

Cont. No.: WI24-00051
Our reference: WI301-00906/05

19 February 2024

The Environmental Commissioner
Ministry of Environment, Forestry and Tourism
Private Bag 13308
Windhoek
Namibia

Dear Mr Timoteus Mufeti,

RE APPLICATION FOR CONSENT BY HERITAGE COUNCIL SUBMITTED 24 JANUARY 2024 FOR RENEWAL OF ECC on EPL 3140


Haib Minerals (Pty) Ltd are currently applying for renewal of the existing ECC (01233) on EPL 1340 and have been requested by MEFT to submit a consent letter from the National Heritage Council of Namibia for the activities. Please be aware the application for consent (as per Sections 53(7) and 55(8) of the National Heritage Act, 2004 (Act No.27 of 2004)) was submitted on the 24th January 2024 and is currently being processed. The application for consent may take up to 3 months thus exceeding the required period to submit the ECC (01233) renewal requirements. Towards ensuring the period is not exceeded, proof of submission of the application of consent from is provided. See Appendix A for application and Appendix B for proof of submission attached hereto.

Your consideration and assistance is highly appreciated.

Yours sincerely,



Joseph Mulders
Senior Environmental Scientist, EAP
Signed date: 19/02/2024



Veronique Daigle
Director Mining, Knight Piésold Namibia



National Heritage Council of Namibia

Technical Department

52 Robert Mugabe Avenue, Windhoek
Private Bag 12043, Ausspannplatz, Windhoek
Tel: (061) 244375 • Fax: (061) 246 872 • Email: info@nhc-nam.org

OFFICE OF THE DIRECTOR

APPLICATION FOR CONSENT

(Sections 53(7) and 55(8) of the National Heritage Act, 2004 (Act No.27 of 2004))

CONDITIONS AND INSTRUCTIONS

1. The receipt issued serves as a reference when making enquiries.
2. Works and activities applied for under section C, of this application, is subject to an environmental impact assessment at the applicant's expense.
3. Instructions for completion:

Applicants must complete the relevant parts of this application.

A. APPLICANT'S DETAILS

1. Name and address of applicant
 - Mr Pierre Léveillé,
 - Managing Director, Haib Minerals (Pty) Ltd
 - EPL 3140 License Holder
 - P.O. Box 87186, Eros - Namibia
2. Full name and designation of the person in charge of undertaking the works or activities:
 - Mr Pierre Léveillé,
 - Managing Director,
 - Haib Minerals (Pty) Ltd,
3. Full name and personal details of researcher, contractor or person in charge of the proposed works or activities:
 - Mr Pierre Léveillé, has appointed Mr Joseph Mulders (Knight Piesold) and Dr Lima Maartens (Environmental Consulting) as Environmental Assessment Practitioners for the renewal of ECC for EPL 3140 and the development of ECC for ML 3140 application (See attached Appendix A appointment letter and ToR).
 - Dr John Kinahan, Registered Heritage Specialist, has been appointed to conduct the required Heritage Impact Assessment (HIA)

4. Academic qualifications, skills, occupation and competencies of the person in charge mentioned under A2 above.

- **Name:** Dr John Kinahan
 - **Qualification:** PhD University of the Witwatersrand, 1989;
 - **Skills:** A respected member of the Archaeological community of practice: Adjunct Faculty Member, School of Evolution & Social Change, Arizona State University; Honorary Research Fellow, School of Geography, Archaeology and Environmental Studies, University of the Witwatersrand, South Africa; Honorary Curator of Archaeology, National Museum of Namibia; Advisory editorial board member Southern African Field Archaeology.
 - **Occupation:** Archaeological Specialist
 - **Competencies:** Heritage Impact Studies- Carried out over 350 field surveys and assessments of mining, infrastructure and related projects during the last twenty-five years.
-

5. Previous permits issued in Namibia:

None _____

6. Period for which permit is required: From **March 2024** to **March 2025** ___
to _____

7. Date by which permit is required: **1 March 2024** _____

B: WORKS OR ACTIVITIES

15. Geographic location and address (farm, village, settlement, town, region, magisterial district, constituency, Global Positioning System coordinates) of the site, protected place or protected object where works or activities are proposed:

- EPL 3140 is located in the South of Namibia, approximately 9 km (from the South-Western boundary) from the town of Noordoewer. The B1 road forms the north-western boundary of the EPL. The Orange River runs immediately to the south of the EPL
- **Co-Ordinates:** Lat: -28°39'42.88"S; Lon: 17°50'59.10"E
- **Region:** //Karas
- **District:** Karasburg
- **Registration Division:** V

Archaeological Survey conducted in 1997 (Kinahan) – See attached Appendix B

Field survey for Heritage Impact Assessment conducted December 2023 (Kinahan) – See attached Appendix C letter from John Kinahan

20 Government Gazette 1 September 2005 No. 3490

16. Detailed description of the nature of works or activities for which the permit is applied for: (e.g. excavation, construction, filming etc) (*Attach additional and supporting information if the space on the form is insufficient.*)

Title of Activity:

Proposed Additional Exploration Activities on EPL 3140, Noordoewer, //Karas Region

Nature of Activity:

Haib Minerals (Pty) Ltd has conducted a comprehensive exploration programme on EPL 3140 and would like to continue with the activities. The exploration programme includes the following:

- 1) Operation of vehicles and drilling machinery.
- 2) Drilling of 5 000m, approximately 25 holes spread across the target area
- 3) Abstraction of surface water from the orange river for drilling purposes (up to 20 000 Liters per day)
- 4) Resource mapping
- 5) Refining the resource model
- 6) Employees and contractors on site during daytime hours.
- 7) Maintenance of access roads
- 8) Storage and transport of vehicle and machinery fuel (hydrocarbons) (approx. 500 Liters)

See attached Appendix D Environmental Management Plan for EPL 3140

See attached Appendix E ECC for EPL 3140

C: UNDERTAKING BY APPLICANT

17. I Mr Pierre Léveillé (the person in charge of undertaking the works or activities) and (where applicable) being head of the Haib Minerals (Pty) Ltd, hereby undertake to strictly observe the terms and conditions under which the National Heritage Council may issue the permit.



Signature _____ dated 22nd January 2024 _____

Consent No......
(Consecutive number & year of issue)

CONSENT

APPENDIX A

Knight Piésold Consulting (Pty) Ltd Appointment Letter and ToR

Cont. No.: WI23-00388
Our reference: WI301-00906/05

26 October 2023

The Environmental Commissioner
Ministry of Environment, Forestry and Tourism
Private Bag 13308
Windhoek
Namibia


Dear Mr. Timoteus Mufeti

RE APPOINTMENT OF ENVIRONMENTAL CONSULTANT (EPL 3140)

Haib Minerals (Pty) Ltd hereby confirms that Mr. Joseph Mülders, Senior Environmental Scientist at Knight Piésold and Dr. Lima Maartens T/A LM Environmental Consulting, have been appointed as the Environmental Assessment Practitioners for the Renewal of the Environmental Clearance Certificate for Exclusive Prospecting License Area EPL 3140.

Your assistance is highly appreciated.

Yours sincerely



Jean-Luc Roy
COO, Director

21/10/23

Date

27 July 2023

Mr. Jean-Luc Roy
Chief Operating Officer (COO)
Deep-South Resource
Suite 888, 700 West Georgia,
Vancouver, British Columbia
Canada, V7Y 1G5

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www.knightpiesold.com

File No.: WI301-00906/05-P.01
Cont. Number: WI23-00195

Dear Jean-Luc,

Re: Proposal for Environmental Impact Assessment for the Haib Copper Project

1.0 INTRODUCTION

Knight Piésold Consulting (Pty) Ltd (KP) was appointed by Deep-South Resources in 2021 to undertake a scoping assessment for the proposed Haib Copper Project. The proposed facility is situated in the //Kharas region of Southern Namibia, near the Orange River which borders South Africa.

KP completed the draft scoping assessment in 2021 inclusive of the following:

- Environmental Reconnaissance and Roadmap to Environmental Authorisation
- Water Supply Options Study
- Power Supply Options Study
- Heap Leach Pad Conceptual Assessment

South Deep Resources requested a proposal for the further environmental studies recommended during the scoping assessment. This letter presents our intended approach and provides a detailed budget estimate for the Environmental and Social Impact Assessment (ESIA).

The SoW discussed comprises environmental and hydrogeological feasibility studies and a public participation programme required for assessing overall feasibility of proposed project and obtaining the necessary authorisations. Required authorisations include an Environmental Clearance Certificate (ECC) from the Ministry of Environment, Forestry and Tourism (MEFT), a Mining Licence from the Ministry of Mines and Energy (MME) and Water Abstraction Permit from the Ministry of Agriculture, Water and Land Reform (MAWLR). Exploration activities on EPL 3140, Noordoewer, //Karas Region are currently authorised under the existing ECC valid from 15 February 2021 to 15 February 2024.

2.0 APPROACH

The SoW has been divided into 7 main tasks as follows:

- Task 100 – Project Management
- Task 200 – Baseline Studies
- Task 300 – Consultations
- Task 400 – Scoping and EIA
- Task 500 – Water Permits

- Task 600 – Mining Licenses
- Task 700 – Closure Planning.

The tasks culminate in the development of a project level Environmental Management Programme (EMPr) and submissions for the necessary authorisations described above.

The project will be initiated upon receipt of a purchase order from Deep-South Resources. KP is ISO 9001, 14001, and 45001 certified and therefore we will adhere to these standards in the project management of all aspects of the work.

Specialist studies are undertaken by the KP team members and various sub contractors of which are discussed more detail below.

3.0 UNDERSTANDING OF THE PROJECT

The Project involves the development of feasibility studies for the Haib Copper Project towards development of a project level Environmental Management Programme (EMPr) and submissions for the necessary authorisations.

The Project comprises a large copper resource to be mined from an open pit and processed through a heap leaching facility at a mined throughput of 20 million tonnes per annum (Mtpa). Life of mine is approximately 22 years and a total of 400 million tonnes (Mt). The Haib copper deposit is in the //Kharas region, near the Orange River at the border with South Africa, approximately 780 km by road South of Windhoek, the capital of Namibia. Proposed project infrastructure includes the following:

- an open pit (made up of three pits which will eventually form one mega pit),
- a crushing and agglomeration circuit,
- a heap leach processing facility and
- a solvent extraction plant to recover the copper.

Ancillary components include:

- Water abstraction pipeline or groundwater abstraction infrastructure (depending on outcomes of feasibility)
- Power lines and substation
- Access roads.

A locality map of the proposed Project site is shown in Figure 1.

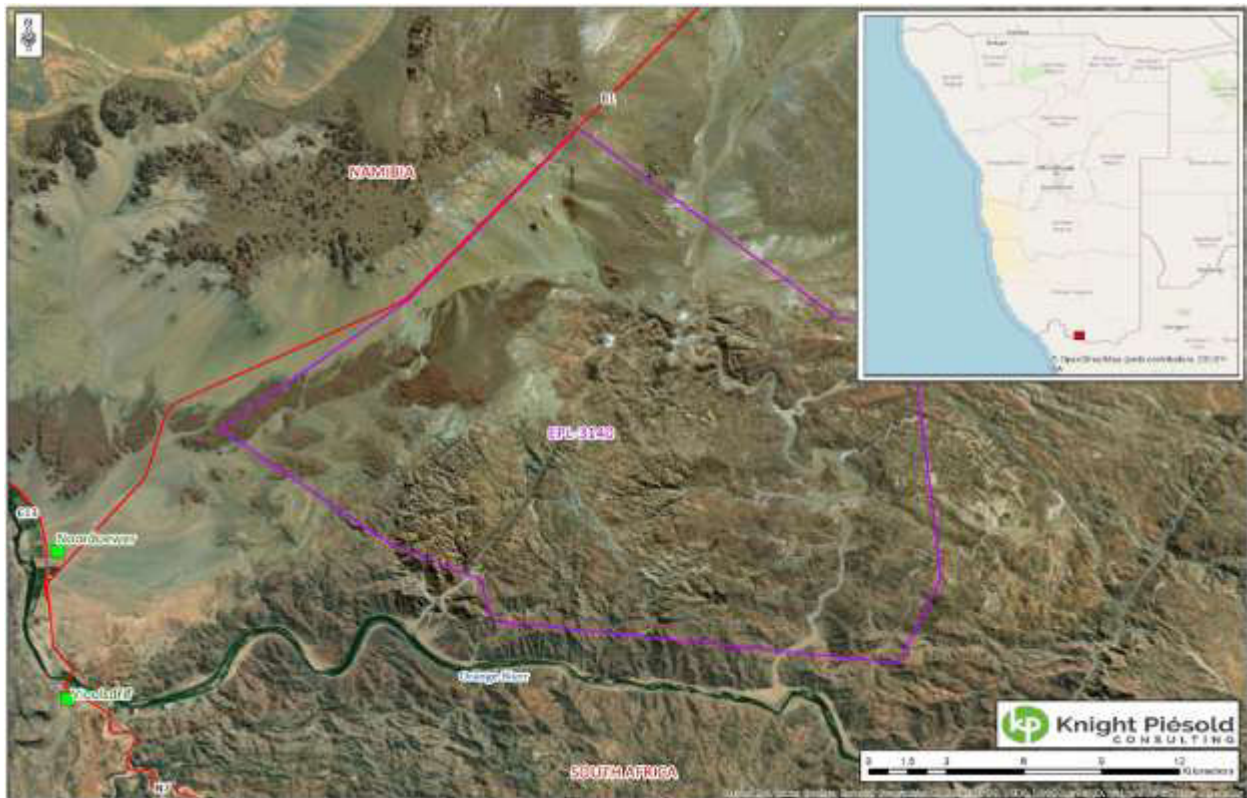


Figure 1: The Haib Copper Deposit and EPL3140 in Namibia along the Orange River

4.0 SCOPE OF WORK

Description	Methodology / notes on scope assumptions
Task 100 - PROJECT MANAGEMENT	
Project set up and inception meeting via Teams	Knight Piésold is ISO 9001 accredited globally and our projects are managed using a web-based project management system to track tasks, deliverable due dates and budget. Project management will entail: <ol style="list-style-type: none"> 1. Conduct inception meeting with the client and project team to initiate the project 2. Review design documents and project specifications and finalise timelines and project milestones 3. Continuous liaison with client providing progress feedback and requests for clarity/ data/ information. 4. Continuous liaison with project team and sub-consultants 5. Ongoing financial management and administration
Project management and financial management	
Client, team and sub-consultant liaison	
TASK 200 - BASELINE STUDIES	
Biodiversity Specialist Study	

Description	Methodology / notes on scope assumptions
	<p>Objective: To determine the effect that the proposed Haib Copper Project developments may have on the terrestrial bio-physical environment (vertebrate fauna & flora) within the development area and immediate surroundings (Noordoewer area).</p> <p>This will be done through implementing the following methodology:</p> <ol style="list-style-type: none"> 1. Phase 1: Literature review <ol style="list-style-type: none"> a. A literature study will be conducted on existing as well as “recent” relevant publications as well as the vertebrate fauna & flora known or expected to occur in the general area. This would include rare & endangered (R&E), threatened, protected, endemic, etc. species as determined by the Namibian and International legal status for such species. 2. Phase 2: Site Visit & Fieldwork <ol style="list-style-type: none"> a. A visit to the proposed Haib Copper Project area (area of interest portions only) will be conducted to determine the actual biodiversity at the proposed development site will be conducted during the same period and will include: <ol style="list-style-type: none"> i. Small mammal transects to determine small mammal diversity in the area ii. Larger mammal presence will be determined in the area iii. Reptile & amphibian transects (diurnal & nocturnal) to determine reptile & amphibian diversity in the area iv. Bird transects to determine avian diversity in the area v. Flora transects to determine plant diversity in the area 3. Phase 3: Report <ol style="list-style-type: none"> a. Results (literature study and fieldwork) of the bio-physical issues for the proposed Haib Copper Project including other general issues for the proposed development area will be presented. b. Possible adverse effects of potential development on the vertebrate fauna & flora (i.e., endemic, endangered, etc. species) will be presented. c. Impact assessment & practical mitigation measures will be included. d. This report will be finalised within the time scale of the proposed EIA study.
Aquatics Specialist Study	
	<p>Objective: To determine the effect that the proposed Haib Copper Project developments may have on the aquatic bio-physical environment within the development area and immediate surroundings.</p> <p>The objective will be achieved through the following:</p> <ol style="list-style-type: none"> 1. Phase 1: Literature Review <ol style="list-style-type: none"> a. Review previous studies b. Review applicable legislation and standards c. Consult available ecological databases, aerial imagery, topographical maps and identify target areas for survey d. Review species distribution lists to identify Species of Conservation Concern (SCC) 2. Phase 2: Field work <ol style="list-style-type: none"> a. Two seasonal (dry and wet season) field investigations conducting the following aquatic biodiversity analysis: <ol style="list-style-type: none"> i. Water quality (SANS241), ii. diatoms, iii. fish and iv. macro-invertebrates’ assessments

Description	Methodology / notes on scope assumptions
<p>3. Phase 3: Reporting</p> <ol style="list-style-type: none"> a. Analyse all site data and compile species lists b. Review results of water quality analysis and compare to Namibia and international standards c. Evaluate baseline data and provide aquatic ecological sensitivity maps with detail on the ecological aspects of concern d. Conduct an impact assessment, taking the mitigation hierarchy into account e. Provide mitigation / management measures and monitoring requirements 	
<p>Hydrogeology Specialist Study</p> <p>Objective: Undertake a hydrogeological study to determine effect that the proposed Haib Copper Project developments may have on groundwater resources and determine the quality and availability of groundwater to augment the proposed main surface water supply which is proposed to be sourced from the Orange River.</p> <p>The objective will be achieved through the following:</p> <ol style="list-style-type: none"> 1. Task 1: Project Management <ol style="list-style-type: none"> a. A kick-off meeting will be held using Microsoft Teams (or similar) within 1 week of award of the contract. During the kick-off-meeting the following details will be discussed/agreed: <ol style="list-style-type: none"> i. Contact details for various members of staff. ii. Confirmation of staff members roles and responsibilities. iii. Confirmation of mutual understanding of the Scope of Work. iv. Details as to how to access any data room that may exist. v. Agreement on style of weekly project updates. vi. Agreement on timelines. vii. Confirming goals and objectives of the site visit and assessing availability of mine site staff to facilitate the site visit. viii. Financial management details including invoice processing procedures. 2. Task 2: <ol style="list-style-type: none"> a. Hydrocensus <ol style="list-style-type: none"> i. KP have allowed for conducting a site walkover and hydrocensus. The site walkover will be used to allow the visiting Hydrogeologist to become acquainted with the site. We shall: <ol style="list-style-type: none"> 1. Undertake a site walkover and identify various hydrogeological/hydrological features and make observations with respect to possible historical surface water flow. 2. Visit boreholes to determine in-situ groundwater quality parameters and to determine water levels. 3. Take measurement of in-situ surface water quality parameters (if present). 4. Identify areas of waste deposition/accumulation. 5. Produce an annotated map of areas of potential concern and identify sampling locations. 6. Obtain up to five bailed groundwater samples of groundwater for subsequent chemical analysis. 7. Water field parameters, including pH; electrical conductivity, and oxidation-reduction potential (ORP) will be monitored prior to sampling using calibrated portable hand-held equipment. 	

