the estimated impact of the proposed development on any possible sites, features, or objects of cultural heritage significance; to assess the significance of any identified resources; and to assist the developer in managing the documented heritage resources in an accountable manner, within the framework provided by the National Heritage Resources Act (Act 25 of 1999) (NHRA).

South Africa's heritage resources are rich and widely diverse, encompassing sites from all periods of human history. Resources may be tangible, such as buildings and archaeological artefacts, or intangible, such as landscapes and living heritage. Their significance is based on their aesthetic, architectural, historical, scientific, social, spiritual, linguistic, economic or technological values; their representation of a time or group; their rarity; and their sphere of influence.

The report will further:

a) discuss the affected environment;
b) provide any Legal Context that should be considered;
c) identify the potential impacts that should be evaluated in the EIA Phase:
d) Identify possible Flaws and Provisional Layout Recommendations and
e) provide a Heritage Impact Assessment Study Plan.

2. SUMMARY OF SPECIALISTS' EXPERTISE

SKY-LEE FAIRHURST

CRM ARCHAEOLOGIST

Sky-Lee Fairhurst has been part of UBIQUE Heritage Consultants since 2019. She is responsible for research, desktop studies, report compilation and surveys. Miss Fairhurst obtained her BA in Archaeology and Biblical archaeology in 2016 and her BA Hons in Archaeology (*cum laude*) at the University of South Africa (UNISA) in 2018, focussing on research themes such as gender, households and Late Iron Age settlements. She is currently pursuing her interest in southern African agropastoral societies as an MA Archaeology student at the University of South Africa (UNISA). She is skilled at artefacts and archaeological illustrations. Over the past nine years, she has obtained considerable excavation and survey experience and worked on various sites, including Historical, Iron Age, and Palaeontological sites.

HEIDI FIVAZ

CRM ARCHAEOLOGIST & OBJECT CONSERVATOR

Heidi Fivaz has been a part of UBIQUE Heritage Consultants since 2016 and took over ownership in 2018. She is responsible for project management, surveys, research and report compilation. She holds a B.Tech. Fine Arts degree (2000) from Tshwane University of Technology, a BA in Culture and Arts Historical Studies degree (2012) from UNISA and received her BA (Hons) in Archaeology in 2015 (UNISA). She has received extensive training in object conservation from the South African Institute of Object Conservation and specialises in glass and ceramics conservation. She is also a skilled artefact and archaeological illustrator. Ms Fivaz was awarded her MA in Archaeology (with distinction) in 2021 by the University of South Africa (UNISA), focusing on historical and industrial archaeology. She is a professional member of the Association of South African Archaeologists with CRM Field Director status. She has worked on numerous archaeological excavation and surveying projects over the past twelve years.

JAN ENGELBRECHT

CRM ARCHAEOLOGIST

Jan Engelbrecht is accredited by the Cultural Resources Management section of the Association of Southern African Professional Archaeologists (ASAPA) to undertake Phase 1 AIAs and HIAs in South Africa. He is also a member of the Association for Professional Archaeologists (ASAPA). Mr Engelbrecht holds an honours degree in archaeology (specialising in the history of early farmers in southern Africa (Iron Age) and the Colonial period) from the University of South Africa. He has 12 years of experience in heritage management. He has worked on projects as diverse as the Zulti South HIA of Richards Bay Minerals, research on the David Bruce heritage site at Ubombo in Kwa-Zulu Natal, and various archaeological excavations and historical archaeological projects. He has worked with many rural communities to establish integrated heritage and land use plans and

speaks Zulu fluently. Mr Engelbrecht established Ubique Heritage Consultants in 2012. The company moved from KZN to the Northern Cape and is currently based at Askham in the Northern Cape within the Mier local municipality in the Kgalagadi region. He had a significant military career as an officer, whereafter he qualified as an Animal Health Technician at Technikon RSA and UNISA. He is currently studying for his MA Degree in Archaeology.

ELIZE BUTLER

PALAEONTOLOGIST

Elize Butler has conducted approximately 300 palaeontological impact assessments for developments in the Free State, KwaZulu-Natal, Eastern, Central, and Northern Cape, Northwest, Gauteng, Limpopo, and Mpumalanga. She has an MSc in Zoology (*cum laude*) (specialising in Palaeontology) from the University of the Free State, South Africa. Mrs Butler has been working in Palaeontology for more than twenty-nine years. She has experience in locating, collecting and curating fossils. She has been a member of the Palaeontological Society of South Africa (PSSA) since 2006 and has conducted PIAs since 2014.

3. TERMS OF REFERENCE

3.1 Study approach and Methodology

3.1.1 Desktop study

The first step in the methodology was to conduct a desktop study of the heritage background of the area and the proposed development site. This entailed scoping and scanning historical texts/records, previous heritage studies, and research around the study area.

The study area is contextualised by incorporating data from previous CRM reports in the area and an archival search. The objective is to extract data and information on the area in question, looking at archaeological sites, historical sites and graves.

No archaeological site data was available for the project area. A concise account of the archaeology and history of the broader study area was compiled (sources listed in the bibliography).

3.1.1.1 Literature review

A literature survey was undertaken to obtain background information regarding the area. Through researching the SAHRA APM Report Mapping Project records and the SAHRIS online database (http://www.sahra.org.za/sahris), it was determined that several other archaeological or historical studies had been performed within the broader vicinity of the study area. Sources consulted in this regard are indicated in the bibliography.

3.1.2 Report

The desktop research is compiled in this report. The identified heritage resources and anticipated direct, indirect, and cumulative impacts of the proposed project's development on the identified heritage resources will be presented objectively. Alternatives are offered if any significant sites are impacted adversely by the proposed project. All efforts will be made to ensure that all studies, assessments, and results comply with the relevant legislation, code of ethics, and guidelines of the Association of South African Professional Archaeologists (ASAPA). The report aims to assist the developer in managing the documented heritage resources in a responsible manner and protecting, preserving, and developing them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

4 PROJECT OVERVIEW

UBIQUE Heritage Consultants were appointed by Naledzi Environmental Consultants Pty Ltd as independent heritage specialists in accordance with Section 38 of the NHRA and the National Environmental Management Act 107 of 1998 (NEMA) to conduct a cultural heritage assessment to determine the impact of the proposed Mining Right Application (MRA) on any possible sites, features, or objects of cultural heritage significance.

Nabas Diamonds (Pty) Ltd (applicant) currently holds a registered prospecting right (NC 30/5/1/1/2/501 PR) for alluvial diamonds on a Portion of the Remainder of Farm No. 18 (Grasdrift) located on the southern/left bank of the Orange River within the |Ai-|Ais/Richtersveld National Park. Furthermore, Nabas Diamonds (Pty) Ltd has now applied to the Department of Mineral Resources and Energy: Springbok (DMRE) for a mining right (DMRE Ref. NCS 30/5/1/2/2/10211 MR) over the same area. The mining operation will be known as 'Grasdrift Diamond Mine'. The mining right area is approximately 2692 ha in extent.

4.1 Technical information

PROJECT DESCRIPTION	
Project name	Heritage Scoping Report Richtersveld No. 11 (Grasdrift) Northern Cape
Description	Heritage Baseline / Scoping Report for the Proposed Mining Right Application for Alluvial Diamonds on the Remainder of the Farm Richtersveld No. 18 (Grasdrift) located within the |Ai-|Ais/Richtersveld National Park, Richtersveld Local Municipality, Namakwa District Municipality, Northern Cape Province.
CONSULTANTS	
Environmental	Naledzi Environmental Consultants Pty Ltd
Heritage and archaeological	UBIQUE Heritage Consultants
Palaeontological	Banzai Environmental
PROPERTY DETAILS	
Province	Northern Cape
District municipality	Namakwa District Municipality
Local municipality	Richtersveld Local Municipality
Topo-cadastral map	1: 50 000 2817AD
Farm name	Farm No. 18
Closest town	Kuboes
GPS Co-ordinates	Site 1: 28°21'4.84"S 17°23'22.21"E Site 2: 28°22'56.39"S 17°23'12.02"E Site 3: 28°22'40.63"S 17°24'21.52"E

	Site 4: 28°23'29.71"S 17°24'15.70"E Site 5: 28°24'40.60"S 17°23'57.10"E Site 6: 28°25'23.56"S 17°23'16.12"E
DEVELOPMENT FOOTPRINT SIZE	2692 ha
LAND USE	
Previous	SANPARKS conservation Agriculture Mining
Current	SANPARKS conservation Agriculture
Rezoning required	No
Sub-division of land	No

DEVELOPMENT CRITERIA IN TERMS OF SECTION 38(1) NHRA	YES/NO
Construction of a road, wall, power line, pipeline, canal or other linear forms of development or barrier exceeding 300m in length.	Yes
Construction of bridge or similar structure exceeding 50m in length.	No
Construction exceeding 5000m ².	Yes
Development involving three or more existing erven or subdivisions.	No
Development involving three or more erven or divisions that have been consolidated within the past five years.	No
Rezoning of site exceeding 10 000m ².	No
Any other development category, public open space, squares, parks, recreation grounds.	No

4.1.1 Locality

The proposed development for the Mining Right Application (MRA) for alluvial diamonds is located on the southern (South African) bank of the Orange River, Richtersveld Local Municipality, Namakwa District Municipality, Northern Cape Province. The MRA falls in the Richtersveld National Park, a World Heritage Site. The MRA area is located 250 km north of Springbok and 140 km east of Alexander Bay. An 80 km secondary gravel road that passes through Richtersveld National Park through Akkedispas or Helskloofpas provides access to the planned mining right area.

The mining right area comprises three landscape features:

a) **Orange River and its floodplains**
   - No mining will take place below the 1: 100-year flood line of the river
   - Only water will be abstracted by a water pump and pipeline from two confirmed abstraction points at the river for the first two mining sections and plants. The third abstraction point is yet to be confirmed.

b) **Alluvial diamond-bearing gravel terraces (Meso) along the southern bank (valley) of the Orange River** (outside the Orange River floodplains)
   - Minerals will be mined from these terraces in Sections 1 and 3.
   - Processing Plants with associated infrastructure will be established
   - Use of existing structures, access and haul roads

c) **Mountains /Koppies**
   - Only the demarcated 'Proto terrace' area for Section 2 on the koppies will be targeted for mining.
   - Establishment of the second processing plant and associated infrastructure
   - The mountains on the western perimeter of the MRA will not be explored (information provided by the client).