Description	Methodology / notes on scope assumptions																																																								
	<p>ii. Photographs will be taken and a technical memo recording the event with be produced.</p> <p>b. Aquifer Testing</p> <p>i. Opportunistic aquifer testing will be undertaken at existing boreholes and, if available, recently drilled geotechnical boreholes. Aquifer testing will be undertaken using a combination of the following methods:</p> <ol style="list-style-type: none"> 1. Falling Head: <ol style="list-style-type: none"> a. The hole is filled with water and the change (decrease) in the water level in the hole over time is observed until the equilibrium position is reached (corresponding to the groundwater table in the vicinity). 2. Rising Head: <ol style="list-style-type: none"> a. The water in the borehole is pumped or bailed to a level lower than the groundwater table in the vicinity and the change (increase) in water level in the borehole over time is observed until the equilibrium position is reached. 3. Constant Head: <ol style="list-style-type: none"> a. The hole is filled with water and the (constant) flow rate required to maintain the water level in the hole is measured. <p>c. Geophysical Survey</p> <p>i. If after review of the available site-specific information it is considered that a geophysical survey is required to further inform understanding of the site, development of the Conceptual Hydrogeological Model (CHM) and improved construction of the Numerical Hydrogeological Model (NHM) then KP will inform the client of this recommendation. Currently, we have allowed for 1 week of site supervision for a geophysical survey; however, we have not allowed for third party contractor costs for conducting such a survey.</p> <p>d. Chemical Analysis</p> <p>i. Ground water samples will be submitted to a South African National Accredited System (SANAS) accredited laboratory for the suite of analysis shown below:</p> <p style="text-align: center;">Table 1-1: Proposed Chemical Analysis for Water Samples</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #4CAF50; color: white;">Determinand</th> <th style="background-color: #4CAF50; color: white;">Unit</th> <th style="background-color: #4CAF50; color: white;">Determinand</th> <th style="background-color: #4CAF50; color: white;">Unit</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td>-</td> <td>Magnesium as Mg</td> <td>mg/L</td> </tr> <tr> <td>Electrical Conductivity</td> <td>mS/m</td> <td>Potassium as K</td> <td>mg/L</td> </tr> <tr> <td>Total Dissolved Solids</td> <td>mg/L</td> <td>Sodium as Na</td> <td>mg/L</td> </tr> <tr> <td>Total Suspended Solids</td> <td>mg/L</td> <td>Phenolic compounds</td> <td>mg/L</td> </tr> <tr> <td>Total Alkalinity</td> <td>mg/L</td> <td>Manganese as Mn</td> <td>mg/L</td> </tr> <tr> <td>Chemical Oxygen</td> <td>mg/L</td> <td>Boron as B</td> <td>mg/L</td> </tr> <tr> <td>Chlorides as Cl</td> <td>mg/L</td> <td>Chrome Total and</td> <td>mg/L</td> </tr> <tr> <td>Ammonia (NH₃-N)</td> <td>mg/L</td> <td>Copper as Cu</td> <td>mg/L</td> </tr> <tr> <td>Fluoride as F</td> <td>mg/L</td> <td>Cadmium as Cd</td> <td>mg/L</td> </tr> <tr> <td>Nitrate as NO₃</td> <td>mg/L</td> <td>Cyanide as CN</td> <td>mg/L</td> </tr> <tr> <td>Sulphates as SO₄</td> <td>mg/L</td> <td>Lead as Pb</td> <td>mg/L</td> </tr> <tr> <td>Total Inorganic Nitrogen</td> <td>mg/L</td> <td>Mercury (Hg)</td> <td>mg/L</td> </tr> <tr> <td>Calcium as Ca</td> <td>mg/L</td> <td></td> <td></td> </tr> </tbody> </table> <p>3. Task 3: Reporting and Modelling</p> <p>a. Document Review</p> <p>i. KP will review all existing information made available and/or that is accessible in the public domain. It is envisaged that this information will include, but not necessarily be limited to the following:</p> <ol style="list-style-type: none"> 1. Borehole drilling logs. 	Determinand	Unit	Determinand	Unit	pH	-	Magnesium as Mg	mg/L	Electrical Conductivity	mS/m	Potassium as K	mg/L	Total Dissolved Solids	mg/L	Sodium as Na	mg/L	Total Suspended Solids	mg/L	Phenolic compounds	mg/L	Total Alkalinity	mg/L	Manganese as Mn	mg/L	Chemical Oxygen	mg/L	Boron as B	mg/L	Chlorides as Cl	mg/L	Chrome Total and	mg/L	Ammonia (NH ₃ -N)	mg/L	Copper as Cu	mg/L	Fluoride as F	mg/L	Cadmium as Cd	mg/L	Nitrate as NO ₃	mg/L	Cyanide as CN	mg/L	Sulphates as SO ₄	mg/L	Lead as Pb	mg/L	Total Inorganic Nitrogen	mg/L	Mercury (Hg)	mg/L	Calcium as Ca	mg/L		
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Description	Methodology / notes on scope assumptions
	<ol style="list-style-type: none"> 2. Drilling specifications. 3. Pumping test data. 4. Pump specifications. 5. Piezometric maps. 6. Records of borehole abstraction rates. 7. Borehole licence data. 8. Regional and local geological maps. 9. Geological memoirs and geological studies. 10. Groundwater level monitoring records. 11. Previous Numerical Modelling reports and modelling files. <p>ii. The purpose of the document review is to assess the appropriateness of data collection and modelling undertaken for the site and to inform the subsequent field activities. KP will produce a record of the information reviewed and identify possible data gaps.</p> <p>b. Modelling</p> <ol style="list-style-type: none"> i. It is proposed to develop a Conceptual Hydrological Model (CHM) for the site. The CHM will be informed following review of available geological, hydrogeological and topographical data. The CHM will be further updated with any new data acquired from the proposed geotechnical fieldwork and possible geophysical survey and developed as a regional 3D Hydrostratigraphic Model using Leapfrog Works®. Available data will be imported and analysed in Leapfrog Works®; this will include structural and geotechnical information, subject to availability. ii. The 3D Hydrostratigraphic Model will be used as the basis for the Numerical Hydrological Model (NHM) (produced in FEFLOW) which will be updated to quantify the available resource of the aquifer, the extent of the drawdown cone associated with groundwater abstraction from boreholes and though open pit mining, potential for water supply, and impact on identified receptors. iii. Compilation of a comprehensive conceptual and numerical model will be used to simulate the following scenarios and will be supported with information from the Geochemical Assessment: <ol style="list-style-type: none"> 1. Steady-state calibration based on water levels. 2. High-level groundwater flow and mass migration of key parameters to estimate the potential plume migration from key mining infrastructure and to determine the impact the mining may have on groundwater quality for Life of Mine (LOM). 3. High-level post-closure understanding of the groundwater rebound and continued mass loading and plume migration over time. iv. There is only limited information available to support construction of the NHM. All assumptions made in constructing the model and associated limitations of the model will be recorded <p>c. Hydrological Reporting</p> <ol style="list-style-type: none"> i. A hydrogeological assessment report will be produced which will include the following sections: <ol style="list-style-type: none"> 1. Introduction to the Project. 2. Scope of Work and Objectives 3. Documents Reviewed. 4. Site Setting 5. Fieldworks Undertaken

Description	Methodology / notes on scope assumptions
	6. Conceptual Hydrogeological Model 7. Numerical Hydrogeological Model 8. Risk Assessment 9. Conclusions with respect to the hydrogeological characterisation of the site. 10. Recommendations for further site assessment, if required.
Geochemical Specialist Study	
<p>Objective: Undertake geochemical testing to assess the potential of geochemical risk of acid rock drainage and metal leaching for potential mine waste and stockpiles that may be generated at the mine.</p> <p>The objective will be achieved through the following:</p> <ol style="list-style-type: none"> 1. Task 1: Project Management <ol style="list-style-type: none"> a. On initiation of the project, a virtual kick-off meeting will be held between the project team and the Client. This will enable: <ol style="list-style-type: none"> i. Establishment of focal points/communication lines between the project team. ii. Confirmation of the scope of work. iii. Agreement on the procedures and guidelines to be used for the project. iv. Provision of project data. v. Provision of any other information required to successfully undertake the project. b. Attend project meetings when required or deemed necessary, in addition to ongoing email communication related to information or issues. Issue a monthly memo summarising the works undertaken to date. 2. Task 2: Sampling and Chemical Analysis <ol style="list-style-type: none"> a. Sampling <ol style="list-style-type: none"> i. KP proposes that a KP Geochemist from Windhoek or Sandton offices visit the site and collect up to 6 samples of material (3 to 5 kg per sample) of various material types. One day on site should be sufficient for all fieldwork. The samples will then be submitted to a South African National Accredited System (SANAS) accredited laboratory with the results used to characterise the long-term acid generation potential of the samples. b. Chemical Analysis <ol style="list-style-type: none"> i. Samples representative of potential waste type will be selected for analysis and mineral characterisation. Waste rock samples will undergo laboratory and chemical analysis determine the acid generating potential and leaching of waste rock, as follows: <ol style="list-style-type: none"> 1. Acid Base Accounting (ABA) <ol style="list-style-type: none"> a. Modified Sobek NP, paste pH, Total Sulphur, Sulphate Sulphur, Sulphide Sulphur, Carbonated Carbon and Neutralization Potential 2. Minerology <ol style="list-style-type: none"> a. X-Ray Diffraction (XRD) analysis 3. Geochemical Source tests (leaching potential) <ol style="list-style-type: none"> a. Synthetic Precipitation Leaching Procedure (SPLP, EPA method 1312) 4. Net Acid Generation (NAG) test <ol style="list-style-type: none"> a. Modified Sobek method 3. Task 3: Assessment and Reporting 	

Description	Methodology / notes on scope assumptions
	<ul style="list-style-type: none"> a. Data Review and Assessment <ul style="list-style-type: none"> i. Upon receipt of the data requested, KP will undertake a desktop study to collate and analyse the data received and identify any data gaps. The required data will include, but not limited to: <ul style="list-style-type: none"> 1. Available literature i.e., existing geochemical characterisation and hydrogeological reports 2. EIA/baseline study of the proposed mine (If available) 3. Overview of geological model of the mine 4. Groundwater monitoring data and information 5. Any concept mine pit and Waste Rock Dump (WRD) plans 6. Existing geochemical rock mineral characterisation data 7. Extract of geological drill database ii. The data review and gap analysis will aid in planning the geochemical characterisation assessment in terms of additional data needed, planned sample locations and sample-collection procedures during the assessment. b. Reporting <ul style="list-style-type: none"> i. Field Report <ul style="list-style-type: none"> 1. Following completion of the fieldwork a Field Report Technical Memo will be produced summarising the field works undertaken, field measurements obtained, and details of samples gathered in the field. The Field Report Technical Memo will be issued within five working days of departure from site. ii. Comprehensive Report <ul style="list-style-type: none"> 1. A comprehensive report will be produced outlining a high level acidic and metalliferous risk profile for each satellite deposit with recommendations. Based on the static results, the report will outline recommended kinetic testing program to be conducted. The report will include the following: <ul style="list-style-type: none"> a. Introduction to the Project b. Scope of Work and Objectives c. Fieldwork Undertaken d. Documents Reviewed 2. Chemical Analysis undertaken 3. Data Assessment 4. Conclusions with respect to the geochemical characterisation assessment 5. Recommendations for further testing, if required iii. The comprehensive report will also include several drawings, specifically: <ul style="list-style-type: none"> 1. Site Location 2. Sampling Locations 3. Conceptual Site Model
Archaeological Specialist Study	
Objective: To determine the effect that the proposed Haib Copper Project developments may have on the archaeological components within the development area and immediate surroundings.	
This will be done through implementing the following methodology: <ul style="list-style-type: none"> 1. Review of existing archaeological records 2. Carry out detailed site survey on foot 3. Document all archaeological materials according to standard procedures 4. Assess archaeological significance and vulnerability of any sites found 	

Description	Methodology / notes on scope assumptions
<p>5. Compile assessment and impact report.</p>	<p>The study includes an assessment of heritage as a requirement by the provisions of the Heritage Act.</p>
<p>Social Specialist Study</p>	
<p>Objective: To determine the effect that the proposed Haib Copper Project developments may have on the socio-economic conditions within the development area and immediate surroundings and propose mitigation measures.</p>	
<p>The social specialist study is designed around four objectives namely:</p> <ol style="list-style-type: none"> 1. to understand the socio-economic conditions prevailing in the area that will “receive” the proposed project and prepare a socio-economic profile 2. to anticipate the potential positive and negative impacts the project may have on the receiving environment and the people that reside there 3. to assess the impacts and suggest avoidance or mitigation measures for negative impacts and enhancement measures for potential positive impacts 4. to assess the options related to the ability of surrounding towns to accommodate incoming staff and determine the requirements for town planning to design and service the required land for residential and ancillary services to accommodate the impact of the proposed mine 	
<p>Key elements of the social study will be conducted through close collaboration with the project Environmental Assessment Team.</p>	
<p>To facilitate proper control and management, the assignment is divided into four phases as follows:</p> <ol style="list-style-type: none"> 1. Phase 1 deals with the familiarisation of the team with the situation on site in Noordoewer and to meet with and brief the authorities and key stakeholders about the assessment. The phase objectives are: <ol style="list-style-type: none"> a. To procure a base map of the study area at local and regional scale b. To do a reconnaissance site visit and meet with the Karas Regional Council, Noordoewer Settlement Office and other direct stakeholders c. To contribute to the stakeholders database d. To review and finalise the methodology after the site visit 2. Phase 2 deals with the public consultation and data collection process. The objectives of this phase are to: <ol style="list-style-type: none"> a. Do a stakeholder analysis and prepare a stakeholder engagement plan b. Together with the Environmental Assessment team, prepare a Background Information Document (BID) and presentation c. Together with the Environmental Assessment team hold a public meeting where the project is presented and where stakeholders are afforded the opportunity to seek clarification and identify the potential positive and negative issues and impacts of the proposed mine 3. Phase 3 comprise the social and town planning studies and the assessment of socio-economic and planning impacts. The first part of the phase entails the compilation of socio-economic background information which is required to understand the environment within which the project will take place which includes the following: <ol style="list-style-type: none"> a. Provide general social and economic information about the site and its surrounds. The “surrounds” include the village of Noordoewer and the farming, tourism and conservation activities taking place in the area. Grunau is located about 140 km by road from the mine 	

Description	Methodology / notes on scope assumptions
	<p>site. Karasburg is even further (166 km) while Aussenkehr is 52 km away, but this settlement is not planned and has major issues related to accommodating permanent and seasonal workers. It therefore seems logical to concentrate on Noordoewer as the “service centre” for the mine and also the most likely source of accommodation for mine personnel and other support services.</p> <ol style="list-style-type: none"> b. Provide a demographic profile of the people residing in Noordoewer as well as the Karasburg Constituency as the sub region within which the project is located c. Understand the planning context surrounding the project. Noordoewer is a declared settlement and is managed by the Regional Council through a Control Administrative Officer at the Settlement Office. Planning and development of the settlement is largely done from the regional office in Keetmanshoop. However, the current status of planning and the availability of serviced land for various land uses that may be required by the mining activities is unknown <p>The second part of the phase is the preparation of a social impact assessment. The objectives of this part of the phase are to:</p> <ol style="list-style-type: none"> a. Assess the issues and impacts objectively and identify mitigation and management actions that would either avoid or lessen the negative impacts and enhance the positive impacts b. Contribute the key actions required to the Environmental Management Programme (EMPr) to be used during the implementation and operations phases of the project <p>4. Phase 4 rounds off the public consultation process in the form of formal public feedback and the finalisation of the assessment for inclusion into the EIA. The objectives of this Phase are to:</p> <ol style="list-style-type: none"> a. Ensure that the draft EIA report is accessible to all registered stakeholders through the provision of digital copies b. Allow a final input from stakeholders c. Finalise the reports for submission
Air Quality and Noise Specialist Study	
<p>Objective: To determine the effect that the proposed Haib Copper Project developments may have on noise and air quality within the development area and immediate surroundings.</p> <p>This will be achieved through conducting baseline surveys, quantitative modelling and impact assessments for noise and air quality.</p> <ol style="list-style-type: none"> 1. Task 1: Baseline Surveys <ol style="list-style-type: none"> a. Baseline Noise Surveys <ol style="list-style-type: none"> i. The noise survey will comprise measurements collected at 10 locations on and around the concession area (20-minute measurements). Night-time boundary measurements can be conducted where it is anticipated that noise levels will substantially deviate from daytime levels, and where security is available ii. Noise monitoring will be conducted through the use of a type 1 fully integrating noise meter, capable of measuring all of the necessary noise parameters. The sound level meter will be calibrated prior to use with a portable certified acoustical calibrator. The sound level meter shall be set to record noise levels in terms of the following parameters: <ol style="list-style-type: none"> 1. LAeq The equivalent continuous sound level, normally measured on an A-weighted decibel scale 	

Description	Methodology / notes on scope assumptions
	<ul style="list-style-type: none"> 2. LAmax The maximum sound pressure level of a noise event, normally measured on an A-weighted decibel scale 3. LA90 This parameter indicates the noise levels the receiving environment is exposed to 90% of the time 4. LA10 This parameter indicates the noise levels that the receiving environment will be exposed to 10% of the time iii. Noise monitoring will be undertaken using a sound level meter and methodologies which complies with the SANS or other internationally recognised guidelines which in turn are in line with international best practice. b. Baseline Air Quality Survey <ul style="list-style-type: none"> i. Passive Sampling of NO₂ and SO₂ <ul style="list-style-type: none"> 1. The most appropriate and cost-effective means of collecting air quality data for SO₂ and NO₂ will be through the use of diffusion tubes. This allows a long-term characterisation of the air quality conditions with reasonable spatial resolution. The use of diffusion tubes for ambient characterisation is advocated by the World Health Organisation (WHO), which is in turn recognised by the International Finance Corporation (IFC). During the site visit and monitoring campaign, WKC will deploy diffusion tubes at 10 locations on-site, which shall be collected by the site staff 2 weeks after deployment, and sent back to South Africa for analysis. ii. Active Sampling of PM <ul style="list-style-type: none"> 1. In order to quantify particulate matter (PM including PM_{2.5}, PM₁₀ and TSP), it is proposed that a real-time particulate matter analyser (Turnkey Instruments™ Osiris) be deployed at a strategic locations (with a potential of 2 to 3 additional locations covering the most critical boundary areas if required) on site or at the nearest receptors based on the proposed density of mining operations and proximity to the concession boundary and sensitive receptors. 2. Task 2: Dispersal Modelling <ul style="list-style-type: none"> a. The dispersion modelling will be undertaken using the US EPA endorsed AERMOD software. AERMOD is a straight-line, steady-state Gaussian plume model that can model the dispersion of pollutants over rural and urban areas, flat and complex terrain. AERMOD considers surface and elevated releases, and multiple sources (including point, area and volume sources) to determine ground level pollutant concentrations at specified receptor points. The table below outlines our approach to the modelling assessment. A tabulated data request will be provided to the Client, which will be returned completed and used to inform the study parameters for ADM. 3. Task 3: Noise Modelling <ul style="list-style-type: none"> a. In order to predict operational noise levels, the internationally recognised noise modelling software, SoundPLAN, will be utilised. A noise model for the project will be developed using project noise limits and background ambient noise measurements to determine compliance with environmental noise standards. b. The Noise Study Report will include the following: <ul style="list-style-type: none"> i. Noise contour maps illustrating the Project noise contribution in the surrounding environment ii. Tabulated assessment of noise levels at sensitive receptors iii. A summary showing to what extent project noise requirements are being met
TASK 300 - CONSULTATIONS	

Description	Methodology / notes on scope assumptions
Develop Database of IAP's	<p>Task 300 will conduct a comprehensive Public Participation Process (PPP). This task will be accomplished through collaboration with the Social Specialist Study described above. The PPP will be implemented through the following actions:</p> <ol style="list-style-type: none"> 1. Review and establishment of policy, legal and administrative requirements in Namibia 2. Phase 1 of the Public Participation Process: <ol style="list-style-type: none"> a. Identify and establish a database of Interested and Affected Parties (IAPs) b. Together with the Social Specialist, prepare a Background Information Document (BID) and presentation. c. Notify IAPs of project proposal through email, in newspapers (drafting and placing of advertisements in 2 Namibian newspapers for 1 week each) distributing bulk SMS's and posters on site. 3. Phase 2 of the Public Participation Process: <ol style="list-style-type: none"> a. Inform IAPs and relevant stakeholders of Draft Scoping Report (draft letter, email correspondence) and make this available for comment. b. Notify IAP's of where to access the scoping report and location and time for public meeting. This will be done through emailing all registered IAP's and running a second-round advert for 1 week in 2 Namibian newspapers. c. In collaboration with the Social Specialist hold a public meeting where the project is presented, and stakeholders are afforded the opportunity to seek clarification and identify the potential positive and negative issues and impacts of the proposed mine. 4. Incorporate comments, considerations and suggestions from IAPs into the Draft EIA
Plan and Set up Stakeholder Appointments / Consultations	
Prepare Background Information Document	
Consultations	
Consultation Report	
TASK 400 – SCOPING AND EIA	
Project Description and Baseline	<p>Task 400 involves initiating the Environmental Clearance Certificate (ECC) application process, developing the Scoping Report (required for PPP), compiling the Environmental Impact Assessment (EIA) Report and Environmental Management Programme (EMPr) (for submission).</p> <p>The task includes three key phases:</p> <p>The Application Initiation Phase will provide a high-level project description including preliminary baselines, maps of the project area, focal specialist studies, expected impacts and listed activities for the purposes of initiating the ECC application. Feedback received from Ministry of Environment, Forestry and Tourism (MEFT) will be taken forward into the scoping phase.</p>
Legal Framework	
Risk Assessment	
Environmental Management Programme	
Application/ Submission	

Description	Methodology / notes on scope assumptions
	<p>The Scoping Phase will include the development of the Scoping Report which includes the following:</p> <ol style="list-style-type: none"> 1. Project description and baseline (inclusive of specialist baselines where possible) 2. Develop representative site maps 3. Legal review and list of triggered activities 4. Identification of alternatives and fatal flaws 5. Review of legal framework 6. Compile description of project using information received from the project developers 7. Collect baseline information for the area 8. Assess and evaluate impacts 9. Compile Draft Scoping Report and Draft Environmental Management Programme (draft SR and draft EMPr) <p>The Draft SR and Draft EMPr will be presented to IAPs during the public consultation process for inputs.</p> <p>The EIA Phase will involve the development of the EIA report and finalisation of the EMPr. The following activities are included:</p> <ol style="list-style-type: none"> 1. Incorporate findings, outcomes and recommendations of specialist studies. 2. Integrate considerations and outputs of public consultations 3. Conduct comprehensive impact assessment and design mitigation measures in line with the mitigation hierarchy 4. Integrate findings into final Environmental Management Programme (EMPr) 5. A summarised version of the EIA will be developed (maximum of 90 pages as per MEFT requirements) for the purposes of the submission. <p>The finalisation of the task will be to submit final EIA to MEFT. The decision by MEFT is expected to take approximately 6 weeks from date of submission.</p>
TASK 500 – WATER PERMITS	
Collation of documentation	Task 500 focusses on developing and initiating the application for required Water Permits to the Ministry of Agriculture, Water and Land Reform (MAWLR).
Application, submission and presentations	<p>The task will include the following:</p> <ol style="list-style-type: none"> 1. Compile documentation required for the application for Water Permits 2. Submission to MAWLR.

Description	Methodology / notes on scope assumptions
TASK 600 - MINING LICENSES	
Collation of documentation	Task 600 focusses on developing and initiating the application for required Mining Licence from the Ministry of Mines and Energy (MME). The task will include the following: <ol style="list-style-type: none"> 1. Compile documentation required for the application for Water Permits 2. Submission to MME.
Application, submission and presentations	
TASK 700 – CLOSURE PLANNING	
Closure component of prelim design report	Task 700 focusses on the development of the mine closure component in the preliminary design report. The task will involve the following: <ul style="list-style-type: none"> • Formulation of closure objectives • Identification of closure land uses • Identification of closure-related risks and opportunities • Closure concepts for the major landforms (to enable design with closure in mind) • High-level / first order closure cost estimates for major landforms.

5.0 PROJECT SCHEDULE

Task s	Description	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month
101	Project set up and inception meeting via Teams	■									
102	Project management and financial management	■	■	■	■	■	■	■	■	■	■
103	Client, team and sub-consultant liaison	■	■	■	■	■	■	■	■	■	■
200	BASELINE STUDIES										
201	Biodiversity Specialist Study		■	■	■	■	■				
202	Aquatic Specialist Study		■	■	■			■	■	■	
203	Hydrogeology and Geochemistry Specialist Study		■	■	■	■	■	■	■		
204	Geochemistry Specialist Study		■	■	■	■	■	■	■		
205	Archaeological Specialist Study		■	■	■	■	■				
206	Social Specialist Study		■	■	■	■	■	■	■	■	
207	Air Quality and Noise Specialist Study		■	■	■	■	■	■	■		
208	Surface Water Impacts		■	■	■	■	■	■	■		
300	CONSULTATION										
301	Develop Database of IAPs	■	■	■	■	■	■	■	■	■	
302	Plan and Set up Stakeholder Appointments / Consultations				■						
303	Prepare Background Information Document			■	■						
304	Consultations					■					
305	Consultation Report					■	■				
400	SCOPING AND EIA										
402	Project Description and Baseline			■	■	■	■	■	■	■	
403	Legal Framework			■	■						
404	Risk Assessment						■	■	■	■	■
405	Management Plan						■	■	■	■	■
406	Application/ Submission		■							■	■
500	WATER LICENCE										
501	Collation of documentation								■	■	■
502	Application, submission and presentations								■	■	■
600	MINING LICENCE										
601	Collation of documentation								■	■	■
602	Application, submission and presentations								■	■	■
700	CLOSURE PLANNING										
701	Closure prelim design report								■	■	■

■	KP Tasks
■	Specialist Studies
■	Client Review

6.0 BUDGET ESTIMATE

Knight Piésold proposes to develop Environmental Impact Assessment and Environmental Management Programme and compile and submit the application for Environmental Clearance, Water Permits and Mining Licence for N\$ (excl. VAT). The quotation is calculated on a time cost basis, based on an estimation of hours required to perform each task and are summarised below.

Tasks	Description	Hours	Professional Fees	Disbursements	Sub-Total
100	PROJECT MANAGEMENT				
200	BASELINE STUDIES				
300	CONSULTATION				
400	SCOPING AND ESIA				
500	WATER ABSTRACTION LICENCE				
600	MINING LICENCE				
700	CLOSURE PLANNING				
	TOTALS				

More detailed costing is provided in [Appendix A](#).

6.1 ASSUMPTIONS AND LIMITATIONS

The table below summarises Knight Piésold's assumptions in defining the scope and cost for this project. We are available for discussions on scope and price should our understanding differ materially from the Client's expectations.

Project Component	Assumption
Scope Flexibility	The cost proposal is based on information provided by Knight Piésold at the time of drafting the proposal.
	Any change in scope and/or budget will be agreed upon and approved by the client before being undertaken. For this project, Knight Piésold will provide immediate notification of any changes or deviations to our anticipated budget due to delays and/or out-of-scope activities. If any of these situations occur, we will seek approval from the client before proceeding. Any additional works, if required, can be undertaken upon receipt of an agreed variation order.
Specialist Investigations	Specialist costs are estimates based on a high-level understanding of the scope. The exact range, scope and price of specialist investigations will be confirmed after project inception and based on input from MEFT.
Travel to site	It is assumed that all site access permissions and permits will be arranged by the Client. The Client is to provide unhindered access to site and ensure that it is safe for work.
	No allowance was made for any medical assessment or inductions or required trainings.

Project Component	Assumption
	Where relevant to the services, the Client shall give KP and our specialists adequate notice of any danger or hazard of which the Client ought reasonably to be aware and have foreseen.
Data Availability	A design freeze will be provided prior to the implementation of the EIA phase to allow for finalisation of baseline and scoping reports
	Project specific information will be provided by the Client and all data will be provided at the Client's own costs.
	The Client will make the latest survey available (if available).
Resettlement	No provision for a Resettlement Action Plan has been included. Should a Resettlement Action Plan be required, a costing thereof will be provided.
Stakeholder Consultation	Newspaper advertisements costs have been estimated. Actual costs will be reimbursed from the client.
	Provision for 1 round of stakeholder consultation has been included. This includes notification, advertising and a public meeting.
Project Management	<p>Our scope and cost makes provision for:</p> <p>3 project progress meetings and reports and 10 months of project management.</p> <p>3 updates of the project schedule.</p> <p>3 meetings with the technical team.</p>
Meetings	No inclusion has been provided for on-site meetings.
	Client meetings will be held via telephone, WebEx, Skype or Microsoft Teams.
	No authorities' meetings have been included.
	Key decisions will be recorded and distributed as meeting minutes.
Aquatics	Two seasonal surveys, one wet and one dry season survey, will be undertaken.
	The quotation is based on 4 aquatic bio-monitoring sites. Additional sites will incur additional costs.
	It is assumed there is currently no discharge point on the Orange River
	In the event that a site is deemed hazardous during the time of the survey, either due to weather or safety conditions, aquatic bio-monitoring will not be performed.
	Site access is to be arranged with landowners prior to site surveys by the Client.
Hydrogeology	We have not allowed for the cost of a geophysical survey. However, we have allowed a period of 1 week for supervising a geophysical survey. Should a geophysical survey be required then the scope of this will be defined and a

Project Component	Assumption
	price for the third-party works will be obtained. It is assumed that the third-party contractor will be appointed either directedly by the Client or by KP following receipt of a Variation Order for the works
Payment	Please note that our terms of payment are strictly 30 days from date of invoice.
	A project initiation invoice will be issued upfront to cover anticipated laboratory costs and mobilisation of specialists to site.
	Should the project be put on hold for whichever reason, an invoice will be submitted for all work undertaken and project expenditure up to the time of receipt of the stop works order.
	Provisions of N\$ 5 300 has been made for anticipated application fees. Should additional application fee be by a relevant authority be applicable to the project, this will be paid directly by the client.
Reports	All reports will be provided in electronic format and uploaded onto Knight Piésold's online file management system (Fulcrum) for record purposes.
	Hard copies of reports are excluded other than those required for the application process.
	All reports will be submitted as drafts to the Client for review prior to issuing the final reports.
Translation	The deliverable drafts will be reviewed by KP and Deep South Resources in English only.
Validity	This cost proposal is valid for a period of 30 days.
	Our professional fee rates are valid until August 2024, where after an escalation will apply. KP cannot provide a fixed fee with no escalation, as Deep-South Resources' projects may be delayed due to factors beyond the control of KP.

7.0 PROJECT TEAM

The sections below provide background and describe the expertise of KP and our project team.

7.1 KNIGHT PIÉSOLD

Knight Piésold is a global consulting firm that provides specialised services to the mining, power, water resources and infrastructure industries. We are engineers, environmental scientists, geoscientists and technologists who focus on creating value at every stage of a project through quality driven, sustainable solutions.

Established in 1921 in South Africa, we have expanded throughout the world, with 30 offices in 14 countries. At Knight Piésold, we work as one team, mobilising local and global resources to meet the needs of each client.

We work closely with our clients, understanding unique project characteristics within the context of today's global business environment. With a commitment to safety, quality and technical excellence, Knight Piésold specialises in creating customised solutions at every stage of a project life cycle, while delivering sustainable, bottom-line results. We have led numerous award-winning projects to completion and have fostered many long-term client relationships that hold strong today.

Our environmental team specialises in mining and large infrastructure projects and have successfully completed numerous EIAs in complex regulatory environments. Our objective is to provide you with quality deliverables that are "fit for purpose" for both local permitting and international financing requirements.

7.2 PROJECT TEAM

The assignment will be managed through KP Namibia's Windhoek office with additional specialist support being provided from KP offices in South Africa. Knight Piésold will assign the following staff to ensure successful completion of the project within the time schedule.

- Amelia Briel – Section Manager: Environment (KP South Africa) – Technical review
- Veronique Daigle – Director: Mining (KP Namibia) – Project Director
- Joseph Mulders – Senior Environmental Scientist (KP South Africa) – Project Manager
- Diana Duthe – Geochemist and Hydrogeologist Section Manager (KP South Africa)
- Lima Maartens – Environmental Assessment Practitioner (EAP)
- Lloyd Lunch – Environmental Scientist (KP South Africa)
- Amina Mukasa – Junior Environmental Scientist (KP)
- Theo Oosthuizen – Senior GIS Specialist (KP South Africa)
- Bianca Eiasen – Administrative Assistant (KP Namibia)
- Marc Blanche – Air quality and noise specialist
- Ashley Meyer – Air quality and noise specialist
- Peter Cunningham – Biodiversity Specialist
- John Kinahan – Archaeological Specialist
- Ernst Simon - Social Specialist
- Heidri Estellè Bindemann-Nel – Social Specialist.

The table below provides a summary of the complete project team. CVs are attached in [Appendix B](#), and qualifications can be provided on request.

Table 1: Summary of project team, qualifications, and experience

Name	Qualifications and experience
Veronique Daigle	2006 B.Sc. Eng. Coop, Civil Engineering, Université de Sherbrooke, Canada Engineering Professional Association in Canada, Reg No: OIQ143 749) Engineering Council of Namibia (ECN), Pr Eng, Reg No (PE2017-19) 17 years' experience

Name	Qualifications and experience
Amelia Briel	2001 MSc (Environmental Toxicology), University of Johannesburg Professional Natural Scientist (RSA), <i>Pr.Sci.Nat.</i> 114335 >19 years' experience
Diana Duthe	1990 M.Sc. (Hydrogeology), University of Neuchatel, Switzerland Professional Natural Scientist (RSA), <i>Pr.Sci.Nat.</i> 400091/01 >30 years' experience
Lima Maartens	2000 Ph.D. (Fisheries Science), Rhodes University, South Africa Environmental Assessment Professionals of Namibia (EAPAN) >30 years' experience
Joseph Mulders	2015 MSc (Environmental Management), University of Pretoria, South Africa Professional Natural Scientist (RSA) <i>Pr.Sci.Nat.</i> 118063 9 years' experience
Lloyd Lynch	2014 MSc (Aquatic Health), University of Johannesburg, South Africa Professional Natural Scientist (RSA) <i>Pr.Sci.Nat.</i> 116026 7 years' experience
Amina Mukasa	2022 BSc, Environmental Sciences, Université Nouveaux Horizons 1 year experience
Theo Oosthuizen	1995 M.Sc. (Environmental Management), University of Johannesburg, South Africa Professional Natural Scientist, <i>Pr.Sci.Nat.</i> 400304/05 >25 years' experience
Marc Blanche	2005 M.Sc. Applied Environmental Sciences, University of KwaZulu-Natal Professional Natural Scientist (RSA) <i>Pr.Sci.Nat.</i> 400163/11 >20 years' experience
Ashley Meyer	2012 B.Eng. Mechanical Engineering, University of Pretoria 12 years' experience
Peter Cunningham	1996 M.Sc. Nature Conservation, University of Stellenbosch, South Africa >20 years' experience
John Kinahan	1989 Ph.D. Archaeology and Environmental Studies, University of the Witwatersrand. >30 years' experience
Ernst Simon	1986 M. TRP, University of the Free State, South Africa Corporate Member of the Namibia Institute of Town and Regional Planners >30 years' experience
Heidri Estellè Bindemann-Nel	2014, M. TRP, University of Pretoria, South Africa Member of the Namibia Council of Town and Regional Planners, Namibia Institute of Town and Regional Planners, Environmental Assessment Professionals of Namibia 11 years' experience

8.0 PAYMENT TERMS

Please note that in the event we are appointed to undertake this work, our terms of payment are 30 days from date of invoice.

9.0 LIABILITY

In accordance with Knight Piésold's Professional Indemnity Insurers, we limit the maximum amount of compensation payable by Knight Piésold in respect of liability for this scope of work as an amount equal to twice the total fee payable for a period of 3 years from the day of issuing the report.

In the even that we are appointed to undertake this work, we would require that Interwaste indemnifies Knight Piésold against all claims by third parties which arise out of or in connection with the services which exceed the maximum amount of compensation and for the full amount of any such claims after the liability period stated in the agreement.

We would also require that Deep-South Resources indemnifies Knight Piésold against any claim which may be made against us by any party arising from the use for other purposes of documentation submitted to Deep-South Resources in rendition of this appointment.

10.0 WAIVER

We reserve the right to re-negotiate the above proposal should the scope of work change from the above.

11.0 CONCLUSION

The project team presented by Knight Piésold will provide a high level of international experience and in-country expertise. The scope of the environmental and social programmes presented in this proposal is intended to fully address Deep-South Resources' requirements. The scope of work and deliverables may be negotiated and adjusted based on client needs.

We trust that the Scope of Work described in this proposal will support Deep-South Resources well and we look forward to advancing the project together with your team.

Yours Sincerely,

Knight Piésold Consulting (Pty) LTD.

Prepared:



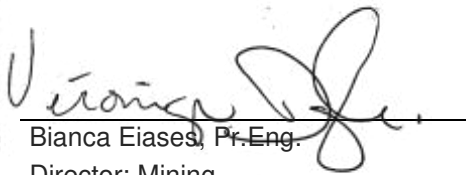
Joseph Mülders, Pr.Sci.Nat.
Senior Environmental Scientist

Reviewed:



Amelia Briel, Pr.Sci.Nat
Section Manager: Environmental

Approved:


Bianca Eiases, Pr.Eng.
Director: Mining

Approval that this document adheres to Knight Piésold Quality Systems:

AB

Attachments:

Appendix A: Detailed Cost

Appendix B: CVs

APPENDIX B

Field survey for Heritage Impact Assessment conducted December 2023 (Kinahan)

Summary

This report presents the results of an archaeological field survey of the area to be affected by the envisaged Haib coppermine development near Noordoewer in southern Namibia. The survey recorded a total of forty eight (48) archaeological occurrences, evidence of intermittent human occupation over approximately the last 500 kyr. Some components of the local archaeology will require mitigation when the project is implemented, but little disturbance or loss of important archaeological evidence is otherwise anticipated.

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Background to the Archaeological Survey

The development of the envisaged Haib Coppermine Project near Noordoewer in southern Namibia will entail significant disturbance of the physical environment through the excavation of a large opencast pit as well as the construction of a crushing plant, tailings dam, heap leach pads, roads, pipelines and related infrastructure. In the absence of detailed information on the archaeology of the project area, Parkman Namibia contracted the author to carry out a field survey and provide a basic archaeological profile as part of the environmental impact study.

The gazetteer of archaeological site localities in Namibia (Kinahan & Deelie 1990: 21) lists only three localities in the degree square 28S 17E, although none of these lies within the mining area itself. Previous research in southern Namibia has revealed evidence of intermittent human occupation during the last half million years, mainly in the form of surface scatters of stone artefacts (Corvinus 1983; Kinahan 1987). Excavated rock shelter deposits in this area have provided more detailed chronostratigraphic evidence (Sievers 1984), including rock paintings dating to approximately 20 000 years BP (Wendt 1972), thus far the earliest examples from the whole of Africa. Rock engravings which are presumed to be more recent have also been reported (Scherz 1970), and there is some evidence of nomadic pastoral settlement and itinerant metalworking during the last 1 000 years. Under present climatic conditions the project area is considered marginal, receiving less than 50mm precipitation per annum, mainly during the winter months and promoting little growth of pasture (Van der Merwe 1983). Although the area therefore failed to attract early colonial settlement

on any but the most limited scale, some farming has been carried out since the turn of the century, when there was also some military activity in response to the Nama uprising of 1904-1907 (Drechsler 1980).

The field survey described below was carried out between 17 February and 1 March 1997, with the aim of gathering data from the project area to augment and test existing information from the surrounding region, and to carry out detailed field examinations of specific areas designated for large scale disturbance. At the time of going to the field a generalized design of the mine and infrastructure was available (Figure 1) and this was used as the basis for the field survey itself. A more detailed design only became available after completion of fieldwork, although this is unlikely to affect the validity of the survey presented here as new areas to be affected by the mine development are in large part already disturbed by previous mining activity.

The Archaeological Survey

Terms of Reference

The study area of approximately 200km² to be surveyed on foot at 5% (average) sampling intensity by transect and randomly selected quadrates. Areas already identified for large-scale disturbance to be fully examined and detailed recommendations to be provided for mitigation work on all sites encountered. All archaeological sites to be documented according to national standards and this documentation will be submitted as an appendix to the survey report. The survey to

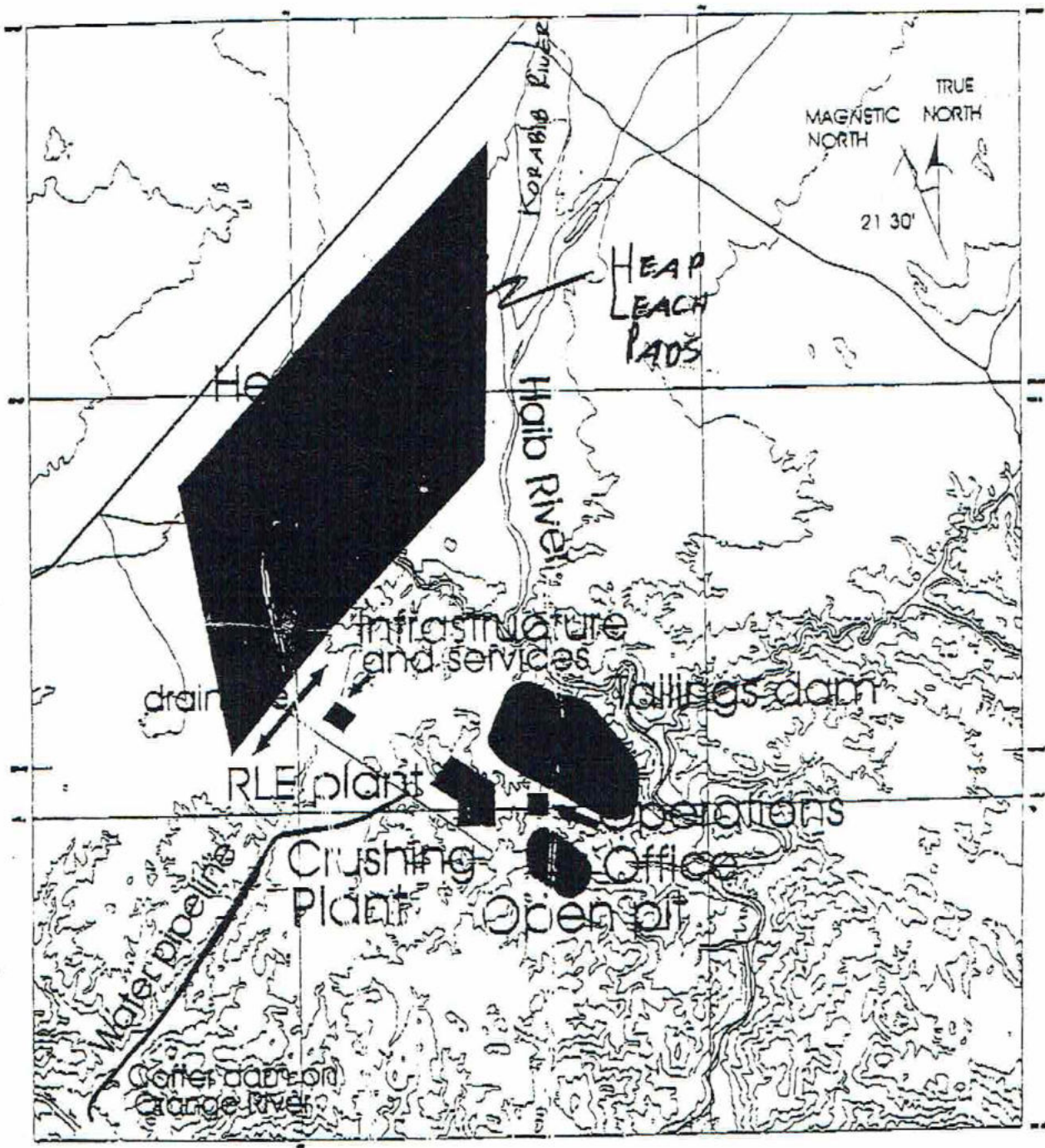


FIGURE 1 PRELIMINARY DESIGN AS BASIS OF ARCHAEOLOGICAL SURVEY

entail no surface collection or excavation. Fieldwork to require no more than two weeks and report preparation no more than one week.

Survey Design and Field Methods

For the purposes of rapid appraisal, the field survey of the Haib Coppermine Project area was designed to emphasize areas designated for large-scale disturbance, while at the same time taking into account the full range of site location possibilities needed to obtain a reliable profile of the local archaeology. The distribution of the survey quadrates and transects selected to fulfil these criteria is shown in Figure 2.

According to their topographic disposition, quadrates A, B and C form part of a high plateau component of the project area; quadrate D falls within a montane component; quadrates E and F are part of the mid- to lower Haib River system, and quadrates G, H and I are located on the banks of the Orange River. The high plateau comprises approximately 45% of the survey area and the montane part 30%, leaving 15% and 10% to the Haib and Orange River systems respectively. The actual sampling intensity on the plateau was approximately 20% or 60km²; approximately 30% or 12km² of the montane part; 45% or 6km² on the Haib, and 65% or 8.5km² on the Orange. This weighting of topographic categories provides for a relatively complete archaeological profile, although mining activity is expected to impact most heavily upon the montane and Haib River components.

In the field, survey quadrates were covered by walking roughly parallel tracks, spaced according to the nature of the terrain and density of vegetation cover. Favoured site locations such as hill saddles and sheltered rock outcrops were closely examined, as were good exposures of gravels in re-incised stream courses. In the generally open terrain of the outwash fans on the high plateau and the silt terraces of the Orange River, large stone manuports including quernstones and stone emplacements on pastoral sites were easily seen from up to 100m distance.

All archaeological occurrences were recorded with sequential field numbers and their positions recorded by hand held GPS (Garmin 45). The GPS data were downloaded via Garmin PCX5 (Ver 2.06) software. Site positions were plotted in the field on 1: 50 000 topographic sheets 2817 DA Noordoewer, 2817 DB Haib, 2817 DC Vioolsdrif and 2817 DD Nous. Relatively few of the archaeological sites found were clearly defined or discrete in their extent, most being extensive, low density artefact scatters. In view of the fact that large scatters are subject to erosion processes and may therefore appear as more than one site, some dense groupings of sites found in the course of the survey might represent single sites dissected by the development of new drainage. Detailed intra-site surveys were not possible in the limited time available for the survey.