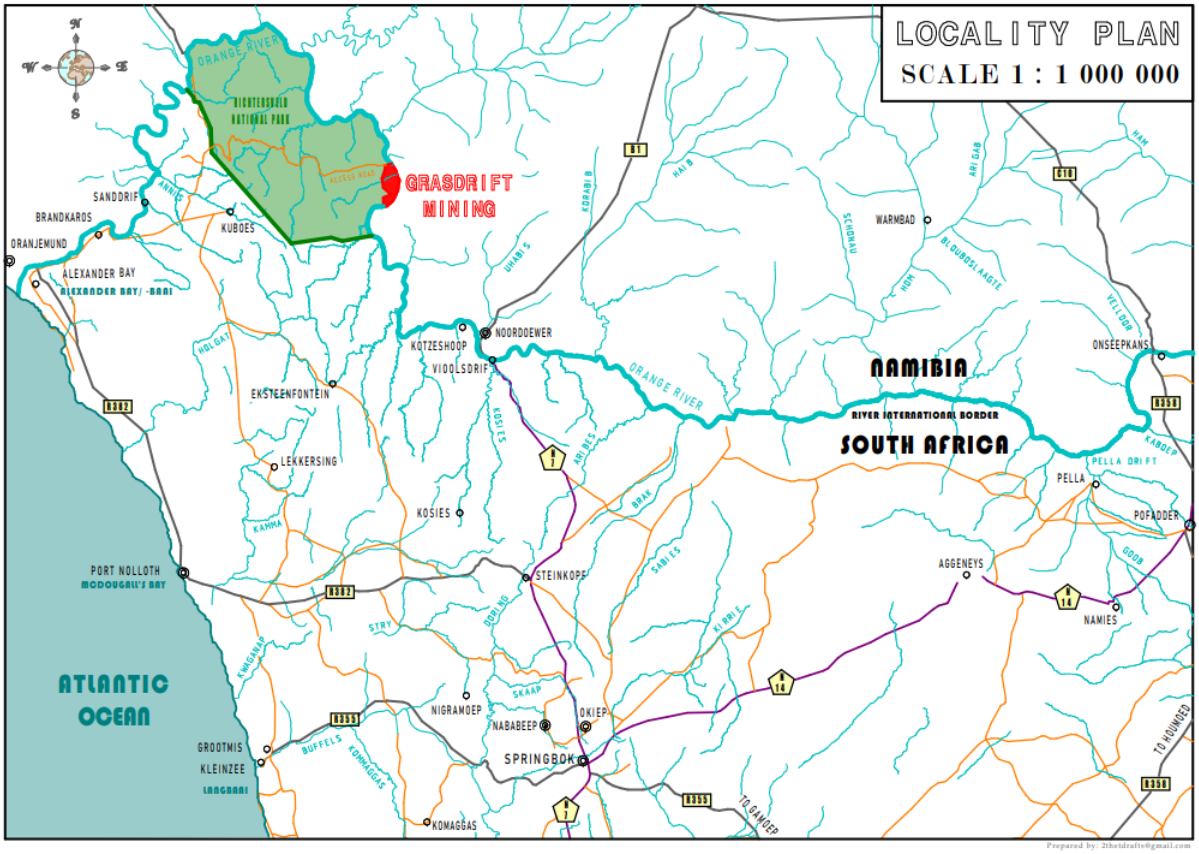

Figure 2 Locality Map. Image provided by the client.

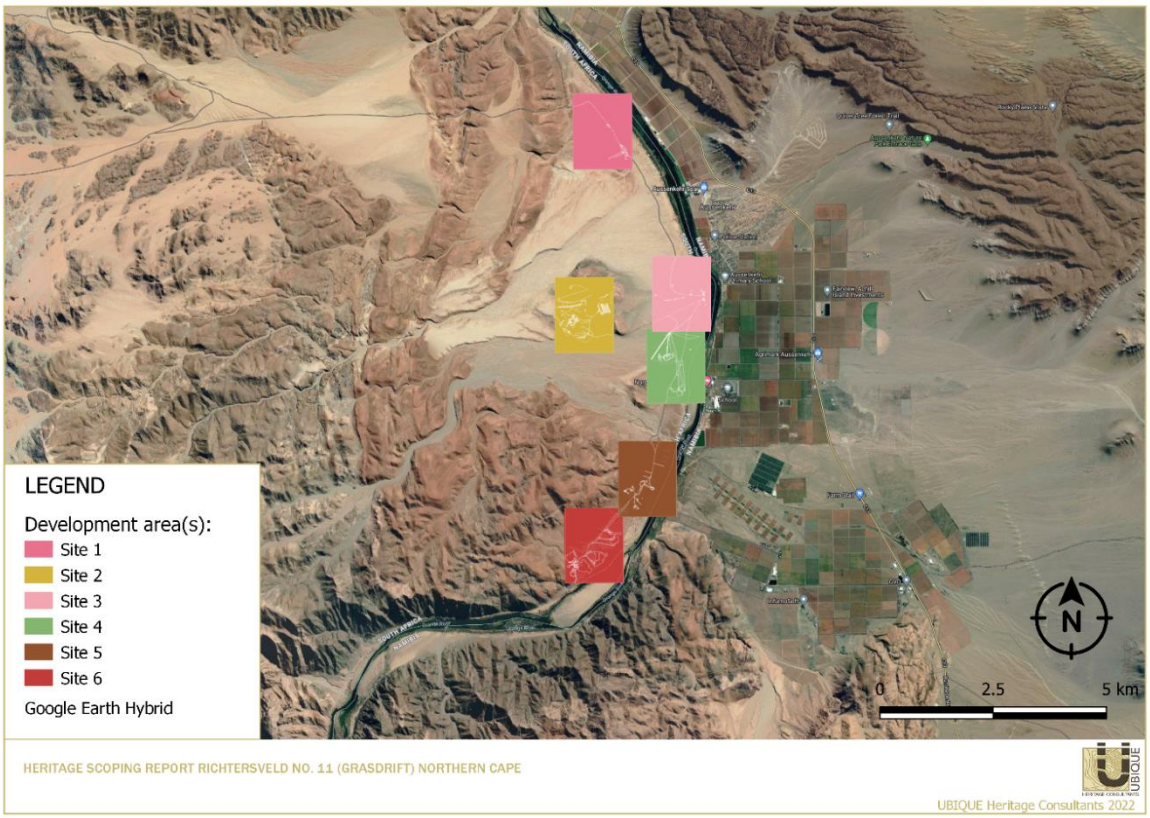

Figure 3 *Proposed Development Area(s), indicated on Google Earth Satellite imagery.*

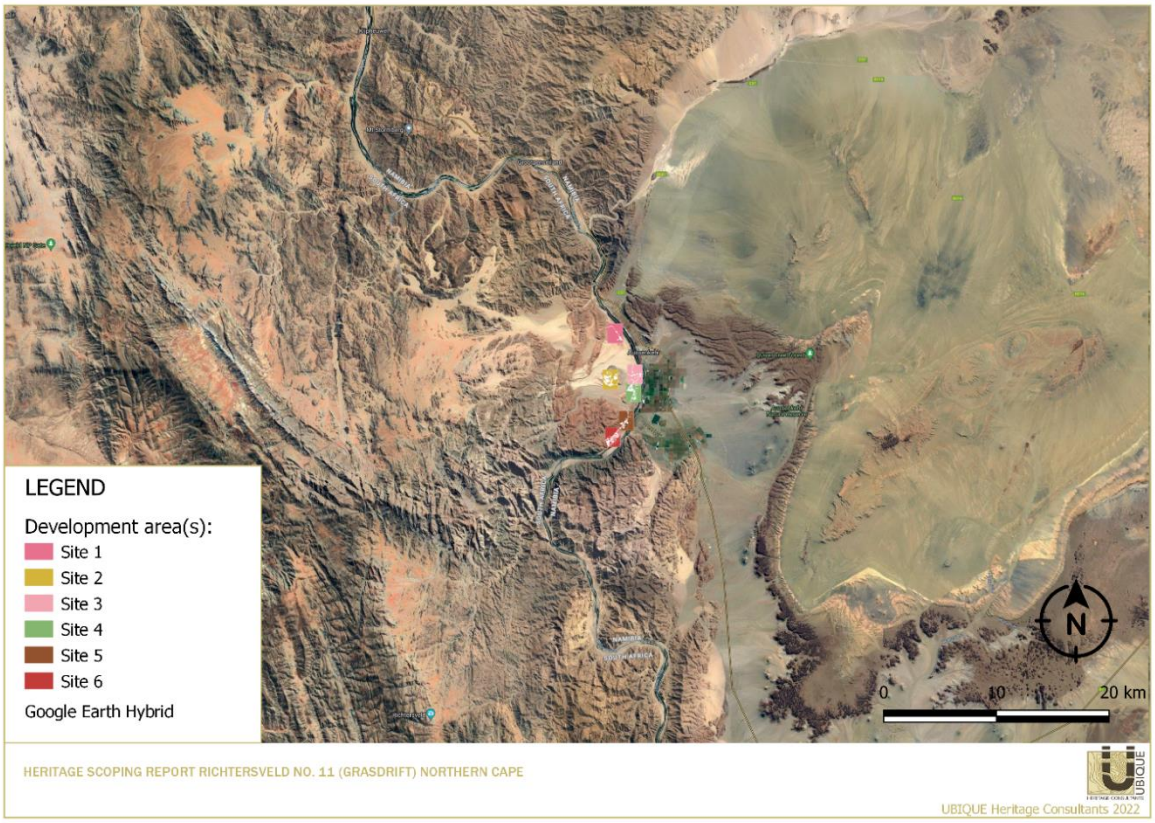

Figure 4 *Regional locality of the development footprint, indicated on Google Earth Satellite imagery.*

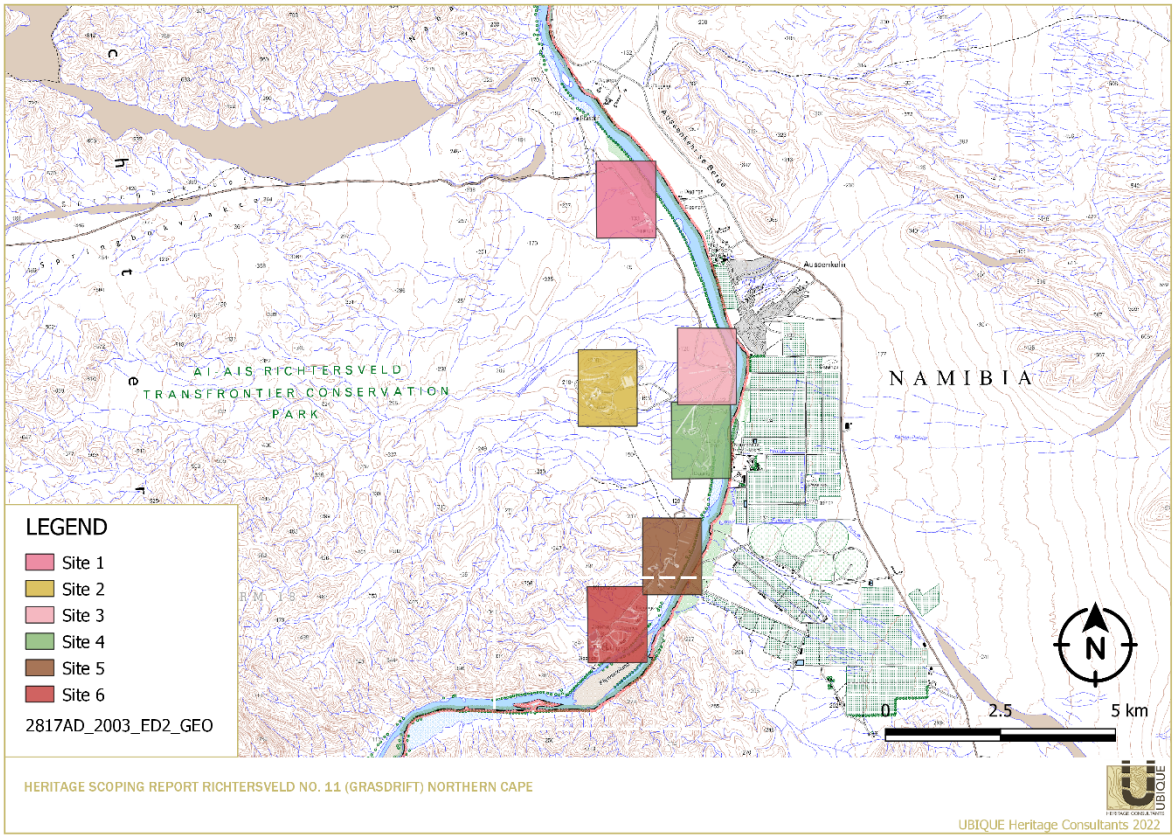

Figure 5 *Locality of the development footprint, indicated on 1: 50 000 2817AD map.*