Stone artefact scatters were found to contain relatively few diagnostic tools suitable for the separation of Early Stone Age (ESA), Middle Stone Age (MSA) and Later Stone Age (LSA) occurrences on typological grounds. It was, however, possible to provisionally allocate almost all

occurrences on the basis of raw material preferences and geomorphological setting. For example, while handaxes and other diagnostic types were scarce, ESA assemblages were frequently based on a distinctive light grey basalt and therefore easily recognized. Diagnostic MSA tools including denticulate pieces were not uncommon and tended to occur in obviously more recent geomorphological settings than ESA materials. Both MSA and LSA assemblages contained significant numbers of quartz pieces, as well as examples of cryptocrystalline siliceous rock types that are extremely scarce in ESA assemblages.

For the purposes of the present survey, pastoral occurrences were distinguished from LSA on the presence of recognizable stone hut and stock enclosure features. All burial cairns have been provisionally treated as pastoral except those clearly related to recent historical settlement of the project area. The characteristics of recent historical as opposed to precolonial pastoral burial include extended rather than flexed burial position (as reflected in the shape of the cairn), the presence of headstones, and a tendency to occur in groups rather than singly. In view of the continuity of the archaeological and recent historical occupation of the area, remains of early farming and colonial military activity were also treated as part of the archaeological survey. Recent historical building remains are usually distinguished by the presence of foundations, right angled corners and rubble-filled walling.

Observations and Results

The distribution of the 48 archaeological occurrences found in the course of the survey is shown in Figure 2. Precise position details and descriptive notes are provided in the Appendix 1 gazetteer. A summary of the observations and results is presented in Table 1, as the basis for the following remarks.

Early Stone Age (ESA) occurrences, provisionally dating to between 500 and 100kyr BP, are mainly concentrated in the plateau component of the project area. These occurrences are thinly distributed and consist for the most part of very small scatters or isolated finds of single artefacts. The artefacts show little evidence of fluvial rolling and are therefore probably in their approximate primary context. All have extensive surface abrasion consistent with their present sedimentary context of extensive outwash fans reworked by aeolian transport. Although the surface characteristics of the artefacts are obscured they are easily recognizable due to the apparent preference for a light grey fine grained basalt with good flaking properties. This material is found at surface along a roughly 2km strike which is extensively covered by a mantle of aeolian sand. Within this area (Sites 19 & 48) there are fairly dense scatters of up to 100 pieces/m² extending over an area measuring 150x500m. Most of the material within these scatters is waste, a very small proportion (estimated at less than 1%) showing evidence of more than one trimming blow per piece. Formally shaped pieces including polyhedral cores tend to occur at some distance from the raw material source, as is usually the case in these circumstances.

Table 1 Haib archaeological survey: summary of results

Topo setting	Plateau	Montane	Haib River	Orange River	
Quadrates	A, B & C	D	E & F	G, H & I	
Approx km ²	60	12	6	8.5	
Approx % sample	20	30	45	65	
					Seq group totals
ESA	6	0	0	2	8
MSA	6	0	2	2	10
LSA	7	3	3	1	14
Pastoral	1	0	3	6	10
Historic	1	0	1	3	5
Other	1	0	0	0	1
Topo group totals	22	3	6	14	48

9

The general picture for the plateau is of ESA quarrying activity concentrated within a relatively small area and extensive distribution of artefacts from the same source on a landscape basically the same as it appears today. The relative absence of ESA material from the montane and Haib River components is probably a result its removal by high energy drainage, although it would in any case be slightly less visible on rubble-strewn slopes. The ESA pieces found in the Orange River component were probably eroded from old silt terrace deposits.

Middle Stone Age (MSA) occurrences, provisionally dating to between 100 and 40kyr BP, have a broadly similar distribution to those of the ESA. Small scatters and isolated finds predominate, with a very low incidence of formal tools. On the plateau, MSA sites are associated with low granite outcrops which might represent a significant behavioural and environmental contrast with the ESA sites. The outcrops are in many cases suitable as lookout points and their use may have to do with cooperative hunting strategies during MSA times. The association with outcrops may also result from the use of shallow rainwater pools in an area with little surface water. As such, MSA activity on the plateau was probably limited to short-term hunting expeditions after periods of even fairly light rainfall. It is possible that expeditions to the plateau were made from basecamp sites in the Haib River, where riverbend pediments and terraces appear to have been favoured as site locations. This pattern is well exemplified by Sites 3, 9 and 10, where outcropping hydrothermal vein quartz was quarried, producing high density surface scatters containing up to 500 pieces/m². These discrete concentrations probably represent separate flaking

areas within the basecamp site (Figure 3). Although the Haib River MSA sites have some potential for further study, the pediments and terraces have been very extensively disturbed by mining of gravel deposits and the value of the sites is therefore much reduced.

Later Stone Age (LSA) occurrences, provisionally dating to within the last 40kyr BP and prior to recent historic colonial settlement, are more generally distributed than either ESA or MSA. Although their numbers are still relatively low, a clear trend is visible in Table 1 where ESA, MSA and LSA occurrences are successively more abundant and more generally distributed through the project area. The most likely explanation for this trend lies in the effect of postdepositional fluvial processes, rather than any significant differences in settlement and landuse. In the LSA, there is a continued association with granite outcrops on the plateau and clear evidence for the use of shallow rainwater catchments. At Sites 28 and 32 rough stone blinds were found adjacent to the catchments, consistent with the hunting of small animals or gamebirds such as sandgrouse. The small size of the hunting blinds points to their use by single hunters rather than groups, as could be expected with the refinement of bow hunting during the LSA. Again, however, the indications are of short hunting expeditions to the plateau from basecamps situated elsewhere, although these were undetected by the survey.

As stated in the previous section, the separation of LSA and pastoral occurrences is to some extent arbitrary, since many activities characteristic of the LSA were also integral to pastoralism in Namibia (Kinahan 1993). The distribution of pastoral sites in the project area



FIGURE 3a SITE 3 , ASPECT

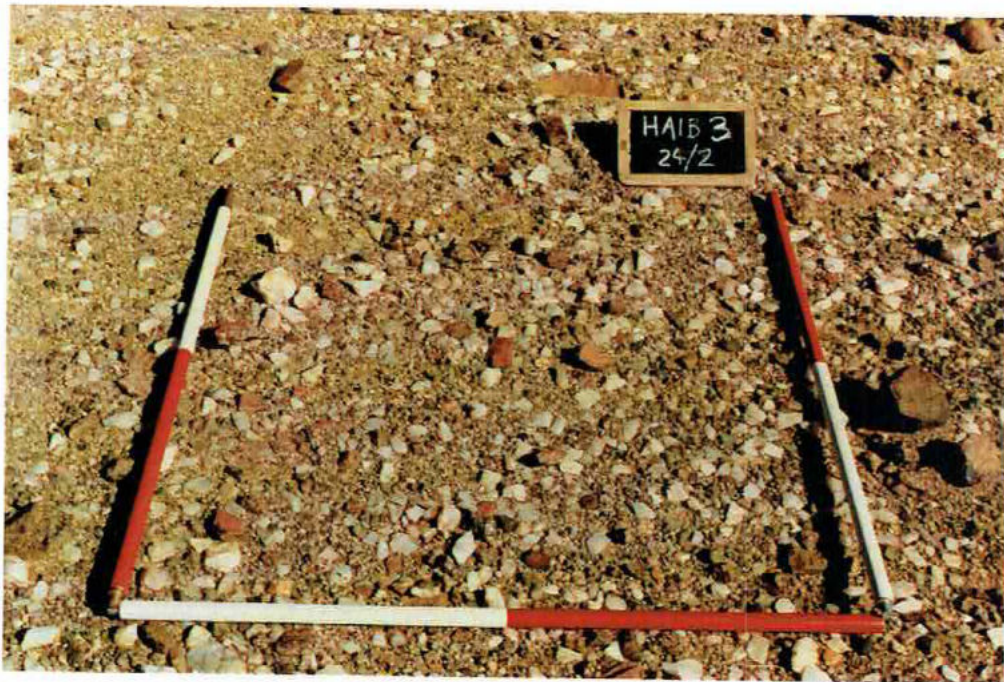


FIGURE 3b SITE 3 , DETAIL

clearly contrasts with that of earlier settlement in that there is a particular emphasis on the Orange River and a much reduced presence on the plateau (Table 1). Most of the Orange River pastoral sites are burials, although there are also some clearly discernible hut emplacements or open scatters of quernstones and other artefacts. However, the river terrace setting illustrated by the Figure 4 catena is not ideal for the preservation of settlement remains. While the burials have a relatively high visibility along the Orange River terraces, other pastoral sites are subject to displacement by wind erosion or covering by drift sand. Dense bush growth and periodic flooding are also important factors affecting survival and visibility of the sites.

Many of the pastoral sites are at or close to suitable crossing places on the river, an especially important consideration in the herding of small stock which are less adept swimmers than cattle. The presence of the burials on the river sites is most likely a reflection of the pattern of pastoral settlement observed throughout the arid western parts of the region, in both the archaeological and historical ethnographic evidence (Kinahan 1996). In terms of this pattern, dry season homestead sites would have been located along the Orange River at suitable crossing points which also offered easy access to the hinterland via tributary valleys. These valley routes would have been used for driving livestock up to ephemeral grasslands when seasonal rainfall permitted some movement away from the river for a period of a few months.

Settlement on the plateau would have been very shortlived, leaving little visible trace. It is possible that the grave sites in the vicinity of riverside homesteads were of some significance in claims for the right of occupancy, but this is unknown. The small stockposts which

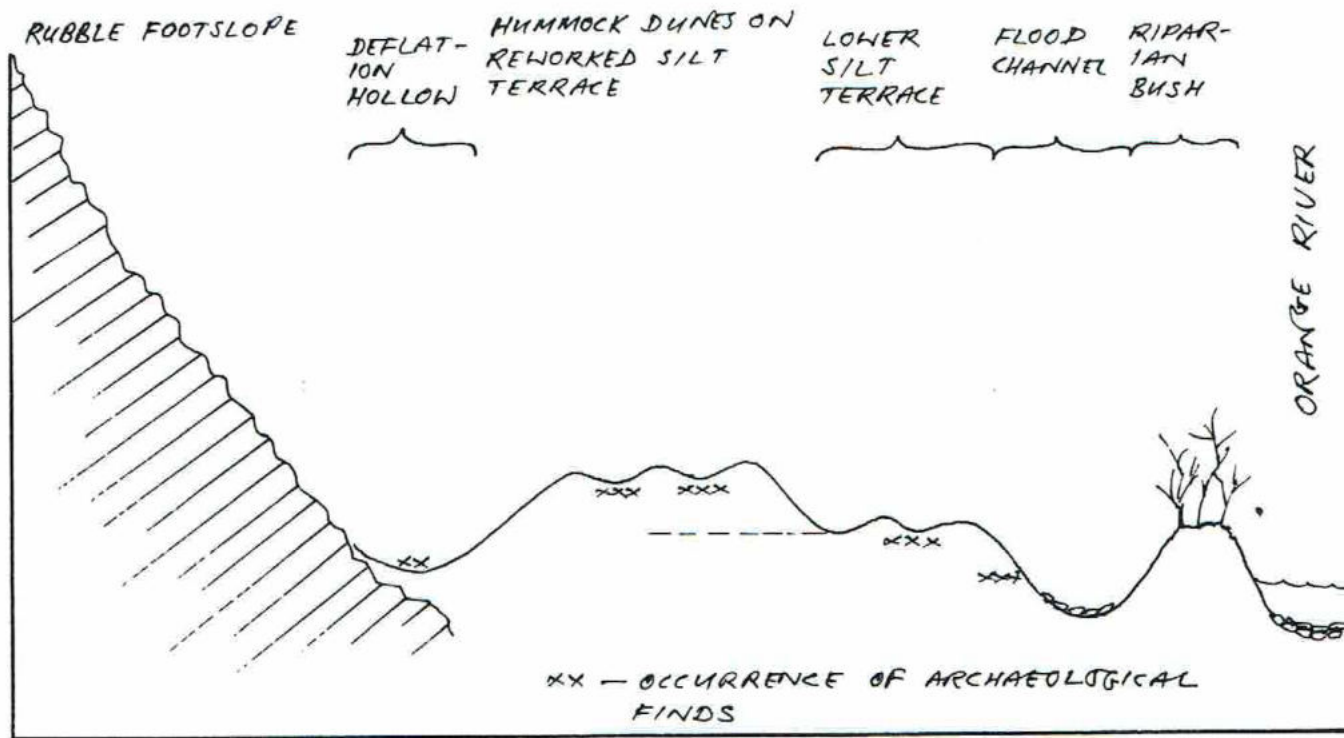


FIGURE 4 TYPICAL CATENA OF ORANGE RIVER TERRACES <10km DOWNSTREAM OF HAIB MOUTH

presently exist on the Orange River are a remnant of this pattern.

Early historic settlement is evidenced at a number of sites in the project area, although it is clear that conditions were at best marginal. The burial ground at Site 1 near the mouth of the Haib River is adjacent to a short length of roadway cut into the mountainslope and buttressed from below with roughly packed stone. The age of the burial ground and roadway is unknown but it would almost certainly predate the construction of large storage dams higher up the Orange River when extreme seasonal fluctuations were greatly reduced. The Haib River provides an easy route of access from the hinterland towards Grünau and it is therefore possible that Site 1 dates from the late nineteenth century. Another example of early historic settlement is provided by the homestead remains at Site 44, consisting of two drystone constructions, one subdivided into a secure livestock enclosure and a one-room dwelling (Figure 5).

Associated with the Site 44 buildings were fragments of a refined earthenware bowl and a porcelain saucer. The bowl had a blue-green transfer printed motif on the outside and a handpainted line in the same colour just below the rim on the inside. The saucer, evidently from a small coffee cup had a simple handpainted dot and line motif in two colours. While it is possible that these items date to the early or mid-nineteenth century when coloured transfer printed ware became available (Klose & Malan 1993), a turn of the century date is more likely. Other evidence also points to a later date. Beneath the fallen stones on the floor of the dwelling there was a layer of thick grass stems, probably the remains of *Cyperus* spp. thatch showing some



FIGURE 5a SITE 44 , VIEW FROM S.E.



FIGURE 5b SITE 44

evidence of burning. Furthermore, stone from the walls of these constructions has apparently been used in two small hut features and to provide anchor stones for a portable mat hut. From this it would seem that the homestead was abandoned and fell into disuse after the turn of the century. The possibility that it was attacked and burned down also exists in view of the fact that this area lay within the theatre of operations towards the end of the Nama uprising which ended in 1907 with the death of Marenga (Drechsler 1980).

There is direct evidence of these events at Site 40, in the form of three German military graves with the following inscriptions:

*Es kämpfte für Kaiser und Reich
Gefreiter Gustav Stückle
geb 21.10.82
in Necktar-Thailfingen
vermisst seit 16.8.1906*

*Es kämpfte für Kaiser und Reich
Unteroffizier Friedrich Ehlers
geb 21.2.81 in Bocklum
vermisst seit 16.8.1906*

*Hier ruht in Gott
Oberleutnant
Richard Barlach
geb 9.12.68 in Ratzeburg
gef 23.7.1906*

According to the official campaign history *Die Kämpfe der Deutschen Truppen in Südwestafrika* (Vol 2, 1907: 313, 311), these individuals were lost in one of the many unsuccessful attempts to capture Marenga. The officer, Barlach, was the only man lost in a skirmish at the mouth of the Gams ravine 23 July 1906. The campaign history provides no details of this particular action, but the German troops probably remained in the area at least until 16 August, when Stückle and Ehlers, signalmen, went missing. Their bodies were recovered later and all three were buried at the same spot. Some action probably took place on the Haib River as well, judging from a tin can found at Site 8, with the embossed logo *München Schweinefleisch 1905*.

In the context of the German military activity in the project area that a sketch map in the official campaign history, reproduced as Figure 6, indicates a track proceeding northward from the Orange River opposite Vioolsdrif. The track branches at approximately the position of the Site 44 homestead. A hand-dug well at the site provides rather brackish water, but if this is the same place it would have served as an important staging post, being 20km north of the Orange River and thus a full days journey by wagon (Dierks 1992: 31). As such, the homestead probably had some strategic significance and this would have made it vulnerable to attack by Nama rebels.

The archaeological occurrences found in the course of the present survey provide a general overview of human settlement in the Haib Coppermine Project area during the last half million years. The Early Stone Age component is not possible to date with any accuracy, being

typologically undistinguished and represented only by surface artefact scatters. The sites are, however, of some interest in that they provide some evidence of the relationship between the artefact distribution and the features of the landscape. Although the Middle and Later Stone Age components are similarly undistinguished and impossible to date, they, too, provide some interesting hints of changes in subsistence strategies, with the change from communal hunting to the use of blinds at small waterholes. The observations in this regard are necessarily conjectural in view of the small amount of available evidence. In contrast to the ESA, MSA and LSA components, the evidence of pastoral settlement indicates a greater emphasis on the resources of the Orange River, while the evidence of recent historic settlement reflects on some minor events in the closing years of indigenous resistance to colonial rule in southern Namibia. The archaeological profile gained from the present survey adds some details to existing knowledge of the region without in any way challenging the current view.

Archaeological Impact

Since the major focus of mining will be in the vicinity of the existing mine and the surrounding montane area, the development of the Haib mine will have very little archaeological impact. The montane area in general has the lowest density of archaeological sites and it is unlikely that any sites missed by the present survey will be of any significance. Some of the other developments associated with the envisaged mine may have a significant archaeological impact. Realignment of road access from the main Grünau-Noordoewer road might have some impact, but if the present route is merely upgraded this should not present any problems. The positioning of the leach pads near the present mine

infrastructure, as indicated in the most recent design information, will have no archaeological impact, in contrast to the plateau area previously designated for this purpose. Construction of a road and/or pipeline in the Haib River valley could affect Sites 3, 5, 6 and 7, but there is as yet no detailed information on how the valley will be used in the development of the mine. Road access along the north bank of the Orange River could, however, present a considerable threat, especially to burials at Sites 22 and 23. Equally vulnerable would be Sites 40, 42 and 43 at the mouth of the valley which is to be used for pumping water up to the mine.

Mitigation Recommendations

Depending on the flexibility of the design, it should be possible to avoid all vulnerable archaeological sites in this area. Where there is a risk of inadvertent damage it would be advisable to flag vulnerable sites or cordon them off during the construction phase of the project. If it is not possible to avoid the sites they should be documented and, if necessary, excavated in advance of construction. This would apply most particularly to the burial sites along the Orange River and some of the sites in the Haib River. If there is no alternative, the burials should be excavated by a competent archaeologist and in the case of recent historical burials, they should be reinterred elsewhere after negotiation with the local community, church and relevant authorities.

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AppendixGazetteer of archaeological sites in the study area

H SOFTWARE NAME & VERSION

I PCX5 2.06

H R DATUM IDX DA DF DX DY DZ

M G WGS 84 121 +0.000000e+00 +0.000000e+00

+0.000000e+00 +0.000000e+00 +0.000000e+00

H COORDINATE SYSTEM

U LAT LON DM

H IDNT LATITUDE LONGITUDE DATE TIME ALT DESCRIPTION

PROXIMITY SYMBOL ;waypts

W 001 S2845.79937 E01754.52855 19-FEB-97 15:18:42 -9999 19-FEB-97 15:18 0.00000e+00 0

Burial ground ca.25x25m with 18 visible graves. Some graves are circular cairns 0.8 to 1.0mø and partly dispersed by erosion of underlying silt. These may be more than a century old, while others, having head and footstones as well as a more elongated plan are less dispersed and probably quite recent. None of the graves have dates or marked headstones, but one has an upright bottle at the head, indicating a recent date. Repeated use of the same site may have followed consecration of the ground at some stage in the past, but this would have to be confirmed. The graves were excavated into a shallow deposit of fine colluvium which is partly reworked by wind erosion and

banked up a shallow angle in a small embayment at the foot of the mountainslope. All of the rock used in the burial cairns originates from the immediate vicinity. The burial ground is apparently associated with a narrow track cut into the rubble slope and supported by roughly packed rock. The road was evidently surfaced with finer material, but much of this has been washed away and at this stage there is less than 500m of continuous track still visible. The height of the track above the present track leading upstream from the mouth of the Haib suggests that it was constructed before the late 1950's when large seasonal variations in the flow of the Orange River were controlled by dams.

W 002 S2845.74305 E01754.43682 19-FEB-97 15:40:42 -9999 19-FEB-97 15:40 0.00000e+00 0

Thin scatter of MSA artefacts, including unifacial points, on a low rocky spur at the mouth of the Haib River.

W 003 S2845.07453 E01754.53402 19-FEB-97 15:54:18 -9999 19-FEB-97 15:54 0.00000e+00 0

ESA/MSA surface scatter 30x25m with artefact densities up to 500/m² in patches of 2m² or less. The scatters are associated with an exposed hydrothermal quartz vein which has been extensively quarried.

Associated with the reduction of the quartz are a number of ESA/MSA pieces in hornfels, including a unifacial point. The flaking scatters may include some LSA material, but some sieving of the scatters would be required to investigate this. The site is situated on a thinly mantled terrace pediment overlooking a bend of the lower Haib River.

W 004 S2844.90555 E01754.74130 19-FEB-97 16:05:04 -9999 19-FEB-97 16:05 0.00000e+00 0

ESA surface scatter of flaked quartzite showing evidence of fluvial transport and surface abrasion. The site is at the foot of a steep rubble slope extending to a colluvial terrace of the lower Haib River.

W 005 S2841.45098 E01755.42172 20-FEB-97 07:31:30 -9999 20-FEB-97 07:31 0.00000e+00 0

Small group of stone emplacements which probably served to anchor upright posts, and associated with a single quern stone. These remains are typical of recent pastoral encampments and probably date to within the last two hundred years. The site is situated in the lee of a low ridge which juts out into a bend of the lower Haib River near the old Tsams farmstead.

W 006 S2841.40785 E01755.63190 20-FEB-97 07:38:18 -9999 20-FEB-97 07:38 0.00000e+00 0

Small circular cairn 0.8mø, partly dispersed and covered in drift sand. The proximity of this feature to the previous site and its lack of artefact associations suggests that it may be a burial. Surface indications are that the burial would be in loose colluvium, mixed with drift sand and river cobbles.