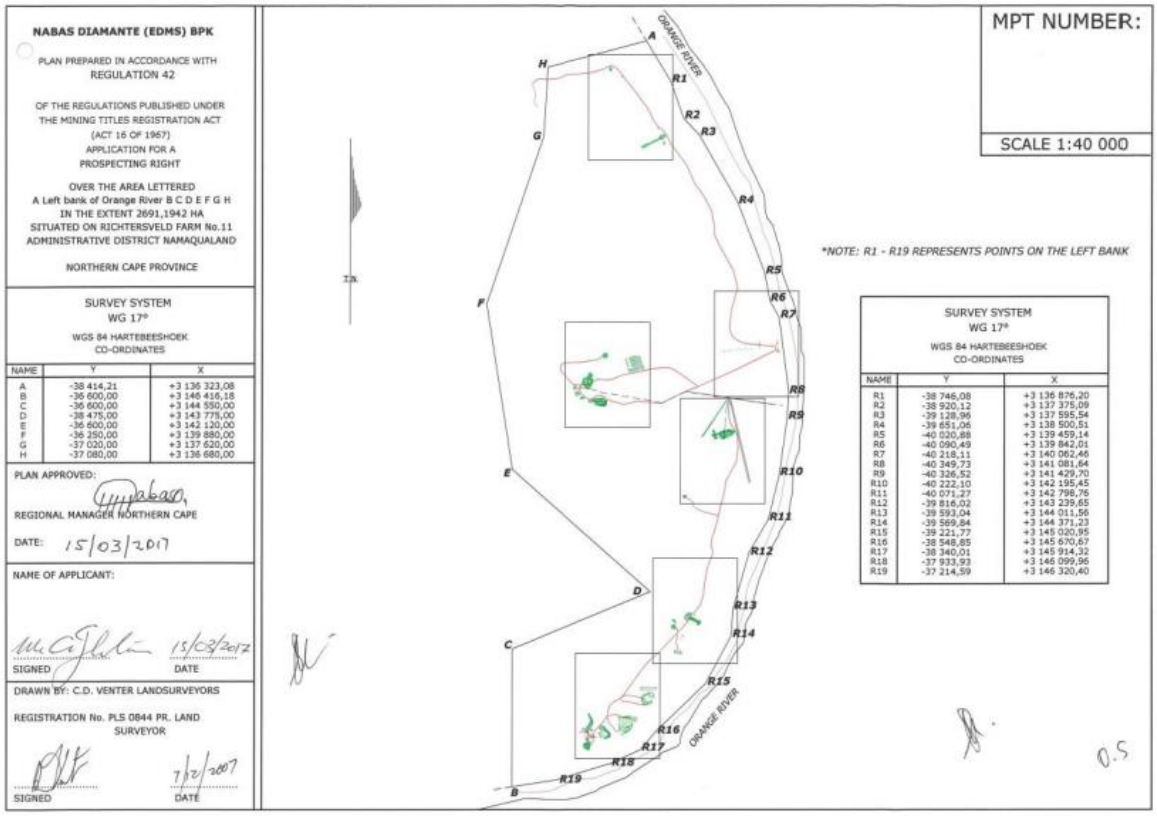

Figure 6 *Plan showing registered land of the proposed project site. Image provided by the client.*

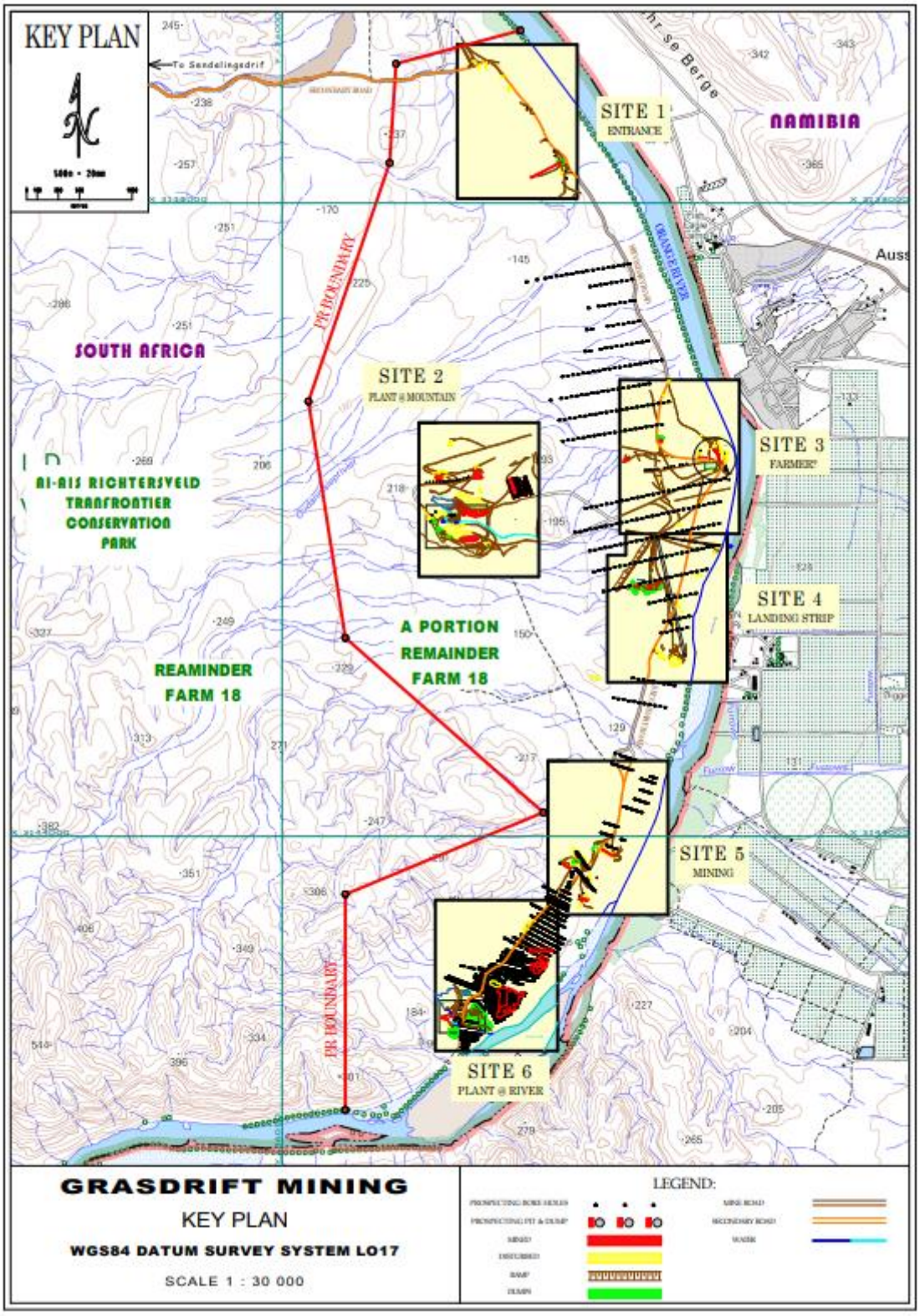

Figure 7 Plan showing registered land of the proposed project site. Image provided by the client.

4.1.2 Current valid Prospecting Right (PR)

Nabas Diamonds (Pty) Ltd (applicant) currently holds a registered prospecting right (NC 30/5/1/1/2/501 PR) for alluvial diamonds on a Portion of the Remainder of Farm No. 18 (Grasdrift) located on the southern/left bank of the Orange River within the Ai-Ais Richtersveld National Park and has now applied to the Department of Mineral Resources and Energy: Springbok (DMRE) for a mining right (DMRE Ref. NCS 30/5/1/2/2/10211 MR) over the same area. The mining operation will be known as 'Grasdrift Diamond Mine'.

4.1.3 Existing infrastructure and operations under PR

Some of the infrastructure required for the mine operation has already been established during the prospecting period, such as:

- Access and haul roads.
- In Section 1, there is an existing mineral processing plant (ray sorter) and mining equipment currently being used for prospecting purposes and will be upgraded to accommodate higher volumes for mining purposes. (See Site Plan 6 Plant).
- Existing slimes dams at Sections 1 and 2.
- Existing ruined brick buildings and steel structures (site office and parking near Orange River).
- Jojo tanks and several steel dams.
- Landing Strip.
- Prospecting trenches and dumps.
- Stormwater infrastructure (see Site Plan 4, retainer wall, stormwater drainage ditch).
- Septic tank and French drain systems.
- Contractors area.
- Existing water abstraction point from Orange River (more than 100 000 litres) at Section 1 and close to contractors area.

4.1.4 The proposed project (planned infrastructure and operations)

An additional 9.4 ha of mine infrastructure will be established at the mine site:

- Existing access and haul roads will be used (established during prospecting operations).
- Existing brick buildings and steel structures owned by the mine (from prospecting operations) will be refurbished and reused as office/labour quarters (Site 3 and 4)
- < 1 ha Parking areas will be required.

- A Mineral Processing Plant will be established in each of the three mining sections on the property and will comprise each (see Table 1 below):
    - A Rotary Pan covering > 0.5 ha (i.e. three plants @ 0.5 ha = 1.5 ha)
    - A Final Recovery Plant covering 0.5 ha (i.e. three plants @ 0.5 ha = 1.5 ha)
    - A Slimes Dam ranging in size at each plant, i.e. 1 ha, 1 ha and 2.97 ha. Each slimes dam's minimum holding capacity requirement is 110 000m^3/month.

  - Processing Plant capacity will be 71 000 tons/month;
  - Sand will be screened out before passing through the processing plant, and a closed circuit system will be used to decrease slime and water usage through the processing plant.
  - Note: Section 1 has an existing mineral processing plant (ray sorter) and mining equipment to be upgraded to accommodate higher volumes for mining purposes. In addition, both Sections 1 and 2 have existing slime dams that will be used.

- Pollution Control Dam
- Topsoil stockpile areas (each <0.5 ha) for the temporary storage of topsoil, which will be used to rehabilitate disturbed areas.
- 2x 23 m^3 Diesel storage (storage tank) at each plant area and a single 0.5 m^3 fuel trailer onsite.
- < 0.5 ha Contractor's laydown area
- A Hanger will be established at the Landing strip.
- Dust suppression
- Stormwater management infrastructure

In the first year of production, the production capacity will be 600 000 tons. In year two, the production capacity will be 1 200 000 tons. In year 3, the production capacity will be 3 600 000 tons. Production will be ramped up as time goes on expedited by the introduction of processing plants in different sections of the mine i.e.

- Phase 1: Processing Plant at Section 1 will be brought into total production until the mining right is issued.
- Phase 2: Upon receipt of the mining right
  - 2nd processing plant is established (Section 2)
  - 3rd processing plant is established (Section 3)

4.1.5 Services required for the mine include:

- Water Requirements:
  - 270 000 m^3 of water will be abstracted from the Orange River for mine process and potable water;
  - Potable water will be stored in JoJo Tanks
  - Process water will be stored in three dams (3x 0.5 ha = 1.5ha)
  - A water transmission pipeline will be used to transfer water from the river to the processing plants;
  - An average of 80 000 - 100 000m3/month of water will be required per month
- Electricity Supply
  - Power generators will supply electricity to the plants, accommodation areas and the water pump.
- Sewage
  - Ablution facilities and a Sewage Treatment Package Plant will be constructed.

4.2 Phases of the proposed project

The project involves three phases, namely the:

a) Establishment/construction phase;
b) Operational phase; and,
c) Rehabilitation and closure phase.

Furthermore, the duration of the project is 30 years (LOM). Drilling and bulk samples carried out in 2019 under the Grasdrift prospecting right revealed the presence of more than 250 000 carats of high-value diamonds. This will be extracted over 30 years utilizing traditional open-cast mining procedures, such as loading, hauling, and mineral processing using Standard Rotary Pan Plants. The mining operation will be known as "Grasdrift Mine."

Legislation prescribes that the applicant is required to obtain multiple environmental permits and licenses as part of the procedure for gaining mining rights for the "Grasdrift Mine."

4.3 Legislation

4.3.1 Relevant Legislation

The proposed project triggers several listed activities in Government Notice (GN) No. R. 324, R. 325 and R. 327 of 7 April 2017 (as amended), which require environmental authorisation in terms of the 2014 EIA Regulations (GNR 326) published under the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA). A number of waste management activities listed under GN R. 633 and R. 921 published under the National Environmental Management: Waste Act (Act 28 of 2008) (NEM: WA) are also triggered, requiring a waste management license. Both applications are subject to a full Scoping and EIA Process.