W 007 S2841.39980 E01755.70464 20-FEB-97 07:41:53 -9999 20-FEB-97 07:41 0.00000e+00 0

Semi-circular arc 4mø of river cobbles, probably arranged to anchor the support poles of a portable mat hut. This probably represents an extension of Sites 5 and 6.

W 008 S2841.42716 E01755.95827 20-FEB-97 07:50:30 -9999 20-FEB-97 07:50 0.00000e+00 0

Tin can, cylindrical, marked "München Schweinefleisch 1905". Probably discarded during military operations in the Nama uprising of 1904-07.

W 009 S2841.27878 E01756.14013 20-FEB-97 07:58:31 -9999 20-FEB-97 07:58 0.00000e+00 0

Probable MSA quarrying site situated on hydrothermal quartz vein, with associated reduction scatters 50x30m in combined extent. This site is similar to Site 3 although it lies about 10m above the riverbend terrace near the upper margin of a wide pediment mantled by large boulders from the footslopes of an adjacent hill and driftsand from silt deposits in the bed of the Haib River. The quarrying site represents a rather limited exposure of the underlying rock.

W 010 S2840.44418 E01755.85914 20-FEB-97 08:32:00 -9999 20-FEB-97 08:32 0.00000e+00 0

MSA quarrying site on narrow terrace overlooking the confluence of a minor tributary to the Haib River.

W 011 S2839.54972 E01754.78572 20-FEB-97 10:42:29 -9999 20-FEB-97 10:42 0.00000e+00 0

Surface scatter of flaked hydrothermal vein quartz, without diagnostic pieces. The scatter is associated with a weak spring marked by sparse growth of *Euclea* and *Cyperus*, in a major tributary to the Haib River.

W 012 S2839.61699 E01754.33832 20-FEB-97 10:54:22 -9999 20-FEB-97 10:54 0.00000e+00 0

Surface scatter of flaked hydrothermal vein quartz, without diagnostic pieces.

W 013 S2839.54296 E01754.25496 20-FEB-97 11:00:49 -9999 20-FEB-97 11:00 0.00000e+00 0

Surface scatter of flaked hydrothermal vein quartz, without diagnostic pieces. The site is situated in an embayment among large granite boulders and adjacent to the banks of the Haib River.

W 014 S2836.71537 E01747.84952 21-FEB-97 09:50:02 -9999 21-FEB-97 09:50 0.00000e+00 0

Isolated find of ESA handaxe made on river cobble, possibly transported by fluvial action. The artefact was found on the banks of a small braided streambed in an extensive colluvial fan deposit.

W 015 S2836.49973 E01747.72014 21-FEB-97 09:59:55 -9999 21-FEB-97 09:59 0.00000e+00 0

Isolated find of MSA point, on banks of small braided streambed in an extensive colluvial fan deposit.

W 016 S2836.57375 E01747.30686 21-FEB-97 10:20:25 -9999 21-FEB-97 10:20 0.00000e+00 0

Small group of isolated dolomite boulders with caliche deposit indicating displacement from below surface. This is consistent with recent human disturbance of harvester ant seed caches and probably relates to pastoral activities during the last 1 000 years.

W 017 S2836.91879 E01747.15108 21-FEB-97 10:34:47 -9999 21-FEB-97 10:34 0.00000e+00 0

Isolated find of LSA flake in hydrothermal vein quartz, on banks of small braided streambed in an extensive colluvial fan deposit.

W 018 S2836.97190 E01748.46139 21-FEB-97 15:53:43 -9999 21-FEB-97 15:53 0.00000e+00 0

Isolated find of retouched MSA flake in hornfels, on eastern footslopes of low ridge.

W 019 S2837.07232 E01748.58531 21-FEB-97 15:58:06 -9999 21-FEB-97 15:58 0.00000e+00 0

Extensive ESA surface scatter c150x500m with artefact densities up to 100 pieces/m². The material is a uniformly fine grained basalt, light grey in colour and with good flaking properties. There are very few diagnostic pieces, and much of the material appears naturally fractured, with surface abrasion present on all pieces examined.

Although probably ESA for the major part, the presence on the site of hydrothermal vein quartz flakes with MSA characteristics indicates longer term importance of the site as a raw material quarry. The basalt member appears less than 0.3m thick at this point and strikes more or less north-south.

W 020 S2837.28572 E01748.43950 21-FEB-97 16:24:23 -9999 21-FEB-97 16:24 0.00000e+00 0

Surface scatter of MSA flakes in hornfels and hydrothermal vein quartz, on eastern footslopes of low ridge.

W 021 S2837.26609 E01748.17622 21-FEB-97 16:31:35 -9999 21-FEB-97 16:31 0.00000e+00 0

Isolated find of MSA polyhedral core in hydrothermal vein quartz, slopes of low boulder kopje.

W 022 S2845.99668 E01753.69138 22-FEB-97 06:01:02 -9999 22-FEB-97 06:01 0.00000e+00 0

Storage cairn built in lee of free standing boulder at foot of mountainslope overlooking north bank of Orange River. The cairn is dispersed and partly filled with drift sand.

W 023 S2845.69541 E01751.89955 22-FEB-97 08:05:11 -9999 22-FEB-97 08:05 0.00000e+00 0

Burial cairns on footslopes of mountain overlooking north bank of Orange River. One cairn is located in an isolated position higher up among the slope rubble and consists of a 3mø ring of small boulders, infilled with pieces of hydrothermal vein quartz. The cairn also has one upright tabular-shaped stone. Although this feature may also have served as a marker cairn, the fact that it does not appear to have been added to or repaired indicates that it is more likely to be a grave, possibly of an important individual. On the lower slopes, and slightly downstream is a group of three burial cairns. Rather than being excavated into the rubble slope itself, these graves were dug into the light colluvial silt of the river terrace. As a result, they have been slightly undermined by erosion and the boulders are slightly dispersed. There is a small stockpost homestead about 30m away and the cairns are known to contain burials, although of unknown age and identity.

W 024 S2845.73436 E01751.18437 22-FEB-97 08:35:28 -9999 22-FEB-97 08:35 0.00000e+00 0

Stone hut and hearth features associated with flakes of bone and hydrothermal vein quartz, on silt terrace above Orange River.

W 025 S2845.67996 E01750.78590 22-FEB-97 08:47:34 -9999 22-FEB-97 08:47 0.00000e+00 0

Semi-circular stone enclosure c5mø, on silt terrace above Orange River.

W 026 S2845.51774 E01749.59886 22-FEB-97 09:23:42 -9999 22-FEB-97 09:23 0.00000e+00 0

Suspected burial cairn, slightly dispersed, situated on low rocky ridge overlooking Orange River silt terrace.

W 027 S2845.41313 E01749.49200 22-FEB-97 09:29:44 -9999 22-FEB-97 09:29 0.00000e+00 0

Surface scatter of bone flakes and hydrothermal vein quartz, associated with quern stones made on large flat river cobbles, situated in silt terrace dunefield overlooking Orange River. The site appears to be an old drift, with a wide island of cobbles.

W 028 S2836.96643 E01748.09961 23-FEB-97 08:09:38 -9999 23-FEB-97 08:09 0.00000e+00 0

Crudely constructed blind overlooking a small basin in outcropping granite, probably used for hunting sandgrouse after rain.

W 029 S2836.82127 E01748.26892 23-FEB-97 08:30:06 -9999 23-FEB-97 08:30 0.00000e+00 0

Isolated find of LSA hornfels flake, on same rocky ridge as Site 28.

W 030 S2836.42248 E01751.14575 23-FEB-97 12:14:10 -9999 23-FEB-97 12:14 0.00000e+00 0

Surface scatter of MSA flakes with some suspected LSA and fragmented ostrich eggshell, in nek between low boulder kopjes.

W 031 S2837.11417 E01752.17121 23-FEB-97 14:57:31 -9999 23-FEB-97 14:57 0.00000e+00 0

Low density LSA scatter of flaked hydrothermal and crystal quartz on ridge overlooking Haibpforte.

W 032 S2838.16248 E01746.21960 23-FEB-97 16:04:24 -9999 23-FEB-97 16:04 0.00000e+00 0

Crudely constructed blind similar to that of Site 28, and in similar context. Probably used for hunting sandgrouse after rain.

W 033 S2838.06206 E01746.14010 23-FEB-97 16:10:08 -9999 23-FEB-97 16:10 0.00000e+00 0

Isolated find of ESA quartzite flake, on gravel plains.

W 034 S2837.68419 E01745.80665 23-FEB-97 16:24:12 -9999 23-FEB-97 16:24 0.00000e+00 0

Isolated find of LSA hydrothermal vein quartz flake on low gravel bank.

W 035 S2837.79169 E01746.54179 23-FEB-97 16:41:28 -9999 23-FEB-97 16:41 0.00000e+00 0

Small scatter of ESA basalt flakes, on gravel plains.

W 036 S2837.92591 E01747.07673 23-FEB-97 16:54:40 -9999 23-FEB-97 16:54 0.00000e+00 0

Isolated find of MSA hornfels disc core, on gravel plains.

W 037 S2840.34891 E01751.94719 24-FEB-97 07:36:36 -9999 24-FEB-97 07:36 0.00000e+00 0

Small scatter of LSA hydrothermal vein quartz flakes, among granite boulders.

W 038 S2840.32284 E01752.22818 24-FEB-97 07:49:37 -9999 24-FEB-97 07:49 0.00000e+00 0

Small scatter of LSA quartzite and hydrothermal vein quartz flakes, among granite boulders.

W 039 S2843.20160 E01747.14818 25-FEB-97 07:38:47 -9999 25-FEB-97 07:38 0.00000e+00 0

Small scatter LSA flakes, in low hill saddle near spring.

W 040 S2845.37934 E01746.57590 25-FEB-97 09:20:06 -9999 25-FEB-97 09:20 0.00000e+00 0

Three German military graves on high gravel terrace at bottom of steep mountainslope overlooking Orange River. The graves are situated in a slight hollow caused by stream erosion. The graves are oriented north-south and placed less than 1m apart, having roughly constructed

rectangular borders pointed with cement. The cast iron headstones are not attached to the graves but merely propped upright with stones. Inscriptions on the headstones are as follows, from west to east:

Es kämpfte für Kaiser und Reich
 Gefreiter Gustav Stückle
 geb 21.10.82
 in Necktar-Thailfingen
 vermisst seit 16.8.1906

Es kämpfte für Kaiser und Reich
 Unteroffizier Friedrich Ehlers
 geb 21.2.81 in Bocklum
 vermisst seit 16.8.1906

Hier ruht in Gott
 Oberleutnant
 Richard Barlach
 geb 9.12.68 in Ratzeburg
 gef 23.7.1906

W 041 S2844.92937 E01746.02037 25-FEB-97 10:04:30 -9999 25-
 FEB-97 10:04 0.00000e+00 0

Dispersed scatter of ESA/MSA flakes on rocky pediment above silt terrace.

W 042 S2844.49518 E01745.65891 25-FEB-97 10:27:02 -9999 25-

FEB-97 10:27 0.00000e+00 0

Stone hut circles, two conjoined 1.5-2.0mø, no visible associations but probably recent pastoral; on gravel outwash fan.

W 043 S2844.47458 E01745.54948 25-FEB-97 10:35:20 -9999 25-FEB-97 10:35 0.00000e+00 0

Group of seven burials, with the most recent probably dating from the 1950's or 60's. Provisional relative dating based on talcum powder tin, fragments of earthenware teacup and parts of drycell battery. In shelter of a low ridge at outer edge of river pediment.

W 044 S2839.16412 E01742.41419 26-FEB-97 09:42:59 -9999 26-FEB-97 09:42 0.00000e+00 0

Foundations of two drystone house and livestock enclosure structures, with less than 1m height of walling still intact. The more substantial walls are parallel coursed with rubble filling, while the rest are single thickness stone walls. The floor of the dwelling has a layer of compacted *Cyperus* thatch which is partly burnt and decomposed. Associated with these are fragments of imported transfer printed and painted earthenware probably dating to the turn of the century. The buildings overlook a small brackish spring at the head of a rocky kloof that leads via a number of dry river courses towards the Orange River, about 20km away. The spring had been cleared of rubble on at least one occasion and later replaced by a hand-dug well which is still in use. On the ridge surrounding the homestead are a number of semicircular structures which appear to have been made of stone robbed from the walls of these buildings. It is possible that the homestead was abandoned during or after the Nama uprising of 1904-07.

W 045 S2839.34823 E01742.39906 26-FEB-97 10:46:59 -9999 26-
FEB-97 10:46 0.00000e+00 0

Rock outcrop with evidence of rubbing 2m above ground and probably by elephant, in narrow rocky kloof below Site 44.

W 046 S2836.93907 E01749.63781 26-FEB-97 15:42:19 -9999 26-
FEB-97 15:42 0.00000e+00 0

Isolated find of ESA basalt polyhedral core, on banks of braided streambed in extensive outwash fan. Probably a northern extension of Site 19, or derived from same raw material source.

W 047 S2836.76333 E01749.61817 26-FEB-97 15:49:46 -9999 26-
FEB-97 15:49 0.00000e+00 0

Suspected burial cairn 1.0mø on western pediment of low kopje outcrop on extensive outwash fan.

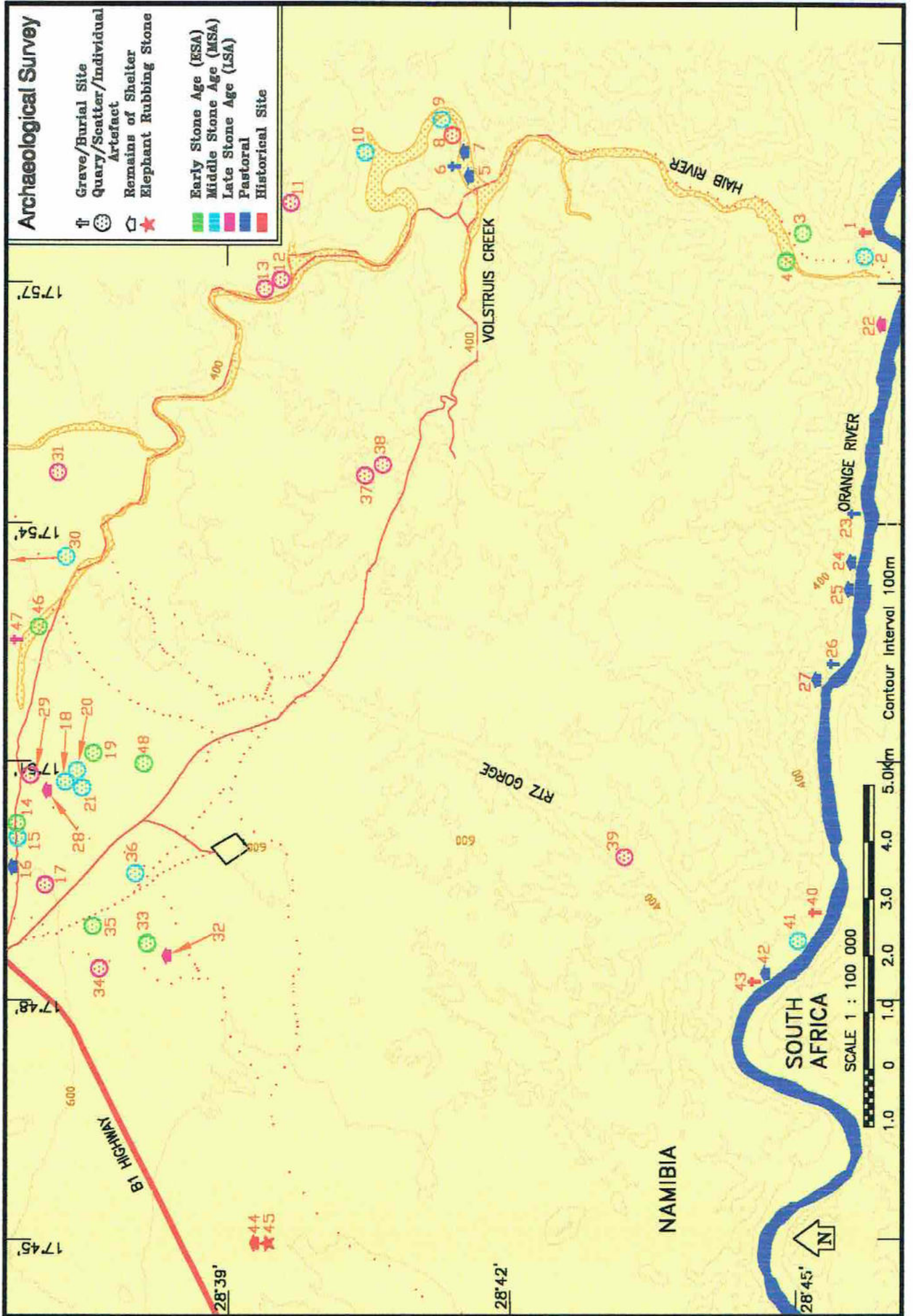
W 048 S2837.44730 E01748.08545 26-FEB-97 17:15:43 -9999 26-
FEB-97 17:15 0.00000e+00 0

Moderately dense scatter of ESA basalt polyhedrals and flakes; probably a southern extension of Site 19 or the same basalt member.

Archaeological Survey

- ↑ Grave/Burial Site
- ⊙ Quarry/Scatter/Individual Artefact
- 🏠 Remains of Shelter
- ★ Elephant Rubbing Stone

- 🟢 Early Stone Age (ESA)
- 🟡 Middle Stone Age (MSA)
- 🟠 Late Stone Age (LSA)
- 🟦 Pastoral
- 🟥 Historical Site

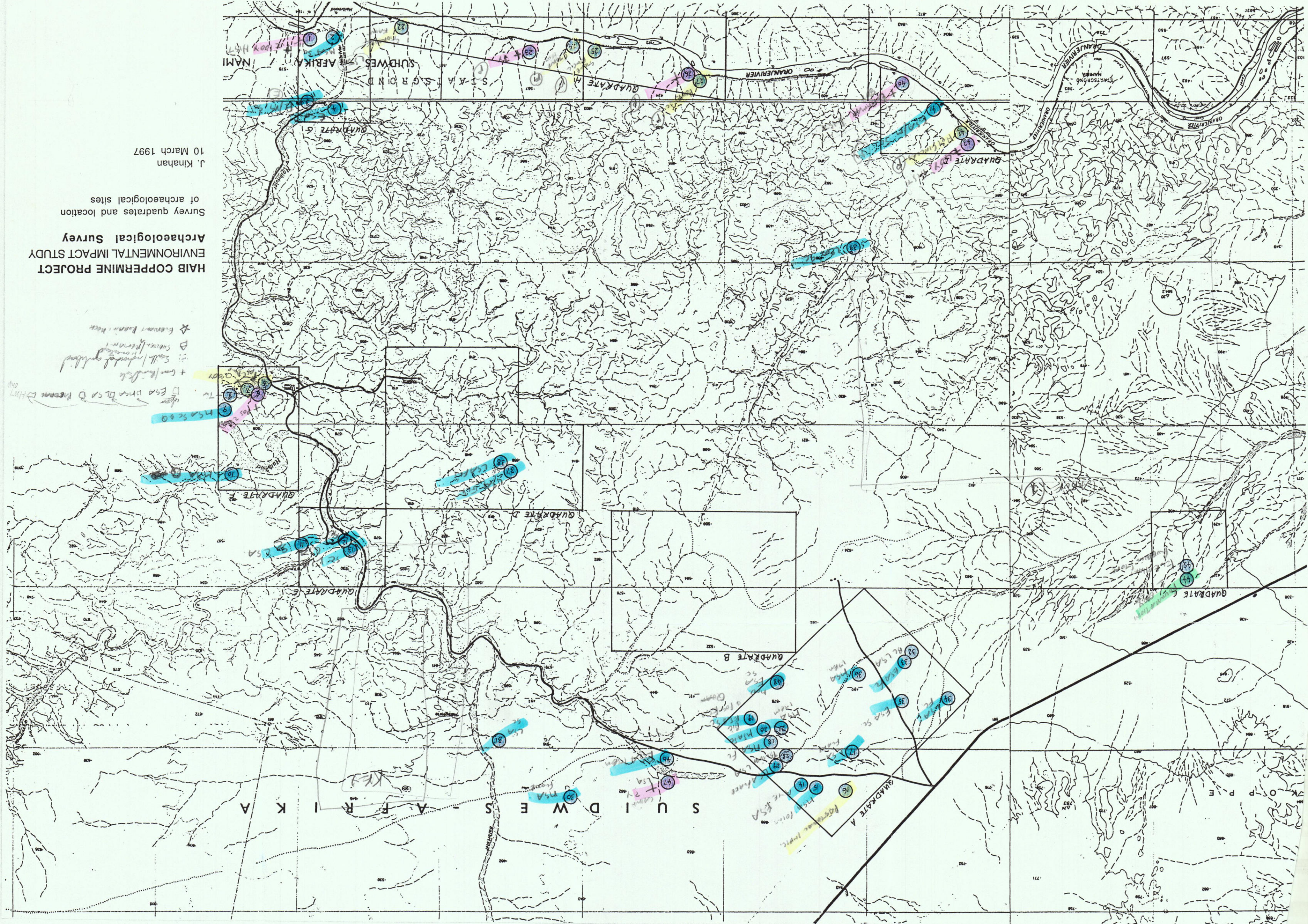


**HAIB COPPERMINE PROJECT
ENVIRONMENTAL IMPACT STUDY
Archaeological Survey**

Survey quadrates and location
of archaeological sites

J. Kinahan
10 March 1997

☆ Eastern Bushveld
□ South African
+ Small Bushveld
+ Small Bushveld
□ ESN Dron BLSA D Reserve DHT



Übersichtsskizze zu den Operationen im Südosten des Schutzgebiets.



Klein

Gama Land

Britische Betschwana Land

Maßstab 1:125000.

0 10 20 30 40 50 km.

APPENDIX C

QRS 354 Haib letter for Consent Application from John Kinahan

J.KINAHAN, Archaeologist

Cell: 081-3320832

Email jkinahan@iafrica.com.na

15h January 2024

Knight Piesold
Gauteng
South Africa

For attention: Joseph Mülders

Dear Mr Mülders

Heritage consent: Haib copper mine, Karas Region, Namibia

Continuing exploration work at the Haib copper mine project (EPL 3140) requires that the client obtain consent from the National Heritage Council. Such consent is based on the results of systematic field survey and assessment of archaeological sites and materials protected under the National Heritage Act (27 of 2004).

A detailed field survey of EPL 3140 was carried out by the undersigned J. Kinahan in 1997 with Parkman Namibia (Pty) Ltd acting as environmental consultant. The undersigned was commissioned by Knight Piesold in 2023 to carry out further field survey in relation to the proposed surface works of the Haib project and covering ground that was previously not accessible.

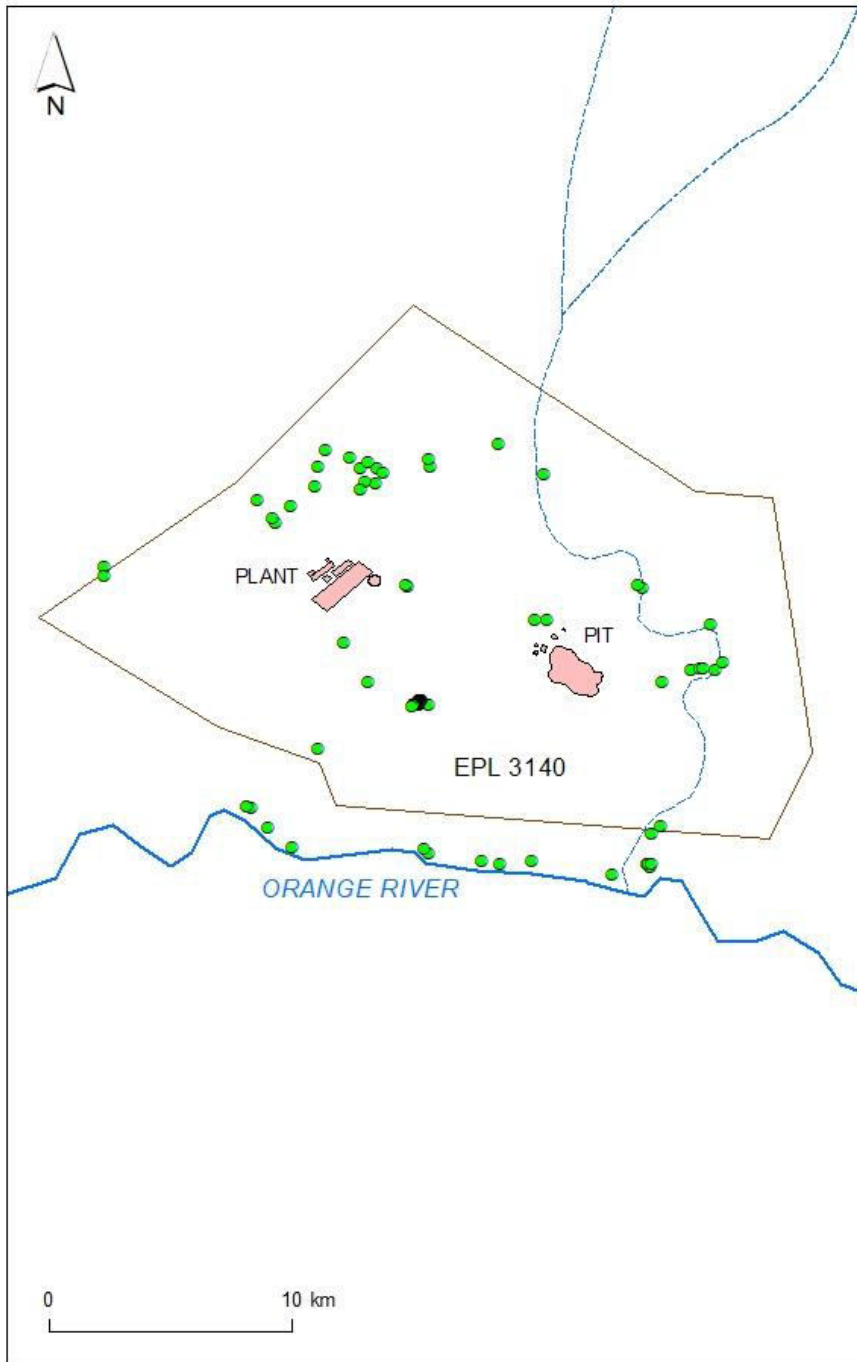
The attached map indicates the cumulative results of field survey on EPL 3140 together with the intended location of the mine pit area and plant. These survey results show that no archaeological sites are directly affected by the intended mine development. On this basis it is recommended that the applicant be granted Heritage Council consent to proceed with the exploration program pending completion of the full archaeological survey and assessment report.

It is intended that the full archaeological survey and assessment report will be completed in the first quarter of 2024.

With kind regards



J. Kinahan PhD



EPL 3140 archaeological sites (green dots) in relation to the intended Haib copper mine pit and plant.

APPENDIX D

EPL 3140 - EMP Feb 2021-2024



global environmental solutions

Haib Minerals (Pty) Ltd

Environmental Management Plan for the proposed amendment of
additional exploration activities on Haib Minerals (Pty) Ltd EPL

3140

SLR Project No.: 734.08012.00001

Report No.: 1

August 2020

Haib Minerals (Pty) Ltd

Environmental Management Plan for the proposed amendment of
additional exploration activities on Haib Minerals (Pty) Ltd EPL

3140

SLR Project No.: 734.08012.00001

Report No.: 1

August 2020

DOCUMENT INFORMATION

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Client	Haib Minerals Namibia Limited
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ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED AMENDMENT OF ADDITIONAL EXPLORATION ACTIVITIES ON HAIB MINERALS (PTY) LTD EPL 3140

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ACRONYMS AND ABBREVIATIONS

Below a list of acronyms and abbreviations used in this report.

Acronyms / Abbreviations	Definition
CITES	Convention on International Trade in Endangered Species of Fauna and Flora
DSM	Deep South Mining (Pty) Ltd
EMP	Environmental Management Plan
EPL	Exclusive Prospecting License
GFM	Great Fitzroy Mines NL
MET	Ministry of Environment and Tourism
MME	Ministry of Mines and Energy
PG	Project Geologist
DCS	Drilling Contractor Supervisor
RTZ	Rio Tinto Zinc

ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED AMENDMENT OF ADDITIONAL EXPLORATION ACTIVITIES ON HAIB MINERALS (PTY) LTD EPL 3140

1 INTRODUCTION TO THE EXPLORATION ACTIVITIES

1.1 BACKGROUND TO THE PROPOSED EXPLORATION ACTIVITIES

Exploration and small scale mining activities of the “Haib copper deposit” commenced as early as the late 1800’s and early 1900’s. After World War II, the prospect owner at the time carried out small scale mining and tank leaching operations. Various prospecting companies continued to show an interest in the deposit and furthered prospecting activities towards the mid 1900’s.

Rio Tinto Zinc (RTZ) conducted the first extensive and systematic investigation of the Haib deposit during the 1970’s. The exploration programme focused largely in an area of the EPL located in and around the dry river bed of the Volstruis River. (Refer to

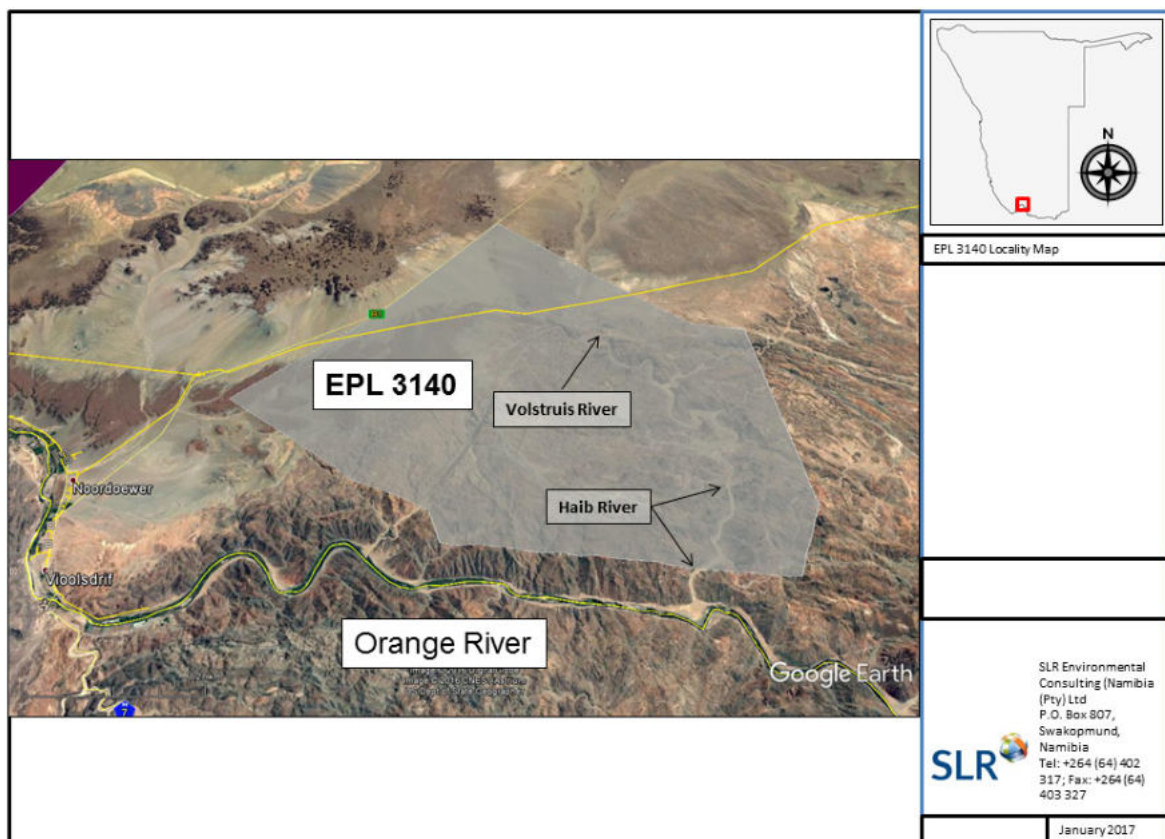


Figure 1-1 and Figure 1-2). RTZ drilled a total of 120 holes. They conducted various sampling programmes including geochemical and geophysical prospecting. During this time RTZ also erected two camp sites on the EPL, indicated in Figure 1-2 and Figure 1-3.

After RTZ relinquished their prospecting rights in 1975, more companies showed interest in the Haib deposit and in the 1990's Great Fitzroy Mines NL (GFM) acquired the deposit and continued with exploration activities until late 1990's.

In 2003, 100% of the mineral rights were vested in the Namibian Government. In 2004 the Exclusive Prospecting Licence (EPL) 3140, inclusive of the entire Haib deposit and a large surrounding area was granted to Deep South Mining (Pty) Ltd (DSM), subsequently renewed in 2007, 2009 and 2011.

From about 2008, Teck Namibia Limited (Teck) has managed the exploration activities under a joint venture agreement with DSM. In 2013 the mineral licence was transferred to the holding company Haib Minerals (Pty) Ltd. Haib Minerals has conducted a comprehensive exploration programme at the Haib and immediate surroundings which includes the following:

- Recon mapping and logging of the historic core;
- large geophysical (gradient array IP) surveys;
- drilling a total of 32 holes spread over four different target areas (Refer to Figures 1-2 and 1-3);
- re-sampling of 14 holes of historic core;
- soil and stream sediment sampling; and
- re-evaluating the geological model of the deposit.

In 2014, an EMP for Haib Minerals Namibia's exploration activities in the current EPL 3140 was prepared and approved by the Ministry of Environment and Tourism (MET), and implemented. Haib Minerals proposes now to continue with additional, similar, exploration activities at about 10 identified sites within the perimeter of the already disturbed areas/ target areas in the EPL 3140 (Figure 1-3).

During a meeting with MET (attended by SLR and Haib Minerals representatives) on the 31st of October 2016, MET indicated that the original (2014) EMP has to be amended to incorporate the proposed additional exploration activities. This was the only requirement from MET, as part of the Environmental Clearance Certificate (ECC) amendment application process, for them to consider issuing an Environmental Clearance for the proposed new activities.

This amended EMP has therefore been revised to include the proposed additional exploration activities that will involve:

- Drilling 20 holes for both metallurgical tests and geo-tech holes on three target area (Target Area 1, 2, and 3) with identified 10 sites (refer to Figure 1-3)
- Excavation of 4 representative trenches, ±20 meters long and ±1 meter deep in the above mentioned target areas.
- Extraction of water from the Orange River for drilling purposes (as per previous EMP).

SLR Consulting (Africa) (Pty) Ltd (SLR) has been appointed by Haib Minerals as the independent environmental assessment practitioners to undertake the EMP amendment process and submit the updated EMP to MET for their review and approval.

This EMP will only present additional information specific to the proposed exploration sites and provide where necessary the additional mitigation measures required to be implemented as part of the overall EMP. All the requirements raised in the original 2014 EMP remain valid.

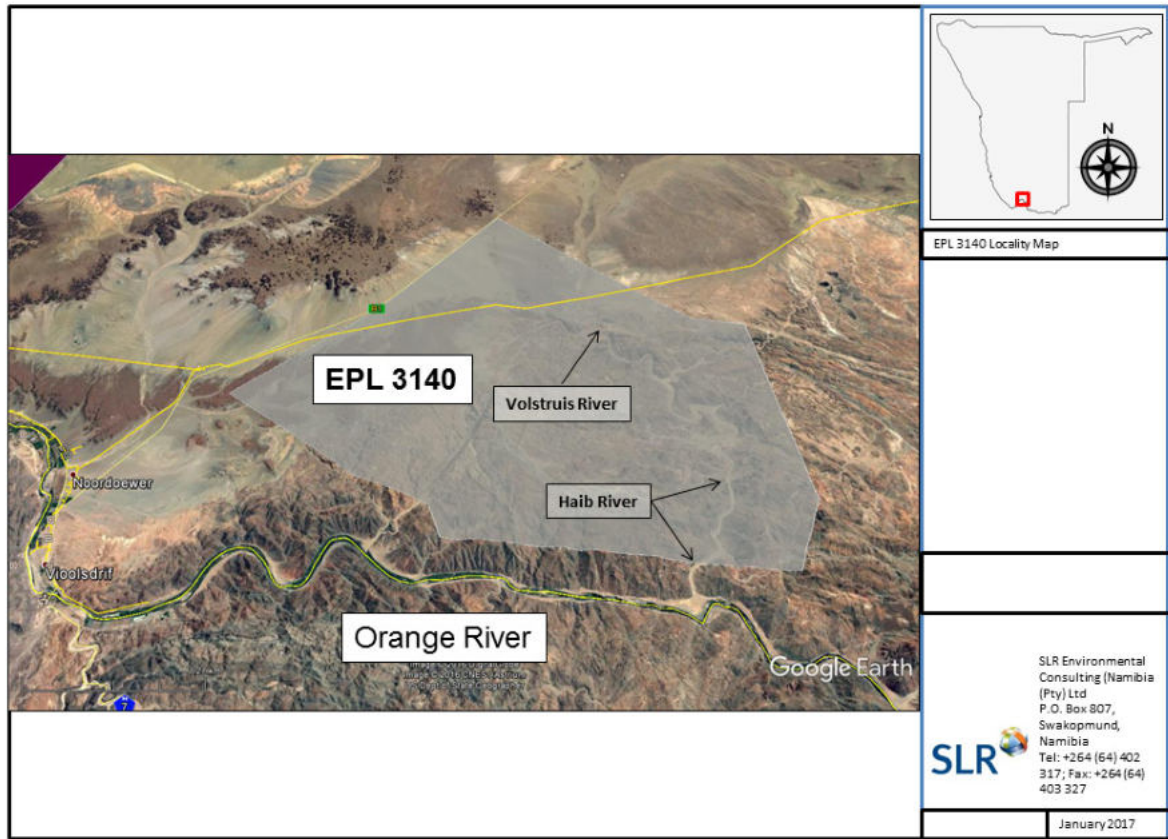


Figure 1-1: EPL 3140 Locality Map

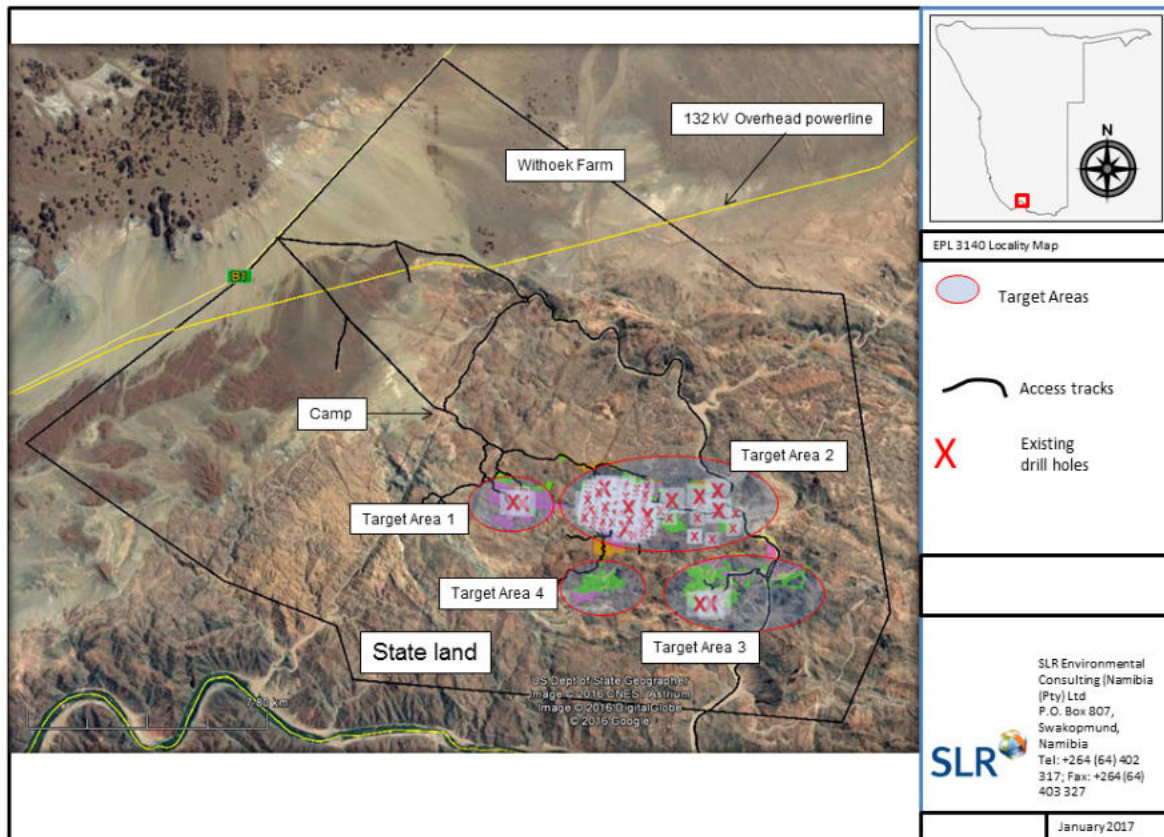


FIGURE 1-2: LOCAL SETTING AND INFRASTRUCTURE ON EPL 3140

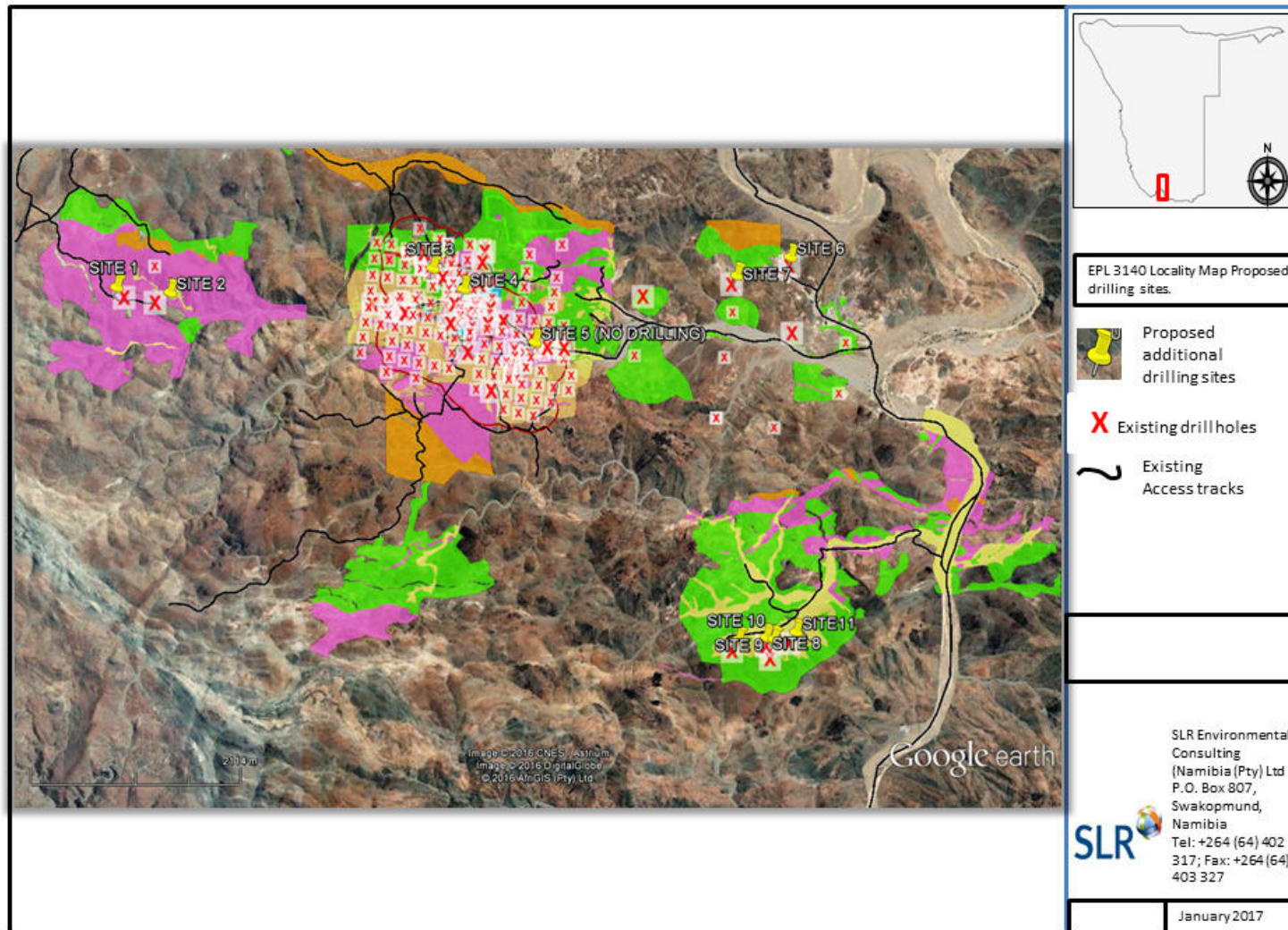


FIGURE 1-3: CLOSE-UP OF THE TARGET AREAS ON EPL 3140

1.2 BASELINE ENVIRONMENT AFFECTED BY THE PROPOSED ACTIVITY

The baseline information provided in this section is aimed at giving the reader perspective on the existing status of the biophysical environment of the proposed exploration sites. Information provided in this section is based on the site visit undertaken by the Environmental Practitioner on the 29th of November 2016 to the 1st of December 2016 at the target sites for the proposed additional exploration activities. The implementation of the additional exploration activities and related infrastructure may impact on the environment. To understand the basis of these potential impacts, the current baseline (taking previous exploration activities into consideration) is described below.