The following listed activities require approval (information provided by Naledzi Environmental Consultants (Pty) Ltd):

Possible List of Triggered Activities (These activities will be confirmed/refined during the EIA process)	
NEMA Listing Notice	Possible Activities Triggered
Environmental Authorisation	
1 (GN R. 327)	Activity 12, 19, 25 (potentially), 27
2 (GN R. 325)	Activity 17
3 (GN R. 324)	Activity 10 (potentially), 12, 14

NEM: WA List of Activities	
Waste Management License	
GN R. 633	Activity 11
GN R. 921 (Category A)	Activity 10, 12
GN R. 921 (Category B)	Activity 1 and 10

Nabas will also submit a Water Use License Application (WULA) in terms of section 40 of the National Water Act (Act 36 of 1998) (NWA) to the Department and Sanitation (DWS): Orange Proto in Upington for water uses specified under Section 21 (a), (b) (c), (g), (i) and possibly 21 (j). The applicable water uses include:

- S 21a - Abstracting water from the Orange River (270 000m^3/annum)
- S 21b – Storing of process water in three (3) dams
- S21c and i – Mining activities within the regulated area of the Orange River/streams
- S21g – Construction and operation of onsite waste disposal facilities (i.e., Sewage Package Plant, x3 Tailings Dams, Pollution Control Dam) and dust suppression.

4.4 Statutory Requirements

4.4.1 General

The principle is that the environment should be protected for present and future generations by preventing pollution, promoting conservation and practising ecologically sustainable development. The identification, evaluation and management of heritage resources in South Africa are required and governed by the following legislation:

- National Environmental Management Act 107 of 1998 (NEMA)
- National Heritage Resources Act 25 of 1999 (NHRA)
- Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA)

4.4.2 National Heritage Resources Act 25 of 1999

The NHRA established the South African Heritage Resources Agency (SAHRA) together with its Council to fulfil the following functions:

- coordinate and promote the management of heritage resources at the national level;
- set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance;
- control the export of nationally significant heritage objects and the import into the Republic of cultural property illegally exported from foreign countries;

- enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; and
- provide for local authorities' protection and management of conservation-worthy places and areas.

4.4.3 Heritage Impact Assessments/Archaeological Impact Assessments

Section 38(1) of the NHRA of 1999 requires **the responsible heritage resources authority to notify the person who intends to undertake a development that fulfils the following criteria to submit an impact assessment report if there is reason to believe that heritage resources will be affected by such event**:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- the construction of a bridge or similar structure exceeding 50m in length;
- any development or other activity that will change the character of a site—
  - exceeding 5000m² in extent; or
  - involving three or more existing erven or subdivisions thereof; or
  - involving three or more erven or divisions thereof which have been consolidated within the past five years; or
  - the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- the rezoning of a site exceeding 10 000m² in extent; or
- any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

4.4.4 Management of Graves and Burial Grounds

- **Graves younger than 60 years** are protected in terms of Section 2(1) of the Removal of Graves and Dead Bodies Ordinance 7 of 1925 as well as the Human Tissues Act 65 of 1983.

- **Graves older than 60 years, situated outside a formal cemetery administered by a local Authority are** protected in terms of Section 36 of the NHRA as well as the Human Tissues Act of 1983. Accordingly, such graves are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of NHRA) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation.

The **protocol for the management of graves older than 60 years situated outside a formal cemetery administered by a local authority** is detailed in Section 36 of the NHRA:

> (3) *(a)* No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
(c) bring onto or use at a burial ground or grave referred to in paragraph *(a)* or *(b)* any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)*(a)* unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

(5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection (3)*(b)* unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

(a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and
(b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

(6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in cooperation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority—

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and
(b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

4.5 Additional information sources consulted

The engaged Heritage Authority is SAHRA. The local community maintains the National Park alongside South African National Parks and is responsible for managing the World Heritage Site.

In compiling this baseline/scoping report, the following databases and information sources were consulted (please refer to the bibliography for a complete list of sources that were consulted):

- A Google Earth map with polygons of the proposed development was obtained from Naledzi Environmental Consultants (Pty) Ltd.
- SAHRA database.
- Previous Impact Assessment Reports found on SAHRIS.
- Previous Articles on sites around the area.
- Topocadastral Maps (e.g. 2817AD).
- Site registers.
- SANBI.
- The Chief Surveyor General (CS-G).
- UNESCO Website.

4.6 Assumptions and limitations

It is assumed that the description of the proposed project, as provided by the client, is accurate. Furthermore, it is assumed that the public consultation process undertaken as part of the Environmental Impact Assessment (EIA) is comprehensive and does not have to be repeated as part of the heritage impact assessment.

The significance of the sites, structures and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. The various aspects are not mutually exclusive, and the evaluation of any site is done with reference to any number of these aspects. Cultural significance is site-specific and relates to the content and context of the site. The methods employed to determine significance combine in-field inspection, grading, and extensive desktop research. This desktop study is therefore limited in its ability to assign significance to sites without a ground-truthing component.

Although all possible care has been taken during the intensive desktop study to identify sites of cultural importance within the development area, it is essential to note that some heritage sites may have been missed due to the limitations of the digital survey. The digital survey depends on available data sources and the visibility of heritage resources in satellite imagery. Heritage/cultural sites, features, and artefacts that may not be visible on satellite imagery include, but are not limited to: graves, graveyards, rock art, archaeological material pertaining to the Stone Age, Iron Age and Historical/Colonial period (e.g. surface scatters of lithics, ceramics, metal objects, beads), middens, as well as structural features that are partially below the surface or hidden by vegetation. No field survey has been conducted as part of this assessment. All heritage sites/possibilities of heritage features mentioned in this heritage screening report are based on the desktop study and digital survey.

Assumptions made on the likelihood of heritage resources present in the vicinity of the study area are based on the artefacts/sites recorded in previous HIA/AIA reports on the broader region. The assessment of the impact of development on heritage resources is limited to conjecture and speculation based on the artefacts/sites recorded in previous HIA/AIA reports on the broader

region. The field ratings and mitigation measures for the artefacts/sites in the table are currently unknown, as we cannot be certain whether these artefacts/sites are present at the development footprint without ground-truthing. Therefore, the Heritage Screener is not a final Heritage Impact Assessment and should not be treated as such.

5 DESCRIPTION OF THE AFFECTED ENVIRONMENT

The development area falls within the Richtersveld Sheet Wash Desert and Kwaggarug Mountain Desert vegetation types. The landscape of the Richtersveld Sheet Wash Desert is characterised by sloping (often broad) valley floors and surrounding bare rock of the mountains (Mucina & Rutherford 2006).

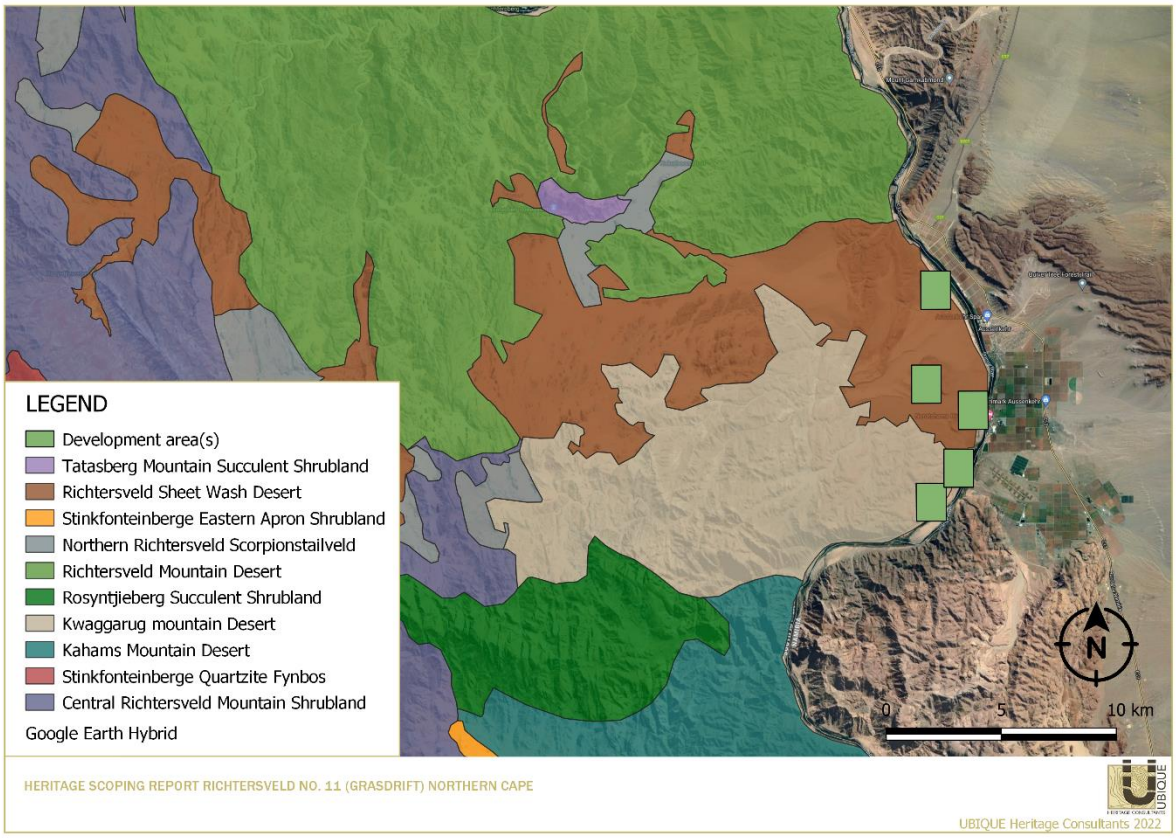

Figure 8 *Indication of the vegetation types in and around the study area (namely the Tatasberg Mountain Succulent Shrubland, Richtersveld Sheet Wash Desert, Stinkfonteinberge Eastern Apron Shrubland, Northern Richtersveld Scorpionstailveld, Richtersveld Mountain Desert, Rosyntjieberg Succulent Shrubland, Kwaggarug Mountain Desert, Kahams Mountain Desert, Stinkfonteinberge Quartzite Fynbos, and Central Richtersveld Mountain Shrubland).*

Figure 9 *Views of the affected development area.*

6 HERITAGE SENSITIVITY

6.1 Historical and archaeological Background of Richtersveld

The archaeology of the Namaqualand region is long and complex. Namaqualand has one of the longest and unbroken records of human settlement, with Nama-speakers (descendants of Khoekhoen) still occupying certain parts of the region (Hart 2010). Briefly, sites dating to the ESA, MSA and LSA have been documented in the wider Namaqualand region. The area is also known for its prolific rock engravings, historic sites, graves, burial mounds, and living heritage related to the Nama speakers.

Figure 10 *Imperial Map of Namaqualand. Image from UCT digital collections, https://digitalcollections.lib.uct.ac.za/*

The Richtersveld region was occupied for thousands of years by prehistoric groups. Evidence of remains dating to 1100 to 1400 BC has been recovered. These are believed to be the remains of the San hunter-gatherers. The Khoekhoen/Khoi-Khoi (ancestors of the present Nama-speaking herders in the Park) settled in the Richtersveld around 2000 years ago, introducing sheep and cattle to the area. The region is known to have numerous rock engravings, which are believed to have been made by Khoekhoen and San (ATRA 2022; Hart 2010).

It was in the 1660s that elephant hunters such as Jacobus Coetzee travelled along the Orange River. Numerous early European travellers, explorers and missionaries had traversed the southern African interior during the 18th century, some of whom visited the Richtersveld area, namely William Paterson and Colonel Gordon. James Edward Alexander was one of the well-known explorers (and geographers) in this area. James prospected for copper around Kodas in the 1830s and during which time he recorded visiting a Khoekhoen settlement of 'twenty huts' at Arries Drift. Interestingly, the Richtersveld area was named after Dr E Richter (an inspector of the Rhenish Mission Society), who visited the area in 1830. In the mid-19th century, a Rhenish mission station was established at Kuboes by Rev B Hein (Hart 2010; Unknown n.d).

It should be noted that not only had copper prospecting taken place during the 19th and 20th centuries, but mineral prospecting had also commenced. Interestingly, Cornell's Kop and Cornell's Berg were named after Fred Cornel, who prospected for copper around 1910 (Unknown n.d).

The Nama speakers lived in this region before systematic diamond mining began in the 1920s. Unfortunately, the Mission Stations and Communal Reserves Act of 1909 significantly reduced the locals' territory. During the beginning of the 20th century, European families began to settle in the Richtersveld area. A sizable number of "Bosluis Basters" relocated to Eksteenfontein and Lekkersing in 1949 after being forced out of Crown Lands Bushmanland. After over a century of mining activities, the Richtersveld community, primarily made up of people of Nama-speakers, was once more granted ownership of the land (Hart 2010).

6.1.1 Living Heritage

The Richtersveld's living heritage is one of its noteworthy features. As a cultural landscape, Richtersveld exhibits the long-standing and enduring traditions of the Nama-speakers, the indigenous community. It is one of the few places in southern Africa where transhumance pastoralism is still practised. The Nama has spread across the region; some of their settlements can be found at Steinkopf, Kommagas, Concordia, Leliefontein, and Richtersveld (Mathoho 2020). The Nama are currently one of the largest tribes in the region (they are also found in Southern Namibia).

Although Nama settlement patterns have changed recently and become subject to increased urbanisation, many traditional practices were followed up until recently (within the past 30 years). Their way of life is based on a herding economy perfectly adapted to the region's arid climate. The Nama herders were traditionally nomadic, travelling from stock post to stock post. The historical accounts up until the 1910s suggest that the Nama speakers continued to live like their ancestors (Hart 2010; TGC 2020). The contemporary Nama-speaking residents engage in seasonal transhumant cycles. In other words, they tend to utilize a specific area on a seasonal basis rather than being migratory. There are still known active stock posts in the area.

The "*matjiehuisies*", though no longer constructed of traditional materials but from modern materials, maintains a traditional shape in terms of size and design. The fact that the stock posts are still in use indicates that traditional herding activities are still practised in the area (Hart 2010).

It should be noted that the Bo-Sluis Baster people reside in the conservancy together with the Nama tribe. These individuals were of Dutch and Khoi-Khoi descent (TGC 2020).

6.1.2 World Heritage Site

Lying south of the National Park, the "Richtersveld Cultural and Botanical Landscape" was designated a UNESCO World Heritage Site in June 2007. The local community maintains the National Park alongside South African National Parks and is responsible for managing the World Heritage Site (UNESCO 2022).

6.2 Summary of Local Heritage Resources

The desktop study consulted numerous Impact Assessments completed in the Namaqualand and Richtersveld regions. Some of the assessments reported on cultural material and features relating to the Stone Ages, pastoralism, and the Historical/Colonial era (Halkett 1999a and b, 2001; Hart 2014, 2015; Kaplan 2011a and b; Matenga 2021; Orton 2020, 2021; Orton & Webley 2009; Van der Walt 2010; Webley 2009). Several articles (Dewar & Stewart 2011, Orton & Halkett 2001, 2010; Webley 1997, Webley et al. 1993) have also been written regarding the area's archaeology focussing on sites such as Jakkalsberg, Die Toon and Spitskop.

Due to the vast amount of impact assessments and research on sites done in the region, the tables below focus on a handful of impact assessments to provide an idea of the cultural material recorded in the general area.

6.2.1 Stone Age

Numerous impact assessments done on the broader region reported on lithics, dating from the ESA, MSA and LSA, some of which are listed in the table below:

STONE AGE RESOURCES RECORDED IN A 80 KM RADIUS			
HIA/AIA	SITE	COORDINATES PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
Matenga 2021	GDM01	28°30'48.30"S 16°38'11.20"E 76 km W	MSA/LSA: On the base of a cluster of boulders on the crest of a ridge. Two fine-grained stones with flake surfaces. 1 flake.
Matenga 2021	GDM02	28°30'51.10"S 16°38'19.40"E 75km W	MSA/LSA flake and scraper

STONE AGE RESOURCES RECORDED IN A 80 KM RADIUS

HIA/AIA	SITE	COORDINATES PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
Matenga 2021	GDM03	28°31'7.95"S 16°38'20.50"E 75km W	MSA/LSA flakes
Matenga 2021	GDM04	28°30'44.30"S 16°38'27.90"E 75km W	MSA/LSA quartzite flake
Matenga 2021	GDM05	28°30'56.80"S 16°38'52.80"E 74km W	MSA/LSA flakes and scrapers
Matenga 2021	GDM06	28°30'48.00"S 16°38'51.50"E 74km W	MSA/LSA scrapers
Kaplan 2011a	267	S28 26.796 E16 58.719 42km W	Quartzite flake
Kaplan 2011a	268	S28 26.762 E16 58.758 42km W	Split quartzite cobble
Kaplan 2011a	269	S28 26.735 E16 58.769 42km W	2 quartzite flakes, 1 quartzite chunk
Kaplan 2011a	271	S28 26.737 E16 58.753 42km W	Split quartzite chunk
Kaplan 2011a	272	S28 26.731 E16 58.759 42km W	Quartzite flake
Kaplan 2011a	273	S28 26.725 E16 58.760 42km W	Quartzite broken/split cobble
Kaplan 2011a	274	S28 26.734 E16 58.748 42km W	Quartzite flake
Kaplan 2011a	275	S28 26.741 E16 58.729 42km W	Quartzite flake
Kaplan 2011a	276	S28 26.707 E16 58.748 42km W	1 quartzite flaked cobble and 2 quartzite chunks on heavily eroded sheet washed slope
Kaplan 2011a	277	S28 26.697 E16 58.743 42km W	Large quartzite flake
Kaplan 2011a	278	S28 26.707 E16 58.715	Quartzite flake and chunk

STONE AGE RESOURCES RECORDED IN A 80 KM RADIUS

HIA/AIA	SITE	COORDINATES / PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
		42km W	
Kaplan 2011a	279	S28 26.689 E16 58.721 42km W	Quartz crystal chunk
Kaplan 2011a	280	S28 26.704 E16 58.659 42km W	Quartzite blade and chunk
Kaplan 2011a	281	S28 26.710 E16 58.658 42km W	Quartzite flake
Kaplan 2011a	282	S28 26.715 E16 58.653 42km W	Large quartzite flake and quartz flake
Kaplan 2011a	283	S28 26.743 E16 58.647 43km W	Anvil
Kaplan 2011a	284	S28 26.723 E16 58.665 42km W	Quartzite chunk
Kaplan 2011a	285	S28 26.756 E16 58.669 42km W	Large, flaked cobble - quartzite
Kaplan 2011a	286	S28 26.724 E16 58.685 42km W	Large flaked chunk – quartzite
Kaplan 2011a	287	S28 26.707 E16 58.699 42km W	Large flaked chunk – quartzite
Kaplan 2011a	288	S28 26.706 E16 58.699 42km W	Quartzite flake
Kaplan 2011a	289	S28 26.702 E16 58.700 42km W	Flaked quartzite chunk
Kaplan 2011a	290	S28 26.700 E16 58.701 42km W	Flaked quartz crystal
Kaplan 2011a	291	S28 26.687 E16 58.718 42km W	Flaked quartzite chunk
Kaplan 2011a	292	S28 26.694 E16 58.715 42km W	MSA silcrete flake

STONE AGE RESOURCES RECORDED IN A 80 KM RADIUS

HIA/AIA	SITE	COORDINATES / PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
Kaplan 2011a	293	S28 26.712 E16 58.708 42km W	Hammerstone
Kaplan 2011b	240	S28 26.825 E16 58.558 43km W	Possible upper grindstone (miscellaneous)
Kaplan 2011b	241	S28 26.770 E16 58.590 43km W	Quartzite chunk
Kaplan 2011b	242	S28 26.766 E16 58.602 43km W	Small weathered quartzite chunk
Kaplan 2011b	243	S28 26.829 E16 58.559 43km W	Quartzite core
Kaplan 2011b	244	S28 26.797 E16 58.595 43km W	Weathered MSA triangular quartzite flake
Kaplan 2011b	245	S28 26.789 E16 58.601 43km W	Large quartzite flake in donga
Kaplan 2011b	246	S28 26.781 E16 58.607 43km W	ESA flat bifacial handaxe in drainage ditch
Kaplan 2011b	247	S28 26.817 E16 58.578 43km W	Weathered quartzite flake
Kaplan 2011b	248	S28 26.837 E16 58.584 43km W	X 2 flaked quartzite chunks
Kaplan 2011b	249	S28 26.830 E16 58.631 43km W	Quartzite flake
Kaplan 2011b	250	S28 26.817 E16 58.668 42km W	Quartzite flake
Kaplan 2011b	251	S28 26.793 E16 58.673 42km W	X 2 quartzite flakes, 2 quartz flakes, 1 smashed/flaked quartzite cobble on patch of compact sheet washed red sands
Kaplan 2011b	252	S28 26.834 E16 58.604 43km W	X 3 quartzite flakes in drainage channel
Kaplan 2011b	253	S28 26.837	Small quartzite flake and chunk

STONE AGE RESOURCES RECORDED IN A 80 KM RADIUS

HIA/AIA	SITE	COORDINATES PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
		E16 58.583 43km W	
Kaplan 2011b	254	S28 26.818 E16 58.597 43km W	MSA utilized quartzite flake
Kaplan 2011b	255	S28 26.818 E16 58.597 43km W	MSA quartzite flake
Kaplan 2011b	256	S28 26.775 E16 58.629 42km W	Quartzite chunk
Kaplan 2011b	257	S28 26.769 E16 58.631 42km W	Quartzite chunk
Orton & Webley (2009)	0P2009/001- 0P2009/016	General area: S28 04 07.2 E17 01 06.4; S28 03 38.3 E17 01 16.0 51km NW	16 Waypoints: material dating to the ESA, MSA and LSA such as lithic scatters, hand-axes, faunal material, OES, glass (historical?).
Orton & Webley (2009)	SB2009/001- SB2009/002	S28 02 26.8 E17 04 29.6; S28 04 50.3 E17 04 30.4 46km NW and 49.8km NW	2 waypoints, with ESA?MSA and LSA materials, such as cores and LSA pottery.
Orton & Webley (2009)	BW2009/001- BW2009/044	General area: S28 02 37.0 E 17 05 34.2; S28 03 32.3 E 17 0607.8 48km NW to 46km NW	44Waypoints: Materials dating from the ESA/MSA and LSA with artefacts such as lithic scatters, potsherds, Upper Grindstones, Lower grindstones
Orton & Webley (2009)	KB2009/001- KB2009/010	General area: S28 06 15.3 E17 10 18.7; S28 06 21.8 E 17 10 33.6 38km NW	10 waypoints: Scatters of MSA and LSA material
Orton & Webley (2009)	VR2009/001- VR2009/004 and VR2009/006	General area: S28 06 11.4 E 17 09 03.4; S28 06 05.5 E 17 08 46.9 39km NW	5 waypoints: Scatters of ESA/MSA and LSA materials.
Orton & Webley (2009)	0P2009/017 and OP 2009/020-021	General area: S28 04 02.5 E17 01 08.6; S28 03 54.7 E 17 01 29.1	Scatters of ESA/MSA materials

STONE AGE RESOURCES RECORDED IN A 80 KM RADIUS			
HIA/AIA	SITE	COORDINATES PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
		51km NW	
Orton & Webley (2009)	BW2009/044-BW2009/050	General area: S28 04 07.4 E 17 07 03.2; S28 03 13.6 E17 06 18.2 44.75 to 46km NW	ESA/MSA and LSA scatters

6.2.2 Rock Art

Rock engravings have been found at several sites in the Namaqualand and Richtersveld regions. The engravings (petroglyphs) are generally found near rocky outcrops and are generally chipped into the dolomite rocks. They are found in areas along water courses and the vicinity of the Orange River. Their designs and patterns often differ. However, the majority portray geometric patterns (dots, grids and spirals), and other engravings sometimes depict animal figures, such as sable antelope and giraffe (ATRA 2022; Coetzee 2022).