1.2.1 LOCATION, ENVIRONMENTAL SETTING AND TOPOGRAPHY

EPL 3140 covers an area of approximately 36 656 ha and is located in the south of Namibia, approximately 9 km (from the south-western boundary) from the town Noordoewer. The B1 Road forms the north-western boundary of the EPL. The Orange River runs immediately to the south of the EPL and a number of farms surround the EPL. (Refer to

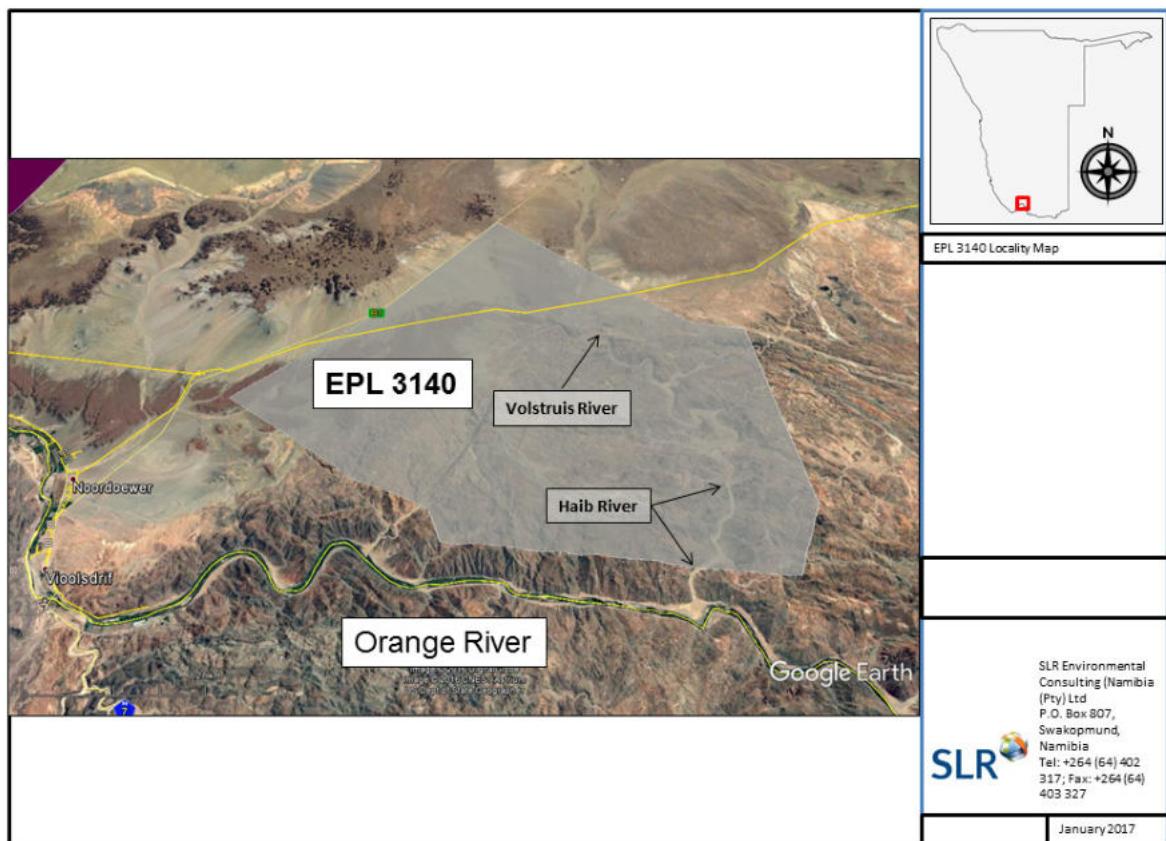


Figure 1-1). The EPL 3140 is within an area dissected by rolling hills with prominent dolerite sills in the Gomkab Basin with elevations varying from 200m to 700m mean sea level (msl). The topography for most of the proposed exploration drilling sites is rocky with undulating hills that has gentle rises and dips. The biggest portion of EPL 3140 lies on state land. The eastern part of the EPL is located

on an abandoned farm (Tsams). Withoek Farm is located on the north-eastern boundary of the EPL (Refer to Figure 1-2).

The three active target areas (indicated as target areas 1, 2 and 3 on Figure 1-2) are located towards the south-eastern side of the EPL, with the focus mostly in and around the dry river bed of the Volstruis River. A fourth target area (not drilled yet) lies to the south of target area 2. The proposed additional exploration drilling and trenching activities will be undertaken in the same target areas (target areas 1, 2 and 3) but adjacent to the previously drilled holes sites that have been capped as indicated in (Figure 1-2 and Figure 1-3)

1.2.2 BIODIVERSITY

The establishment of infrastructure as well as certain supporting activities have the potential to result in the loss of vegetation, habitat and related ecosystem functionality through physical disturbance and/or contamination of soil and/or water resources.

As a baseline, this section provides an outline of the type of vegetation occurring on each proposed site for exploration purposes and the status of the vegetation and highlights the occurrence of sensitive ecological environments including sensitive/ endangered species (if present) that require protection. It further provides information on the animals that occur/might occur in the area.

The EPL falls within the vegetation biome of the Nama Karoo with vegetation type consisting of the Karas dwarf shrubland. During the site visit, plant species were observed in the surrounding areas that have been left undisturbed and those already rehabilitated. The disturbed areas are related to previous exploration activities and limited to:

- The access tracks/ routes relating to the previously drilled site areas with capped holes,
- Access routes to the drill rig laydown areas with a footprint of 25m² (target sites)
- Access tracks to the historic holes
- Access tracks to the camp site.

Plant species were observed in the surrounding rocky outcrops, hill slopes, and dry river courses of all proposed additional 10 drilling sites in the 3 target areas. The observed plant species can be listed and their conservation status highlighted as below as referenced from the (Tree Atlas of Namibia) with site photos of the surrounding areas and identified plant species within the targeted sites for the proposed additional drilling (**TABLE 6-1**).

- *Aloe dichotoma*: Protected by the Nature Conservation Ordinance and listed as a CITES Appendix II species
- *Hoodia gordonii*: Listed as a CITES Appendix II species
- *Euphorbia gregaria*: Endemic to the Southern Namibia and listed as a CITES Appendix II species

- *Euphorbia virosa*: Listed as a CITES Appendix II species
- *Cadaba aphylla swartstorm*: Not regarded as a protected specie.

Plant species observed in the relevant surrounding areas, during the site visit between 29 November and 1 December 2016, are presented in Appendix B. Site coordinates and a short description of the current environment are also provided (linked to the photos at the relevant sites).

The following animals have been spotted by the Haib Minerals personnel in the past: Klipspringer; Blackback Jackal; snakes (Cobras), various scorpions; Kudu; Porcupine; Leopard and various bird species. Evidence of some of these was also noted during the site visit by SLR.

1.2.3 ROADS AND OTHER INFRASTRUCTURE

(Refer to Figure 1-2 and Figure 1-3).

The remains of the old, dilapidated Tsams Farm house is still present on the banks of the Haib River. Within the Volstruis River channel is also the remains of the old mine infrastructure and leach tanks as described in section 1.1 (Refer to photos in Appendix A).

Various tracks were established on the EPL over the years. The main access to the site is off the B1 Road approximately 19 km north-east of Noordoewer. Existing tracks that were created over the years of exploration in the area connect the four target areas and the various drill pads. Figure 1-2 indicates the various tracks and the dates they were created.

Most of the infrastructure relating to the main camp site established by RTZ in the 1970's is still in place and owned by the former owner of the Haib Mine and claims. (Refer to photos in Appendix A). These include:

- Various small buildings/houses
- Air strip
- Tennis court (dilapidated)
- Store rooms (samples)
- Toilets and sewerage tanks
- Redundant buried gasoline/diesel fuel tanks and remains of the former filling station
- Etc.

The second camp has largely been broken down with only a few concrete slabs remaining.

As part of their exploration program, Haib Minerals and their drilling contractors have used some of the above-mentioned infrastructure for their own accommodation and laydown of equipment and erected additional water tanks.

Access to the proposed exploration activities sites will use the same already established routes to the three target areas as indicated in Figure 1-3. Development of additional routes will be avoided as far as possible and where required, the recommendations and mitigation measures to establishing an access route will be followed.

1.2.4 ENVIRONMENT AND LAND-USE

The information presented in the section below was derived from the following sources:

- Visual observations during a site visit by SLR to the EPL and specifically the three active target areas.
- Discussions with Haib Minerals employees
- Atlas of Namibia
- Google Earth

The target areas are located within mountainous terrain, and are very hilly in nature. This area is unsuitable for farming and the current land-use (other than the exploration) is wilderness. Some very small scale, informal, subsistence farming with some small livestock is taking place in the north-western side of the EPL, which falls outside the mountainous terrain. The predominant land-use surrounding the EPL is subsistence farming with small livestock and further away some cattle.

The Haib River cuts through the EPL running from a north-westerly to south-easterly direction and then turning south where it feeds into the Orange River south of the EPL boundary. The smaller Volstruis River runs from the west to the east through the EPL into the Haib River with a number of other smaller washes feeding into these two Rivers. All of the above-mentioned rivers and washes are ephemeral.

Other than the old mining infrastructure and the redundant Tsams Farm house, which might have some heritage value, no visible signs of any cultural or archaeological sites within the target areas of the EPL were found during the site visit by SLR. No reported heritage sites were, or have been, reported within the specific target areas in the past (pers comms Neil Grumbley, Haib Minerals (2014)).

1.3 DETAILS OF PERSONS WHO PREPARED THE EMP

SLR Environmental Consulting (Namibia) (Pty) Ltd (SLR) is an independent firm of consultants who was appointed to compile this EMP. Werner Petrick, the Project Manager and Reviewer has over nineteen years of relevant experience in environmental management, conducting/managing EIAs, compiling EMPs and implementing EMPs and Environmental Management Systems. Marvin Sanzila, the project assistant has six years of experience in the environmental management discipline with four years' experience in the mining industry dealing with environmental management systems

implementation (ISO14001), Coordination and implementation of EMPs, legal compliance and two year with EIAs.

2 PLANNED ACTIVITIES AND ASSOCIATED INFRASTRUCTURE

2.1 EXPLORATION ACTIVITIES

Haib Minerals is planning to continue with their exploration activities on the three active target areas indicated in Figure 1-2 and Figure 1-3 (Target Areas 1 to 3). The activities will entail the drilling of an additional 20 holes; excavation of 4 representative trenches (± 20 meters long and ± 1 meter deep); extraction of water from the Orange River for drilling purposes; further mapping; refining the resource model; etc.

Haib Minerals will use diamond core drilling to drill the holes to an average depth of approximately 400 m. Diamond core drilling uses an annular diamond-impregnated drill bit attached to the end of hollow drill rods to cut a cylindrical core of solid rock. Holes within the bit allow water to be delivered to the cutting face. This provides three essential functions — lubrication, cooling, and removal of drill cuttings from the hole.

As far as possible, already existing drilling pads/ area will be used. A typical drilling pad/area will consist of a drill-rig, an area where the drill core and geological samples can be stored and a storage area for drill equipment, fuel and lubricants. This area is cordoned off and off-limits to those not part of the exploration team. The drilling pad/area is usually cleared and levelled and is approximately 10 m x 10 m. All drill-water will be collected in drill-sumps, which will be managed to prevent overflows. The drill-mud is discarded to the municipal waste dump (Noordoewer) when the drill-site is rehabilitated.

2.2 EMPLOYMENT AND HOUSING

A well-qualified and registered local Namibian drilling contractor will be utilized to conduct the drilling programme, supervised by Haib Minerals employees. Two drilling rigs should be used with each having their own drilling team, consisting of approximately 15 employees including operators, Haib Minerals Staff and a chef. The contractor will have one supervisor overseeing the activities on both rigs.

The Haib Minerals employees that will oversee the exploration activities will consist of the Project Geologist (overall responsible for the activities on EPL 3140), two junior geologists, three field technicians and a camp cook/cleaner.

The Haib Minerals personnel will be housed in the existing main camp site (previously established by RTZ). The contractors will set up their own camp at the secondary camp site (also established by RTZ) on the existing concrete slabs.

2.3 WASTE MANAGEMENT

The following types of waste will be generated during the exploration activities, in relatively small volumes:

Domestic waste (non hazardous) will be separated into recyclable and non-recyclable waste and stored in a manner that there can be no discharge of contamination to the environment. The recyclable material will be brought back to Windhoek for recycling and the non-recyclable material will be disposed of at the Noordoewer waste landfill site.

Potential hydrocarbon spills from vehicles and drilling equipment might lead to soil contamination and needs to be treated as a hazardous waste if not bio-remediated.

2.4 SANITATION

Haib Minerals employees will make use of the existing toilet/ablutions facilities at the main camp site. All sewerage and grey water is collected in tanks, which is pumped out by a contractor as required. Potable (chemical) toilets will be used at the contractor's camp as well as at the drilling sites.

Due to health and safety concerns, personnel may not relieve themselves in the surrounding environment.

2.5 WATER SUPPLY

Water for domestic purposes is bought in Noordoewer from NamWater and gets trucked in. Approximately 30 000 litres of water is utilised over a three week period.

The water for the drilling will be abstracted from the Orange River and trucked to the drilling rigs. Approximately 20 000 litres of water will be required for the drilling operations on a daily basis. A water abstraction license for abstracting water from the Orange River will be obtained, in line with the Promulgation of Water Resource Management Act, 2013 (Act No. 11 of 2013). Abstraction of water will be limited to permit specifications.

2.6 POWER SUPPLY

Power to the camp is provided through an on-site diesel generator. Diesel will be bought in Noordoewer and brought to site via a diesel bowser.

2.7 ACCESS ROADS

The existing access roads (refer to section 1.2.1 and Figure 1-2) will be used as far as possible. No new access roads are anticipated to be constructed and where required, mitigation measures will apply.

3 LEGAL FRAMEWORK

TABLE 3-1: RELEVANT LEGISLATION AND POLICIES FOR THE EXPLORATION ACTIVITIES

YEAR	NAME	Natural Resource Use (energy & water)	Emissions to air (fumes, dust & odours)	Emissions to land (non-hazardous & hazardous)	Emissions to water (industrial & domestic)	Noise (remote only)	Visual	Vibrations	Impact on Land use	Impact on biodiversity	Impact on Archeology	Emergency situations	Socio-economic	Safety & Health
1990	The Constitution of the Republic of Namibia of 1990	X	X	X	X	X	X	X	X	X	X	X	X	X
1997	Namibian Water Corporation Act, 12 of 1997	X											X	
1992	The Minerals (Prospecting and Mining) Act 33 of 1992	X	X	X	X					X				
2001	The Forestry Act 12 of 2001	X							X	X				
2013	Water Resources Management Act, 11 of 2013	X			X								X	
2004	National Heritage Act, 27 of 2004										X			X
2007	Environmental Management Act, 7 of 2007	X	X	X	X	X	X	X	X	X	X		X	X
2012	Regulations promulgated in terms of the Environmental													

YEAR	NAME	Natural Resource Use (energy & water)	Emissions to air (fumes, dust & odours)	Emissions to land (non-hazardous & hazardous)	Emissions to water (industrial & domestic)	Noise (remote only)	Visual	Vibrations	Impact on Land use	Impact on biodiversity	Impact on Archeology	Emergency situations	Socio-economic	Safety & Health
	Management Act, 7 of 2007													
1975	Nature Conservation Ordinance 14 of 1975	X			X					X	X			
1976	Atmospheric Pollution Prevention Ordinance, 11 of 1976		X											
1995	Namibia's Environmental Assessment Policy for Sustainable Development and Environmental Conservation	X	X	X	X	X	X	X	X	X	X	X		X

4 ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS

Environmental aspects and potential impacts associated with Haib Minerals's explorations activities are summarised below:

4.1.1 HYDROCARBON SPILLS

Diesel and other hydrocarbons stored on site as well as vehicles and machinery used for the exploration purposes and road-making and clearing activities, pose an environmental risk due to potential hydrocarbon spills. Soil, groundwater and surface water (i.e. Volstruis River and the Haib River) could become contaminated, however the small scale of activities and relatively small volumes of hydrocarbons that could be spilled makes this potential impact less significant. Exploration activities will only be limited to the footprint of the proposed target sites for drilling activities.

4.1.2 WASTE MANAGEMENT

Waste generated on site (i.e. domestic waste and hydrocarbon contaminated material, empty lubrication bottles, etc.) has the potential to pollute the environment, cause environmental degradation and impact negatively on wildlife, if not properly managed.

4.1.3 BIODIVERSITY

The road making activities, trenching and clearing activities for the drill pads, and other associated activities could result in the general disturbance and/or physical destruction of vegetation and/or fauna.

Excavations (i.e. trenches) may create a hazard to fauna. Large fauna could fall into excavations and become hurt and smaller fauna may fall in and become trapped. All excavation will be opened and closed on the same day, or temporarily fenced off in order to limit this risk.

Drilling contractors and Haib Minerals employees could impact on the biodiversity through illegal collection of firewood, poaching, road kills etc.

4.1.4 ARCHAEOLOGY

The old mining infrastructure and the redundant Tsams Farm house, as discussed in section 1.2.3, might have some heritage value. This was however not confirmed by a heritage specialist. These sites will not be impacted by the proposed exploration activities. No visible signs of any (other) cultural or archaeological sites within the target areas of the EPL were found. Shall the need arise to undertake

exploration activities in the area, an archaeological specialist should be contacted to confirm the site's significance value.

However, a chance find procedure has been included in this EMP.

4.1.5 WATER QUALITY & QUANTITY

Groundwater and surface water quality and quantity can be affected through associated activities, i.e. waste management, hydrocarbon spillages, sewerage management and water usage during drilling activities and for domestic purposes at the camp site. Due to the relatively small scale of activities these aspects are unlikely to cause significant impacts.

4.1.6 AIR QUALITY & NOISE

The road making activities; clearing and levelling of drill pad/areas; and movement of vehicles and machinery on the gravel roads will generate some dust. Gaseous emissions associated with vehicles and machinery also has the potential to impact on air quality.

Noise will be generated by exploration activities, i.e. drilling, movement of vehicles, etc.

Due to the remoteness of the target areas, i.e. the distance from closest sensitive receptors from an air quality and noise point of view, no impacts are foreseen and no mitigation required.

4.1.7 SOCIAL ASPECTS

A number of Haib Minerals employees and contractors will stay on site (camp sites) which can lead to interaction with third parties and related social impacts. However, there are no communities near the camp site. Refer to Table 5-6 in the EMP for the management actions required to avoid potential social impacts.

5 ENVIRONMENTAL ACTION PLANS

The management measures proposed to mitigate the potential impacts are detailed in the action plans below.

5.1 ACTION PLANS TO ACHIEVE OBJECTIVES AND GOALS

Action plans to achieve relevant objectives/goals are listed in tabular format together with timeframes for each action. The action plans include the timeframes and frequency for implementing the mitigation measures as well as identifying the responsible party.

TABLE 5-1: ACTION PLAN – HYDROCARBON AND ASSOCIATED SPILLS MANAGEMENT

Objective:

The objective of the mitigation measures is to handle and store hydrocarbons in such a way as to prevent spills. Where spills do occur, to ensure the spill is contained and the contamination cleaned-up and contaminated material disposed of responsibly.