Approximately 26 rock engravings were recorded by Halkett (1999b) at Bloeddrift (BLD), Nxopdap (NXP) and Reuning (RN).

ROCK ART RECORDED IN 65 KM RADIUS			
HIA/AIA	SITE	COORDINATES PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
Halkett (1999b)	BLD 1-9, 12-14, 16-20, 26-29, 34B, 35 and 36	Approximate area: 28°19'1.60"S 16°46'54.18"E 61km W	Rock Engravings
Halkett (1999b)	NXP 1	Approximate area: 28°13'22.86"S 16°48'33.28"E 61 km WNW	Rock Engravings
Halkett (1999b)	RN 1	Approximate area: 28° 5'46.83"S 16°52'45.74"E	Rock Engravings

ROCK ART RECORDED IN 65 KM RADIUS			
HIA/AIA	SITE	COORDINATES PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
		60km NW	

Only one site near the proposed development area was found on the SAHRA database:

ROCKART IN AND AROUND THE RICHTERSVELD REGION DOCUMENTED ON THE SAHRA DATABASE:				
Site/Object Name	Coordinates	Site type	Site Reference	Site ID
Richtersveld 093	-28.565668, 16.765182	Rock art	RICH093 91189	91189

6.2.3 Pastoralism and Historical/Colonial period

One report noted pastoral encampments dating from 2000 BP to 1800 AD (Halkett 1999b). Additionally, several excavations have taken place at Jakkalsberg A and B, which reported on material linked to herder sites from the last 2000 years (Webley 1997; Miller & Webley 1994). Metal objects recorded from various Hearths at Jakkalsberg A were recorded to date between the 7th and 8th centuries AD, while dates from B are slightly older. Miller and Webley (1994) suggest that various items, such as metal, pottery, Ostrich Eggshell beads, the fauna and the informal lithic material, indicate pastoralism.

Very few impact assessments reported on cultural material and sites associated with the Historical/Colonial Period.

HISTORICAL PERIOD RESOURCES RECORDED IN A 55 KM RADIUS			
HIA/AIA	SITE	COORDINATES PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
Orton & Webley (2009)	0P2009/018	S28 03 36.3 E17 01 11.5 51km NW	Historical scatter, annular ware, glass and fishbone
Orton & Webley (2009)	0P2009/019	S28 03 48.0 E17 01 04.7 51km NW	Possible stock post, circle of rocks (no historical material)

HISTORICAL PERIOD RESOURCES RECORDED IN A 55 KM RADIUS			
HIA/AIA	SITE	COORDINATES PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
Halkett (1999b)	ME1	Approx. at: 28°10'12.72"S 16°53'27.20"E 55km NW	A single colonial site (ME1) is believed to represent the remains of part of the original Sendelingsdrift mission station.

The Richtersveld region has known excavated archaeological sites; most of the cultural material recorded at these sites pertains to the Stone Ages. A few known memorial sites listed in the table below, have been captured on the SAHRA Database:

HERITAGE SITES IN AND AROUND THE RICHTERSVELD DOCUMENTED ON THE SAHRA DATABASE:				
Site/Object Name	Coordinates	Site type	Site Reference	Site ID
Spitzkloof Rockshelter	-28.863167, 17.077545	Archaeological	Spitzkloof	24903
Jakkalsberg A/B	-28.178750, 16.885946	Archaeological	JKB A/B	93864
Jakkalsberg K	-28.182252, 16.882194	Archaeological	JKB K	93868
Jakkalsberg L	-28.180884, 16.886823	Archaeological	JKB L	93866
Jakkalsberg M	-28.180685, 16.886957	Archaeological	JKB M	93865
Jakkalsberg N	-28.180774, 16.885345	Archaeological	JKB N	93867
Richtersveld Land Claim Memorial, Palmiet Avenue, Alexander Bay	-28.594278, 16.485190	Monuments & Memorials	DC6/NAMM/0057	136318

6.2.4 Graves/Burials

Several graves were recorded in the area around the development footprint.

GRAVES/BURIALS RECORDED IN A 65 KM RADIUS			
HIA/AIA	SITE	COORDINATES PROXIMITY TO STUDY AREA	HERITAGE RESOURCES
Kaplan 2011a	270	28 26.743 E16 58.749 42km W	Possible Grave
Halkett (1999b)	BLD 41	General area: 28°19'1.60"S 16°46'54.18"E 61km WNW	Graves
Halkett (1999b)	KK3	General area: 28°28'0.98"S 16°45'34.20"E 64km W	Graves
Halkett (1999b)	NXP 3	General area: 28°13'22.86"S 16°48'33.28"E 60km NW	Graves
Halkett (1999b)	JKB S	General area: 28°10'14.32"S 16°50'6.09"E 60km NW	Graves
Halkett (1999b)	JKB D	General area: 28°10'14.32"S 16°50'6.09"E 60km NW	Graves
Halkett (1999b)	JKB J	General area: 28°10'14.32"S 16°50'6.09"E 60km NW	Graves

6.2.6 Living Heritage

The Richtersveld region is known for its intangible heritage of the Nama speakers, a living heritage/sacred site recorded on the SAHRA database, while some of the consulted impact assessments reported on stock-posts used by the Nama in the region (e.g. Chauke 2014; Hart 2010).

INTANGIBLE/LIVING HERITAGE IN AND AROUND THE RICHTERSVELD REGION DOCUMENTED ON THE SAHRA DATABASE:				
Site/Object Name	Coordinates	Site type	Site Reference	Site ID
Richtersveld	-28.996370, 17.129745	Living Heritage/Sacred sites	9/2/066/0043	93075

6.3 The overall heritage sensitivity

The overall Cultural Heritage site sensitivity rating based on an initial site visit conducted on 18th Nov 2022 and the results from the desktop research is **High cultural Heritage Significance.**

However, the DFFE Screening Tool (Figures 11 and 12) indicates that the development area has a **Low Heritage Significance.**

The Heritage Screening tool (https://screening.environment.gov.za/) shows Low significance with locations of High to Very High sensitivity towards the north and northwest of the proposed project area.

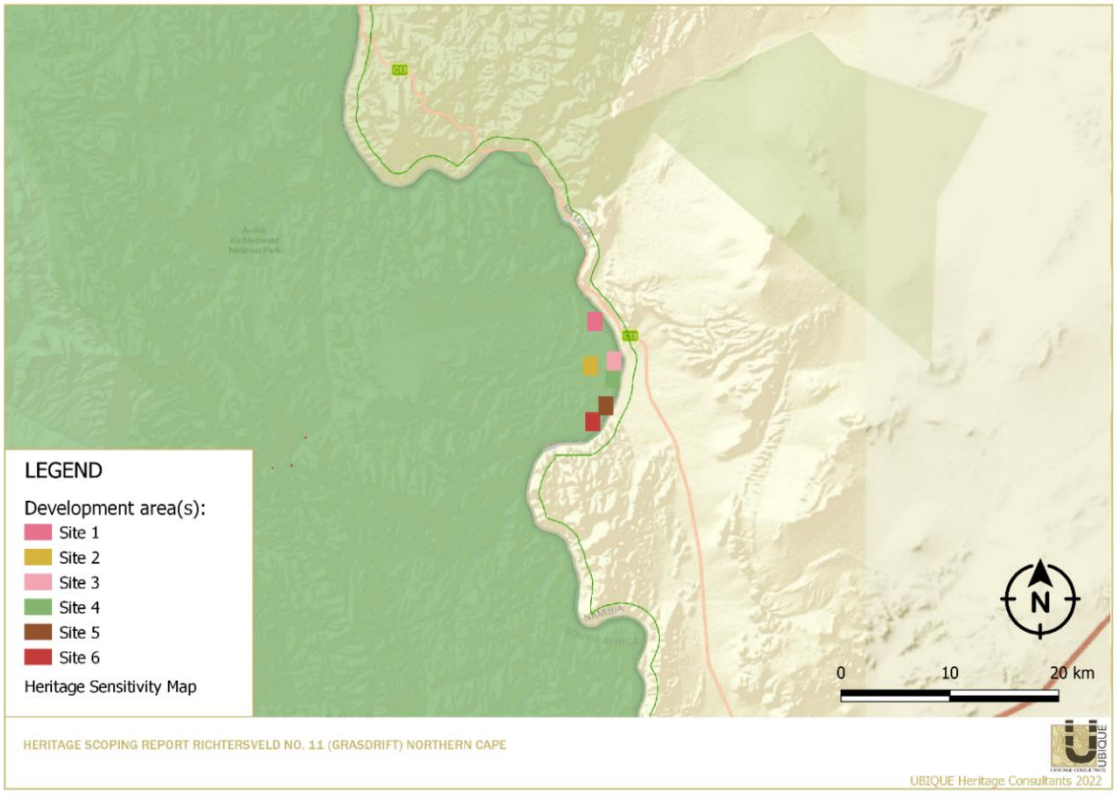

Figure 11 *The Project area indicated on the Heritage Screening tool (https://screening.environment.gov.za/)*

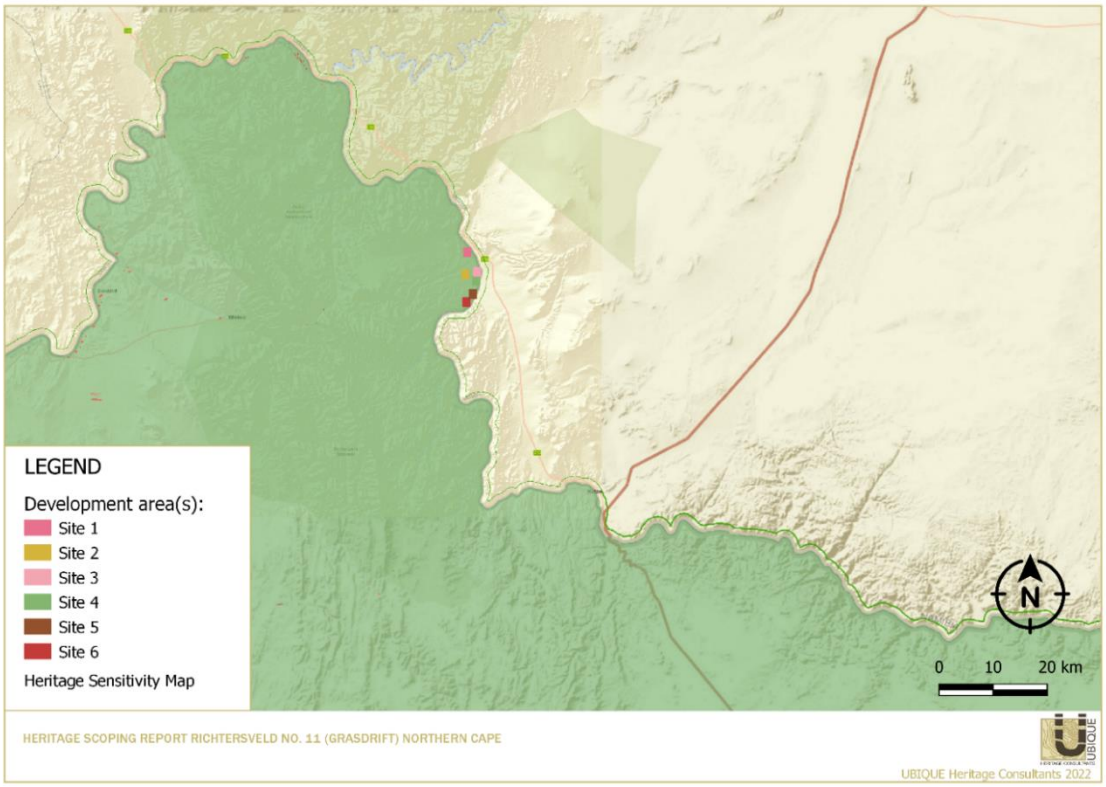

Figure 12 The Project area indicated on the Heritage Screening tool (https://screening.environment.gov.za/)

Figure 13 *Map composite of heritage resources recorded from the SAHRA database and previous HIA/AIAs in the area*

6.4 Palaeontological sensitivity

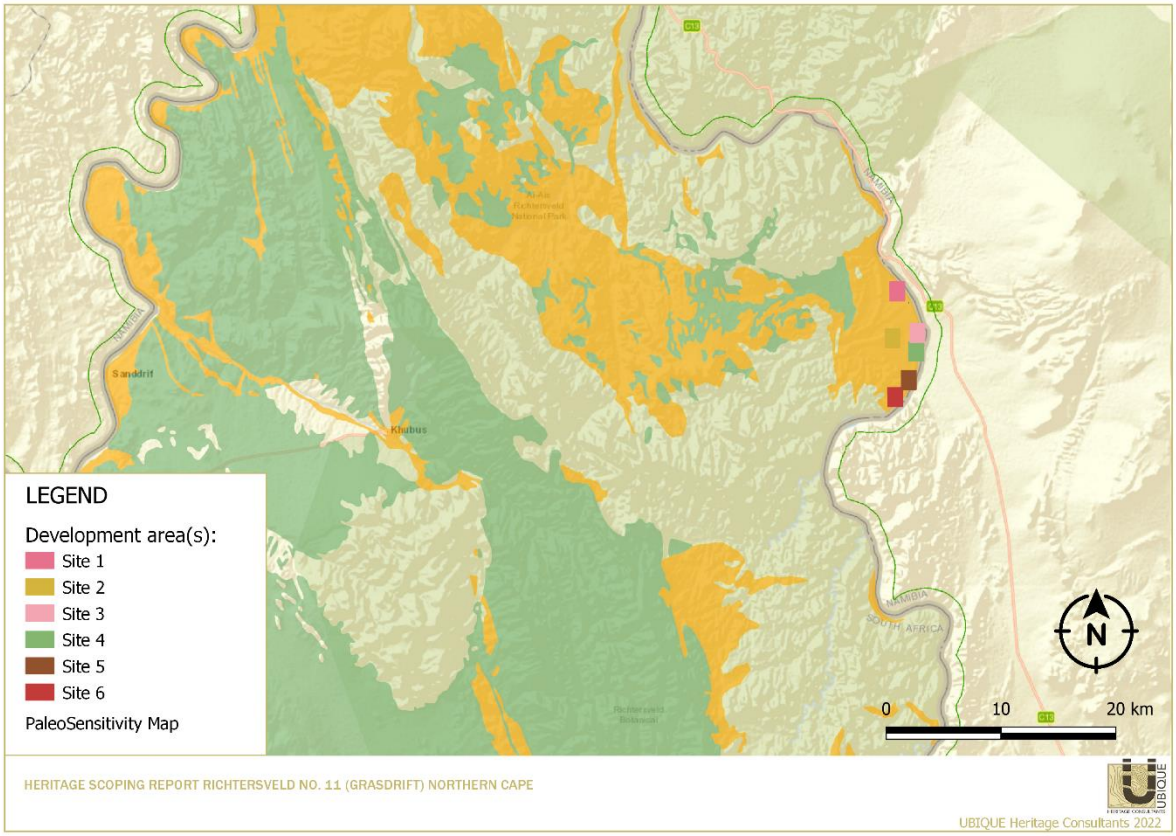

Figure 14 *The Heritage Paleo screening tool and SAHRIS PalaeoSensitivity Map, indicating Medium (yellow) and Low(green) palaeontological significance in the study area.*

(https://screening.environment.gov.za/;https://sahris.sahra.org.za/map/palaeo).

Overall, the site sensitivity rating concerning Palaeontological resources is **Moderate.**

Elize Butler (2022) from Banzai Environmental conducted a palaeontological desktop assessment for the development footprint. She determined that the proposed development is underlain by Quaternary alluvium, Diamondiferous Orange River Terrace Gravels, and the Dwyka Group. The updated geology (Council for Geosciences, Pretoria) indicates that the Dwyka Group underlies the development with only a small patch underlain by the De Hoop Subgroup. According to the South African Heritage Resources Information System, the Palaeontological Sensitivity of the Quaternary alluvium and Dwyka Group is Moderate. At the same time, that of the Diamondiferous Orange River Terrace Gravels is unknown.

Therefore, the proposed prospecting will not lead to detrimental impacts on the palaeontological heritage of the area. (Butler 2022).

7 ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

7.1 Conservation characteristics

The Richtersveld cultural and Botanical landscape was declared a World Heritage site based on its outstanding Universal Value under the following criterion, which can be found on the UNESCO website:

- **Criterion (IV)** the rich, diverse botanical landscape of the Richtersveld, shaped by the pastoral grazing of the Nama, represents and demonstrates a way of life that persisted many millennia over a considerable part of southern Africa and was a significant stage in the history of this area,
- **Criterion (V)** the 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, the indigenous community. Their seasonal pastoral grazing regimes, which sustain the extensive biodiversity of the area, were once more widespread and are now vulnerable.

According to UNESCO (2022), the Richtersveld Cultural and Botanical Landscape has complete legal protection. Early in 2007, the process to declare the land as a Heritage Area was completed. The Nama people's traditional land-use structure should be viewed as a protection system component. Maintaining grazing pastures and continuing the custom of constructing portable mat-roofed houses are the two primary targets for conservation measures. A Communal Property Association (CPA) with a Management Committee (company without profit) oversees the Richtersveld Community Conservancy (RCC). In order to manage and maintain the identified Heritage Area, a participative management plan has been put in place. The Management Plan covers management structures, infrastructure development, public awareness, promoting tourism, and monitoring and evaluating operations (UNESCO 2022).

The conservation of heritage on the floodplain of the Orange river is of high priority, as graves have been identified and recorded. The following recommendations are made based on the conservation of the existing graves:

- A Heritage Management Plan (HMP) should be implemented for floodplain heritage. As mentioned above, there are currently existing Management Plans:
    - **Management Plan Richtersveld Community Conservancy (accessed on UNESCO), and**
    - **Richtersveld National Park Management Plan 2018 – 2028.**
- If construction or mining activities cannot be avoided where the graves are located, an urgent grave relocation of all graves in the floodplain area should be done.
- The client or developer should appoint a qualified heritage agency or authority to manage floodplain heritage, which should include a Phase 2 HIA and grave relocations to rescue existing heritage from the floodplain, which is flooded from time to time.

7.2 Possible Impacts

This report presents deductions and interpretations from the historical background. The following includes potential identified impacts that may take place during the phases of the proposed development (note: we recommend a Heritage Supervisor to monitor the entire process):

- Establishment: Floodplain heritage may be impacted,
- Operation: Floodplain heritage may be impacted,
- Rehab and closure: Floodplain heritage may be impacted.

Because many burials are not always marked on the surface, it is not easy to detect the presence of human remains on the landscape. The South African Heritage Resource Agency (SAHRA) has received numerous complaints about the destruction and desecration of graves from rural communities, conservation bodies, interest groups and families of the deceased throughout the country. Many graves have been desecrated during developments. It is, thus, vital that all precautions are taken regarding graves/graveyards. The possibility of such graves being on/near the current development area should not be excluded. The presence of any graves and grave sites must be confirmed during a field survey.

The region is also well known for its living heritage. Therefore, development may negatively impact the living heritage, the “sense of place”, and the sacred connotation of the Richtersveld to the Nama-Khoi.

Regarding the impact on palaeontological resources, it is considered that the proposed prospecting will not lead to detrimental impacts on the palaeontological heritage of the area (Butler, 2022).

7.3 Possible Mitigation Measures

Based on the assessment of the potential impact of the development on possible heritage, possible mitigations include:

- Any archaeological material identified as not conservation worthy (NCW) is generally considered low significance and does not require any additional mitigation other than a Phase 1 HIA. These heritage resources might include isolated occurrences of surface scatters of cultural material found without archaeological context or low scientific potential.

- Archaeological material identified with historical, cultural and potential scientific value should be mitigated through a Phase 2 process, which includes resource recording and possible excavation, for which relevant permits will have to be acquired from SAHRA.

Alternatively, the proposed project layout must be adjusted to create an adequate buffer/safe zone for the archaeological/cultural sites.

- Structures older than 60 years are protected by the National Heritage Resources Act. Therefore, assessments of structures should be made to determine their uniqueness and scientific or vernacular significance. The destruction of any structure older than 60 years has to be motivated and accompany the application for a destruction permit from the Northern Cape Provincial Heritage Resources Authority. Structures that may not be destroyed must be protected by an adequate buffer/safe zone, with the project layout adjusted to allow maximum protection.

- Several no-go zones have already been identified. However, any additional possible no-go zones could be identified and included during the HIA survey. No development/construction may occur in these no-go zones, as it may result in the loss of heritage resources.

- In the event hidden or sub-surface sites (i.e. any evidence of archaeological sites or remains [e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations], fossils or other categories of heritage resources) are overlooked during the assessment and are uncovered are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA.

- Graves should be avoided; therefore, if graves are identified in the proposed development footprint, the mitigation measures can include the following:

    - A safety/Buffer zone of 50m, with fencing.
    - The care, upkeep, upgrading, reinforcing and management of all graves by the developer.
    - If any graves/graveyards/cemeteries are discovered, and development cannot be avoided near the graves, we recommend a Phase 2 HIA for the rescue and relocation of the graves. Permits and all actions should be in place following the NHRA.
    - If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490) must be alerted immediately as per section 36(6) of the NHRA.

7.4 Identified legal Implications and fatal flaws

The following legal implication(s) have been identified:

- The Richtersveld landscape forms part of the Cultural and Botanical Landscape dominated by a mountainous desert declared a World Heritage site, legally protected through the National Heritage Resources Act (No 25 of 1999), the World Heritage Convention Act (no 43 of 1999) and the National Environmental Management Act 107 of 1998.

- The property is also recognized as a protected area in the National Environmental Management Protected Areas, 2003 (Act 57 of 2003).

- The Richtersveld's Cultural and Botanical landscape constitutes a cultural landscape where the overall management and conservation are community-based.

- The layout plan, according to shape file maps, includes areas in Namibia. Therefore, the proposed development's impact may extend over the National border into the Namibian Border.

- Specific footprints of the various areas include the Orange river floodplain and the official high-water mark, which is problematic, even though the project description claims that no development will occur in this area.

- The Orange river floodplain is out of bounds, and a no-go zone for any development or mining is recommended. The floodplain is the most sensitive area regarding heritage and the impact of mining on existing heritage.

8 RECOMMENDATIONS

This scoping study has discovered that a range of heritage sites occur in the wider region, and similar sites should be anticipated within the study area. Every site is relevant to the Heritage Landscape, but it is projected that only a few sites in the study area could have conservation value. These recommendations are based on studies undertaken in the broader area of the proposed development. The following conclusions apply:

1. The scoping report has revealed several Stone Age occurrences/sites recorded in the region. No studies have been conducted on the property in the development footprints' immediate vicinity (less than a 10 km radius). Therefore, the possibility of open-air Stone Age sites/occurrences in the development area is highly probable. However, we expect occurrences to be low to medium significance based on evidence from the region. We recommend that a field study should be undertaken to ground-truth our findings.

2. Numerous rock engravings have been reported in the wider region. Some of these are present near areas with dolomite and water sources. Due to the substantial amount of rock engravings in the wider region and the proposed development near the Orange River, a field study should be undertaken to confirm such engravings' presence.