Activities / facilities	Management and mitigation measures	Action plan	
		Frequency / target date	Responsible parties
Storage of hydrocarbons (i.e. diesel bowser, oil drums, etc.)	<ul style="list-style-type: none"> In all areas where there is storage of hydrocarbons, there will be containment of spillages on impermeable floors and bund walls that can contain 110% of the volume of the hazardous substances. Regular inspection of hazardous storage area is required Regular environmental awareness should include potential risks associated with hydrocarbons 	Throughout the exploration period	Project Geologist (PG) & Drilling contractor supervisor (DCS)
Vehicles, machinery, generators and equipment	<ul style="list-style-type: none"> Establish and maintain impermeable banded areas around diesel generators. Vehicles, machinery and equipment shall be kept in good working condition to ensure they do not leak oil/diesel. Vehicles and machinery will be serviced off site as far as possible. However, in the event where machinery needs to be repaired/serviced on site all care shall be taken to prevent spillage of oil/diesel by performing the work on impermeable surfaces or proper placement of drip trays. All used parts from vehicles and machinery (which may include, but not limited to, oil filter, pipes, rags, cans) will be collected and removed from site and disposed of in an appropriate manner. All refueling of vehicles will take place on impermeable surfaces Pollution will be prevented through basic infrastructure design and through maintenance of equipment. 	Throughout the exploration period	PG & DCS
General (spills)	<ul style="list-style-type: none"> Any spills will be contained and cleaned up immediately Spill kits will be readily available on site. Employees and/or contractors will be shown how to use the spill kits to enable containment and remediation of pollution incidents. Haib Minerals will establish environmental awareness in employees and contractors Soil contaminated with hydrocarbons shall be excavated and stored in a safe place at the camp site, until such time when it shall be disposed of at the Hazardous waste disposal facility in Windhoek. 	Once off Start of exploration As and when required	PG & DCS PG PG & DCS

TABLE 5-2: ACTION PLAN – WASTE MANAGEMENTObjective:

The objective of the management measures is to ensure proper storage, removal, transportation and disposal/recycling of hazardous and non-hazardous (i.e. domestic) waste

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
General	<ul style="list-style-type: none"> Waste shall be separated and recycled / re-used where possible. 	Throughout the exploration period	PG & DCS
	<ul style="list-style-type: none"> No burning or burying of waste material will be allowed on site. 	Throughout the exploration period	PG
	<ul style="list-style-type: none"> Employees and contractors will be shown the importance of correct waste disposal as well as waste minimisation and recycling. 	Start of exploration	PG
<ul style="list-style-type: none"> Suitable receptacles with lids for waste disposal will be provided at appropriate locations on site. These receptacles will be clearly marked for different waste types. 	PG & DCS		
Collection and storage of waste	<ul style="list-style-type: none"> Dispose of waste at the Noordoewer landfill site 	Throughout the exploration period	PG & DCS
Disposal of non-hazardous (domestic) waste	<ul style="list-style-type: none"> Recyclable material shall be taken to Windhoek for recycling at an identified recycling company. 	Throughout the exploration period	PG
Recyclables	<ul style="list-style-type: none"> Hazardous waste (including hydrocarbon contaminated material/soil) will be disposed of at the Windhoek hazardous waste disposal facility. 	Throughout the exploration period	PG
Disposal Hazardous Waste	<ul style="list-style-type: none"> Medical waste shall be disposed of at the Noordoewer medical waste facility. 	Throughout the exploration period	PG
Medical waste	<ul style="list-style-type: none"> Written evidence of safe disposal of waste will be kept. 	Each time waste gets disposed	PG
Disposal records (domestic and industrial)			

TABLE 5-3: ACTION PLAN – BIODIVERSITY & LAND USEObjective:

The objective of the mitigation measures is to limit the destruction and general disturbance of biodiversity.

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Vehicles and machinery	<ul style="list-style-type: none"> Earth moving machinery and vehicles will follow designated paths and roads. 	Throughout the exploration period	PG & DCS
Clearing new areas and develop drill pads, new access tracks	<ul style="list-style-type: none"> The footprint of the area to be disturbed will be minimised as far as is practically possible. In this regard, use existing access roads and previously disturbed areas (i.e. drill pads, etc.) as far as practically possible. (Minimize the creation of new access tracks). Strip topsoil from new areas to be cleared (depending on availability). Temporarily stockpile the topsoil for the duration of activities and replace once the excavations have been filled. 	Before clearing of new areas Ongoing	PG & DCS

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
	<ul style="list-style-type: none"> No Quiver trees or other indigenous or protected trees/vegetation will be harmed (or removed) in any way. Permits will be required for the removal of protected tree species. 		
Drilling	<ul style="list-style-type: none"> All drill holes shall have suitable casing to prevent collapse and secure capping to prevent small mammals or insects falling into the drill hole. Open water should be fenced off and preferably covered during night to avoid attraction of bees and wildlife. Implement prevention and mitigation measures according to the standard Haib Minerals drilling procedures, following international drill-regulations to prevent and mitigate the spillage of drill-mud. 	After drilling each hole Daily	PG & DCS PG & DCS
Trenching	<ul style="list-style-type: none"> Backfill the trenches as soon as possible after sampling is completed, preferably all excavations will be opened and closed on the same day, or temporary fence off in order to limit this risk of animals falling into trenches. Create ramps on the edges of the trenches for smaller animals to get out. The footprint of the area to be disturbed will be minimized as far as is practically possible. Position the trenches in such a way to avoid harming/removing Quiver trees or other indigenous or protected trees/vegetation. Strip topsoil from trenches to be excavated (depending on availability). Temporarily stockpile for the duration of activities and replace once the excavations have been filled. 	Throughout the exploration period	PG & DCS
General	<ul style="list-style-type: none"> All vehicles and moving machinery will follow designated routes Haib Minerals will implement a zero tolerance policy with regards to the killing or collecting of any biodiversity. This applies to people directly employed by Haib Minerals as well as any contractors working on their behalf. Employees and contractors will be shown the value of biodiversity and the need to conserve the species and systems that occur within the project area. No open fires will be permitted on site. Appropriate ablution facilities will be provided for employees. These facilities must be maintained. Speed limits will be enforced to promote road safety, and prevent corrugation and road kills. Include these rules in the environmental awareness programme 	Throughout the exploration period Start of exploration Ongoing Throughout the exploration period	PG & DCS PG PG & DCS PG

TABLE 5-4: ACTION PLAN – ARCHAEOLOGYObjective:

The objective of the mitigation measures is to prevent the disturbance/loss of heritage resources that may be caused by the exploration activities.

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Old mining infrastructure and the redundant Tsams Farm house	<ul style="list-style-type: none"> The old mining infrastructure in the Volstruis River and the redundant Tsams Farm house shall be left undisturbed. No Haib Minerals Employee or contractor shall be allowed to move/remove any of the above mentioned infrastructures. Employees and contractors will be educated on the possible heritage value of the said structures and the need to conserve this. 	Throughout the exploration period	PG PG & DCS PG
General (Clearing new areas and trenching)	<ul style="list-style-type: none"> The area of disturbance will be limited as far as practically possible Avoid disturbance to areas outside the approved mining and construction area Limit employee access to operation/ exploration areas only Limit vehicle access to designated routes only 	Throughout the exploration period	PG & DCS
Chance Find procedure	<ul style="list-style-type: none"> The contractors and employees should look out for the following types of archeological features/items, as part of a 'chance find' requirements: <ul style="list-style-type: none"> Site and artifacts relating to colonial era military activities Unmarked burial grounds Structural remains (storage pits, wells, foundations etc) Rock paintings and artifacts Miscellaneous archaeological finds In the event that new heritage and/or cultural and/or paleontological resources are discovered, the following process needs to be followed: <ul style="list-style-type: none"> work at the find will be stopped to prevent damage an appropriate heritage specialist will be appointed to assess the find and related impacts permitting applications will be made to the relevant authority, if required. In the event that any graves are discovered during operations, prior to damaging or destroying any identified graves, permission for the exhumation and relocation of graves must be obtained from the relevant descendants (if known) and the relevant local and provincial authorities. 	Throughout the exploration period	PG & DCS

TABLE 5-5: ACTION PLAN – WATER QUALITY AND USEObjective:

The objective of the mitigation measures is to prevent negative impacts associated with water quality.

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Ablution facilities	<ul style="list-style-type: none"> Ensure that sewerage tanks at the main camp are managed properly. Provide chemical toilets for contractor's camp site and each drilling site. Ensure that toilets are working properly and are cleaned at least weekly, so they do not pollute the surrounding environment or create hygiene problems. All sewerage from the chemical toilets and tanks will be pumped out by a contractor when required. Personnel may not relieve themselves in the surrounding bush 	On-going	PG
		Start of exploration	PG & DCS
		Weekly	PG & DCS
		As required	PG
		Ongoing	PG & DCS

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Water usage and control	<ul style="list-style-type: none"> Check for water spills and ensure repairs are made immediately to prevent water spillages. Obtain a water abstraction license for abstracting water from the Orange River in line with the Promulgation of Water Resource Management Act, 2013 (Act No. 11 of 2013). All drill-water will be collected in PVC lined drill-sumps, which will be managed to prevent overflows. Any spills will be contained and cleaned up immediately. 	Ongoing	PG
		Prior to abstracting water	PG
Contamination of groundwater/ surface water	<ul style="list-style-type: none"> Refer to "Hydrocarbon and associated spills Management Action plan". Non-toxic and biodegradable drilling lubricant shall be used. Implement prevention and mitigation measures according to the standard Haib Minerals drilling procedures, following international drill-regulations to prevent and mitigate the spillage of drill-mud. The drill-mud is discarded to the municipal waste dump (Noordoewer) when the drill-site is rehabilitated. 	Throughout the exploration period	PG & DCS

TABLE 5-6: ACTION PLAN – SOCIAL ISSUES & TRAININGObjective:

The objective of the mitigation measures is to prevent negative social impacts associated with people staying in the hostel on site.

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Employees – social issues	<ul style="list-style-type: none"> Have zero tolerance to alcohol in the workplace. Establish a HIV / AIDS / TB workplace policy and wellness programme. Only People working for Haib Minerals or their contractors will be allowed to stay at the on-site accommodation. A paramedic and ambulance will be on site during the drilling phase to supply First Aid in case of an accident. 	On-going Start of exploration Ongoing	PG
Training & Awareness	<ul style="list-style-type: none"> All individuals who work on, or visit, the sites are aware of the contents of the EMP. 	Start of exploration	PG

TABLE 5-7: ACTION PLAN – REHABILITATIONObjective:

The objective of the measures is to rehabilitate the drill sites, camp site and tracks to as close an approximation of the pristine state as is technically, financially and reasonably possible.

Activities / facilities	Technical and management options	Action plan	
		Frequency / target date	Responsible parties
Rehabilitation	<ul style="list-style-type: none"> • All drill sites, trenches and new (unlikely) access tracks should be photographed (1) before commencement, (2) after completion and (3) after rehabilitation • At completion of the exploration programme, and in consultation with MME, the following rehabilitation works is recommended: <ul style="list-style-type: none"> • All drill mud and cores will be removed from site; • All litter from the site will be taken to an appropriate disposal site. • All debris, scrap metal, etc. will be removed. • All camp infrastructure will be dismantled and removed and either sold as scrap metal or disposed of at appropriate waste disposal site • All water tanks and sewerage tanks will be dismantled and removed. • All sumps and trenches will be covered and contoured. Rehabilitate all pit and trench sites by infilling and topsoil replacement. • All the tracks to and at the sites will be rehabilitated. <ul style="list-style-type: none"> • Various trials will be conducted on one or more sections of roads that will not be used. • These trials should include at least the following: leave one section of the road as is; one section to be ripped; and one section to be covered with loose rock from the surrounding environment. • Monitor the rehabilitation success over time on all the trial sections for future implementation. The old mining infrastructure in the Volstruis River and the redundant Tsams Farm house shall be left undisturbed. 	As indicated After completion of exploration programme and consultation with MME.	PG Haib Minerals Country Manager and PG

6 PARTIES RESPONSIBLE FOR THE IMPLEMENTATION OF THE EMP

This section describes the roles and responsibilities for implementing the different parts of the environmental management plan (EMP).

6.1 HAIB MINERALS – COUNTRY (NAMIBIA) MANAGER

The Haib Minerals Country Manager has overall responsibility for environmental management on the exploration activities and all related activities and for ensuring this EMP is implemented.

In addition to the above, the Haib Minerals Country Manager is responsible for ensuring that all persons involved with the exploration activities comply with this EMP.

6.2 PROJECT GEOLOGIST

The Project Geologist (Haib Minerals Site Supervisor) will be responsible for assisting the Head of Exploration in all environmental issues, and specifically to ensure that the commitments as set out in this EMP are implemented for the duration of the exploration and rehabilitation activities.

Responsibilities related to compliance of this EMP:

- Regular inspections and auditing compliance to this EMP and any other relevant legal requirements e.g. licenses, authorisations, etc...
- Include environmental awareness during induction and on an ad hoc basis thereafter.
- Ensure compliance to this EMP and permits and authorisations issued to Haib Minerals by relevant authorities. Ensure responsibilities and target dates are developed for each one of the commitments in this EMP.
- Carefully manage the storage and handling of hydrocarbons and other materials.
- Monitor for biodiversity losses and implement control measures if necessary.
- Implement a waste management strategy.
- Monitoring and maintenance of equipment and machinery.
- Ensure the provision of adequate sanitation facilities.
- Implement an environmental awareness plan.

6.3 DRILLING CONTRACTOR SUPERVISOR

The Drilling Contractor Supervisor (DCS) will be contractually required to comply with the various commitments in this EMP.

The Haib Minerals PG (Site Supervisor) and the DCS will conduct daily informal inspections at contractor areas. Non-compliances will be recorded and action plans developed in conjunction with the contractor that contravened the commitment(s) of the EMP.

Contractors will be formally audited on a monthly basis through internal or external parties in order to determine compliance with the EMP. In the event of non-conformances, the contractor will be required to take corrective action according to the requirements of Haib Minerals and the EMP commitments.

Werner Petrick
(Project Manager and
Reviewer)

Marvin Sanzila
(Project Assistant)

APPENDIX A: PHOTOS



Photos 1 & 2: Established camp site




Photo 3: The remains of the old, dilapidated Tsams Farm house on the banks of the Haib River.





Photo 4: Remains of the old mine infrastructure and leach tanks within the Volstruis River



APPENDIX B: PLANT SPECIES OBSERVED AT THE PROPOSED EXPLORATION SITE



TABLE 6-1 OBSERVED PLANT SPECIES AT THE PROPOSED ADDITIONAL EXPLORATION SITES



Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
Haib West	Site 1: S 28° 41. 326' E17° 50. 751'	<ul style="list-style-type: none"> • Disturbance is as per footprint area of the previous exploration activities, this includes access route to the site and laydown area for drill rig (25m²) • Capped drill holes • Natural Vegetation in the surrounding undisturbed area 	 <p data-bbox="1061 922 1263 954">Capped drill hole</p>

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 810 1397 836"><i>Aloe dichotoma</i>- Kokerboom</p>  <p data-bbox="1061 1249 1249 1276"><i>Hoodia gordonii</i></p>



Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 730 1218 759">Access route</p>
	<p data-bbox="286 783 456 900">Site 2: S 28° 41. 350' E17° 50. 937'</p>		 <p data-bbox="1061 1174 1267 1203">Capped Drill hole</p>

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 738 1323 767">Drill Rig laydown area</p>
			 <p data-bbox="1061 1228 1955 1257">Surrounding area with Karas Euphorbia, hoodia and Euphorbia plant specie</p>



Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 724 1496 756"><i>Euphorbia gregaria</i> Karas Euphorbia</p> 



Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 719 1559 751"><i>Euphorbia virosa</i> – Candelabra Euphorbia</p>  <p data-bbox="1061 1145 1581 1177">Surrounding hills terrains and access routes</p>



Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
Haib Main	Site 3: S 28° 41. 209' E17° 52. 663'		 <p data-bbox="1061 730 1344 762">Capped Drill hole Site 3</p>  <p data-bbox="1061 1189 1646 1220">Surrounding area and access route around Site 3</p>



Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 719 1384 751"><i>Cadaba aphylla</i> swartstorm</p>  <p data-bbox="1061 1150 1339 1182">Surrounding area site 3</p>


Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
	<p>Site 4: S 28° 41. 335' E17° 52. 738'</p>		 <p>Site 4 Haib Main</p>  <p>Surrounding area- drill rig laydown area</p>


Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 754 1249 783"><i>Hoodia gordonii</i></p>
	<p data-bbox="286 850 517 970">Site 5: Historic site S 28° 41. 586' E17° 53. 281'</p>	<ul data-bbox="600 850 1037 1018" style="list-style-type: none"> <li data-bbox="600 850 1037 927">• No drilling activities are anticipated at the historic site. <li data-bbox="600 943 1037 1018">• No activities have been undertaken at the historic site 	 <p data-bbox="1061 1203 1200 1232">Leach pads</p>

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			
	<p>Site 6: Haib East. S 28° 41. 129' E17° 54. 806'</p>		 <p>Site 6: Haib East Capped drill hole</p>

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 730 1962 807">Surrounding proposed drilling site with <i>Cadaba aphylla</i> (Swartstorm) species in the area.</p>
Site 7:	28° 41`22.8"S 17° 54`45.6"E		 <p data-bbox="1061 1222 1469 1251">Surrounding area – less vegetated</p>



Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 708 1554 740">Surrounding area at site 7, less vegetated</p>
<p data-bbox="103 759 259 831">Site 8- Haib South</p>	<p data-bbox="286 759 450 831">S28° 43. 119' E17° 54. 657'</p> <p data-bbox="286 895 450 967">41°24'12.2"N 2°10'26.5"E</p>		 <p data-bbox="1061 1129 1279 1161">Site 8: Haib South</p>


Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 699 1480 730">Surrounding area and access route</p>

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 963 1554 995">Site 8 Surrounding Area and access route</p>

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
Site 9: Haib South	S 28° 43. 182' E17° 54. 681'		 <p data-bbox="1061 759 1487 791">Site 9: Haib South- capped drill hole</p>  <p data-bbox="1061 1227 1458 1259">Surrounding area- less vegetated</p>

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
Site 10 Haib South	S 28° 43. 137' E17° 54. 440'		 <p data-bbox="1061 727 1290 756">Site 10: Haib South</p>  <p data-bbox="1061 1166 1592 1195">Surrounding area and access route to site 10</p>

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 715 1263 746">Euphorbia virosa</p>
Site 11: Haib South	S 28° 43. 102' E17° 54. 795'		 <p data-bbox="1061 1153 1285 1185">Ste 11: Haib South</p>

Site/ Target Area	Coordinates	Site Description (infrastructure)	Surrounding photos
			 <p data-bbox="1061 724 1554 756">Site 11: Surrounding area- less vegetated</p>



RECORD OF REPORT DISTRIBUTION

SLR Reference:	734.08012.00001
Title:	Environmental Management Plan for the proposed amendment of additional exploration activities on Haib Minerals (Pty) Ltd EPL 3140
Report Number:	1
Proponent:	Haib Minerals Namibia Limited

Name	Entity	Copy No.	Date issued	Issuer
Inka Van Der Bijl	Haib Minerals	1	11/01/2017	MS

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APPENDIX E

Deep-South Resources - ECC 2021



REPUBLIC OF NAMIBIA
MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

ENVIRONMENTAL CLEARANCE CERTIFICATE

ISSUED

In accordance with Section 37(2) of the Environmental
Management Act (Act No. 7 of 2007)

TO

Haib Minerals (Pty)
P. O. Box 23096, Windhoek

TO UNDERTAKE THE FOLLOWING LISTED ACTIVITY

**Proposed Additional Exploration Activities on EPL 3140,
Noordoewer, //Karas Region**

Issued on the date: **2021-02-15**
Expires on this date: **2024-02-15**

(See conditions printed over leaf)



CONDITIONS OF APPROVAL

1. This environmental clearance is valid for a period of 3 (three) years, from the date of issue unless withdrawn by this office
2. This certificate does not in any way hold the Ministry of Environment and Tourism accountable for misleading information, nor any adverse effects that may arise from these activities. Instead, full accountability rests with the proponent and its consultants
3. This Ministry reserves the right to attach further legislative and regulatory conditions during the operational phase of the project
4. All applicable and required permits are obtained and mitigation measures stipulated in the EMP are applied particularly with respect to management of ecological impacts.
5. Strict compliance with national heritage guidelines and regulations is expected throughout the life-span of the proposed activity, therefore any new archaeological finds must be reported to the National Heritage Council for appropriate handling of such.
6. A six monthly report on project progress and environmental management profile, starting from date of commencement of operations, must be submitted by the Proponent to Office of Environmental Commissioner



National Heritage Council of Namibia

52 Robert Mugabe Avenue • P/Bag 12043 • Ausspannplatz • Windhoek • Namibia
Tel: (061) 244 375 • Fax: (061) 246 872 • E-mail: finance@nhc-nam.org

Secretariat

Receipt No. 6087

CASH RECEIPT

Customer

Date:

24/01/2024

Full Name:

KNIGHT PIESOLO CONSULTING

Postal Address:

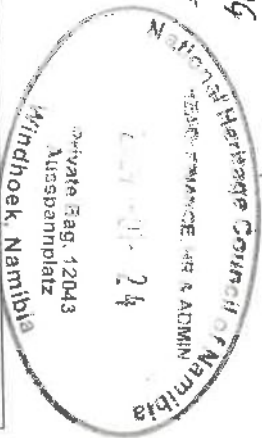
11 NELSON MANDELA STREET

City:

WINDHOEK

Phone:

+264 61 307 297



Quantity	Description	Unit Price	TOTAL
1x	APPLICATION FOR THE CONSIST LETTER PERMS FOR EPL NO: 3140, NORD DORGE.		N\$ 150 -00
			N\$ 150 -00

Amount in Words:


ONE FIVE ZERO N\$ ONLY

Receipt issued by:

TRANSMITTAL

Environmental Support and EIA

Date:	24 January 2024	File No.:	WI301-00906/05-A
		Cont. No.:	WI24-00018
To:	National Heritage Council of Namibia 52 Robert Mugabe Avenue Windhoek Namibia		
Attention:	Mrs. Agnes Shiningayamwe		
Client Signature:	<i>SIMON ENKALI</i>	Date:	24/01/2024
Name:	ACCOUNTANT		2024-01-24
Contact no.:	061 244375		



Private Bag 12043
Ausspannplatz
Windhoek, Namibia

Document Items

Item No.	Description
1	Application for Consent ((Sections 53(7) and 55(8) of the National Heritage Act, 2004 (Act No.27 of 2004))

Remarks

Remarks	Contact Details: Knight Piésold Consulting (Pty) Ltd 11 Nelson Mandela & Simon Bolivar Street, Klein Windhoek, Windhoek, Namibia Tel: +264 61 307 297 Contact persons: Mr. Joseph Mulders or Mrs. Veronique Daigle Email Addresses: jmulders@knightpiesold.com / vdaigle@knightpiesold.com
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