3. Formal and informal graveyards, including pre-colonial graves, occur widely across southern Africa. It is commonly recommended that these sites are preserved from development. The presence of any grave sites must be confirmed during a field survey and public consultation. Any graveyard(s), grave(s) or burial(s) found close to the proposed development footprint would likely be of High Local Significance.

4. Should it be impossible to avoid graveyard(s), grave(s) or burial(s) sites during development, mitigation in the form of grave relocation could be undertaken. This is, however, a lengthy and costly process. Grave relocation specialists should be employed to manage the liaison process with the communities and individuals who, by tradition or familial association, might have an interest in these graves or burial grounds, as well as manage the permit acquisition from the SAHRA Burial Grounds and Graves (BGG) Unit and the arrangements for the exhumation and re-interment of the contents of the graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

5. Due to the low palaeontological significance of the area, it is considered that the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area. (Butler 2022).

6. Several no-go zones have already been identified (Figure 1). The No-go zones are identified along the floodplain. **Any development in these areas may result in the loss of heritage resources; thus, development, associated activities, infrastructure etc., should be avoided.**

7. This scoping report estimates the probability of heritage sites/artefacts located on/near the development footprint based on available data. Due to the wide range of heritage resources within the region, the likelihood of archaeological sites/occurrences in the development area is highly probable. **Therefore, ground-truthing the BAR with a field survey of the area before the commencement of construction activities is highly recommended.**

8. This scoping report reflects the specialists' estimation of the likely impacts that may occur on said resources by the proposed MRA. The extent and significance of identified probable resources are unknown. **The final decision on whether a complete impact assessment submission is required lies with the responsible heritage resources authorities. The South African Heritage Resources Agency (SAHRA) & Northern Cape Provincial Heritage Resources Agency -** if there is reason to believe that heritage resources will be affected by construction activities and events.

9. Hidden or sub-surface sites may exist in the area. No sub-surface testing may be conducted without a permit. Therefore, sites may be missed during the field assessment. We recommend that if any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are uncovered during mining, SAHRA APM Unit must be alerted as per section 35(3) of the NHRA. If unmarked human burials are discovered, the SAHRA Burial Grounds and Graves (BGG) must be alerted immediately as per section 36(6) of the NHRA. A professional archaeologist or palaeontologist must be contracted as soon as possible to inspect the findings. If the newly unearthed heritage resources are of high significance, a Phase 2 rescue operation may be required with permits issued by SAHRA. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or costs incurred due to such oversights.

9 PLAN OF STUDY APPROACH AND METHODOLOGY FOR HIA

9.1 Desktop study

The first step in the methodology was to conduct a desktop study of the heritage background of the area and the proposed development site. This entailed scoping and scanning historical texts/records and previous heritage studies and research around the study area.

The study area is contextualised by incorporating data from previous CRM reports in the area and an archival search. The objective is to extract data and information on the area in question, looking at archaeological sites, historical sites and graves.

No archaeological site data was available for the project area. A concise account of the archaeology and history of the broader study area was compiled (sources listed in the bibliography).

9.1.1 Literature review

A literature survey was undertaken to obtain background information regarding the area. Through researching the SAHRA APM Report Mapping Project records and the SAHRIS online database (http://www.sahra.org.za/sahris), it was determined that several other archaeological or historical studies had been performed within the broader vicinity of the study area. Sources consulted in this regard are indicated in the bibliography.

9.2 Field study

Phase 1 (AIA/HIA) requires the completion of a field study to establish and ensure the following:

9.2.1 Systematic survey

A systematic survey of the proposed project area has to be completed to locate, identify, record, photograph, and describe archaeological, historical or cultural interest sites.

UBIQUE Heritage Consultants will inspect the proposed development and surrounding areas and complete a controlled-exclusive, pre-planned pedestrian and vehicular survey. An inspection of the ground's surface will be performed wherever the surface is visible. This will be done with no substantial attempt to clear brush, sand, deadfall, leaves or other material that may cover the surface and with no effort to look beneath the surface beyond inspecting rodent burrows, cut banks and other exposures fortuitously observed.

The survey will be tracked with a handheld Garmin global positioning unit (Garmin eTrex 10).

9.2.2 Recording significant areas

GPS points of identified significant areas will be recorded with a handheld Garmin global positioning unit (Garmin eTrex 10). Photographs will be taken with a Canon IXUS 185 20-megapixel camera. Detailed field notes will be taken to describe observations. The layout of the area and plotted GPS points, tracks, and coordinates will be transferred to Google Earth, and QGIS and maps will be created.

9.2.3 Definitions of heritage resources

The NHRA defines a heritage resource as any place or object of cultural significance, i.e., aesthetic, architectural, historical, scientific, social, spiritual, linguistic, or technological value or significance. These include, but are not limited to, the following wide range of places and objects:

- Living heritage as defined in the National Heritage Council Act No 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
- Ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity; definition used in KwaZulu-Natal Heritage Act 2008);
- places, buildings, structures and equipment;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds;
- public monuments and memorials;
- sites of significance relating to the history of slavery in South Africa;
- movable objects, but excluding any object made by a living person; and
- battlefields.

9.3 Determining significance

Heritage resources are considered of value if the following criteria apply:

a.	It is important in the community or pattern of South Africa's history;
b.	It has uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;

c.	It has the potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
d.	It is vital in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
e.	It exhibits particular aesthetic characteristics valued by a community or cultural group;
f.	It is essential in demonstrating a high degree of creative or technical achievement at a particular period;
g.	It has a strong or unique association with a particular community or cultural group for social, cultural or spiritual reasons;
h.	It has a strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;
i.	It is of significance relating to the history of slavery in South Africa.

Levels of significance of the various types of heritage resources observed and recorded are determined by the following criteria:

CULTURAL & HERITAGE SIGNIFICANCE	
LOW	A cultural object found out of context, not part of a site or without any related feature/structure in its surroundings.
MEDIUM	Any site, structure or feature is regarded as less important due to several factors, such as date, frequency and uniqueness. Likewise, any important object found out of context.
HIGH	Any site, structure or feature is regarded as important because of its age or uniqueness. Graves are always categorised as of a high importance. Likewise, any important object found within a specific context.

Field Ratings or Gradings are assigned to indicate the level of protection required and who is responsible for national, provincial, or local protection.

FIELD RATINGS & GRADINGS	
National Grade I	Heritage resources with exceptional qualities to the extent that they are of national significance and should therefore be managed as part of the national estate.
Provincial Grade II	Although it may form part of the national estate, heritage resources with qualities that are provincial or regional importance should be managed as part of the provincial estate.

FIELD RATINGS & GRADINGS	
Local Grade IIIA	Heritage resources are of local importance and worthy of conservation. Therefore, it should be included in the heritage register and not be mitigated (high significance).
Local Grade IIIB	Heritage resources are of local importance and worthy of conservation. Therefore, it should be included in the heritage register and mitigated (high/ medium significance).
General Protection Grade IVA	The site/resource should be mitigated before destruction (high/ medium significance).
General protection Grade IVB	The site/resource should be recorded before destruction (medium significance).
General protection Grade IVC	Phase 1 is considered sufficient recording, and it may be demolished (low significance).

9.3.1 Assessment of development impacts

A heritage resource impact may be defined broadly as the net change, either beneficial or adverse, between the integrity of a heritage site with and without the proposed development. Beneficial impacts occur wherever a proposed development actively protects, preserves, or enhances a heritage resource by minimising natural site erosion or facilitating non-destructive public use. More commonly, development impacts are adverse and can include the following:

- destruction or alteration of all or part of a heritage site;
- isolation of a site from its natural setting; and / or
- introduction of physical, chemical or visual elements out of character with the heritage resource and its setting.

Beneficial and adverse impacts can be direct or indirect and cumulative, as implied by the examples. Although indirect impacts may be more difficult to foresee, assess and quantify, they must form part of the assessment process. Therefore, the following assessment criteria have been used to assess the impacts of the proposed development on possible identified heritage resources:

CRITERIA	RATING SCALES	NOTES
Nature	POSITIVE	An evaluation of the type of effect the construction, operation and management of the proposed development would have on the heritage resource.
	NEGATIVE	

CRITERIA	RATING SCALES	NOTES
	NEUTRAL	
Extent	LOW	Site-specific affects only the development footprint.
	MEDIUM	Local (limited to the site and its immediate surroundings, including the surrounding towns and settlements within a 10 km radius);
	HIGH	Regional (beyond a 10 km radius) to national.
Duration	LOW	0-4 years (i.e. duration of construction phase).
	MEDIUM	5-10 years.
	HIGH	More than 10 years to permanent.
Intensity	LOW	Where the impact affects the heritage resource in such a way that its significance and value are minimally affected.
	MEDIUM	Where the heritage resource is altered, and its significance and value are measurably reduced.
	HIGH	Where the heritage resource is altered or destroyed to the extent that its significance and value cease to exist.
Potential for impact on irreplaceable resources	LOW	No irreplaceable resources will be impacted.
	MEDIUM	Resources that will be impacted can be replaced, with effort.
	HIGH	There is no potential for replacing a particular vulnerable resource that will be impacted.
Consequence	LOW	A combination of any of the following: • Intensity, duration, extent and impact on irreplaceable resources are all rated low. • Intensity is low and up to two of the other criteria are rated medium. • - Intensity is medium, and all three other criteria are rated low.
	MEDIUM	Intensity is medium, and at least two of the other criteria are rated medium.
	HIGH	Intensity and impact on irreplaceable resources are rated high, with any combination of extent and duration. Intensity is rated high, with all the other criteria being rated medium or higher.
Probability (the likelihood of the impact occurring)	LOW	It is highly unlikely or less than 50 % likely that an impact will occur.
	MEDIUM	It is between 50 and 70 % certain that the impact will occur.
	HIGH	It is more than 75 % certain that the impact will occur, or it is definite that the impact will occur.

CRITERIA	RATING SCALES	NOTES
Significance (all impacts including potential cumulative impacts)	LOW	Low consequence and low probability. Low consequence and medium probability. Low consequence and high probability.
	MEDIUM	Medium consequence and low probability. Medium consequence and medium probability. Medium consequence and high probability. High consequence and low probability.
	HIGH	High consequence and medium probability. High consequence and high probability.

9.4 Report

The identified heritage resources and anticipated direct, indirect, and cumulative impacts of the proposed project's development on the identified heritage resources will be presented objectively. Alternatives are offered if any significant sites are impacted adversely by the proposed project. All efforts will be made to ensure that all studies, assessments, and results comply with the relevant legislation, code of ethics, and guidelines of the Association of South African Professional Archaeologists (ASAPA). The report aims to assist the developer in managing the documented heritage resources in a responsible manner and protecting, preserving, and developing them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

An HIA/ AIA must address the following key aspects:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on heritage resources;
- an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

In addition, the HIA/AIA should comply with the requirements of NEMA, including providing the assumptions and limitations associated with the study; the details, qualifications and expertise of the person who prepared the report; and a statement of competency

10 CONCLUSION

In conclusion, the scoping report has shown that no Heritage and Archaeological Impact Assessments have been done on the proposed development area(s). However, heritage sites and resources ranging from low to high significance have been documented on the periphery of a 30-100 km radius from the study area. These sites provide the reader with the data necessary to anticipate the sites' probable significance that might accompany any projected heritage resource.

The heritage resources in the area range from Stone Age scatters, material linked to pastoral groups, rock art and sites containing colonial-era structures/artefacts, and living heritage related to the Nama-speakers of the Richtersveld. Similar resources could be in the development area, so the possibility of such heritage resources should not be unheeded. Several graves and burials have also been documented within a 40 to 60 km radius of the development footprint. Graves were identified during the preliminary site visit. The preliminary site visit revealed the area's high cultural heritage sensitivity. Therefore, our recommendation, in accordance with Section 38 of the NHRA, is that a Phase 1 archaeological field survey be undertaken to determine the presence of any heritage recourses occurring in the development area before any development activities commence. As a result of a field survey, a more accurate assessment of the impact of the development on heritage resources can be completed

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