

ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT REPORT

FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A 500 MW RENEWABLE ENERGY POWER PLANT ON
PORTION 46 OF THE REMAINDER OF FARM 58, WALVIS BAY IN THE ERONGO REGION, NAMIBIA



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Prepared for: ISF Trading Enterprises (Pty) Ltd

**As required under Section 53 (7) and Section 54 (7) of the National Heritage Act (No. 27 of
2004).**

August, 2025

Document Information/Project Details

Item	Description
Report Title	Archaeological and Heritage Impact Assessment Report for the construction and operation of a 500 MW Renewable Energy Power Plant.
Project Location & Site Name	The Proposed Project is located on portion 46 of a remainder farm 58 in Walvis Bay, Erongo Region.
Granted Date	<i>Pending ECC</i>
Expiry Date	<i>Pending ECC</i>
Approximately Coordinates	<i>Refer to Table 1</i>
Purpose of the Archaeological & Heritage Assessment	The purpose of the study is to identify, record and recommend measures for mitigation in areas of archaeological and cultural heritage significance, this includes rock art sites, artefacts, graves or burial grounds features, paleontological, structures, buildings, landscapes etc. that might be impacted by the proposed project.
Address & Contacts of the Project Proponent/Developer	ISF Trading Enterprises (Pty) Ltd No.6 Sir Seretse Khama Street, Erf 1117 Bonsec Heights, Unit 2 Windhoek
Total size of the application area	±305.2795 ha
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Heritage Research Permit	Permit No. 11/2025 <i>Issued under section 52(1) of the National Heritage Council Act (Act 27 of 2004).</i>
Competent Authority	National Heritage Council of Namibia (NHC)
Report Date	23/04/2026
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Geographic Co-ordinate Information: Geographic coordinates in this report were obtained using a hand-held Garmin Global Positioning System device, *GPSmap 60CSx*. The accuracy device, as stated by the manufacturer, states that these devices are accurate to within 11 feet, which is equivalent to ± 3 meters. Maps: Maps included in this report use data extracted from the GIS Database, Spatial datasets, Google Earth Pro, and Coordinates.

Disclaimer: Although all possible care is taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. TARO Archaeological & Heritage Consultants and its personnel will not be held liable for such oversights, and inconsistencies that may result from information that may not be available at the time this report was prepared, or for costs incurred as a result of such oversights. The client is advised to seek clarification on any elements that may be indistinct. Information and recommendations in this document should only be relied upon in the context of this document; any documents referenced explicitly herein should only be used within the context of the appointment.

Declaration of Independence

Specialist Name/Archaeologist who prepared this report	Mr. Roland Mushi Contacts: +264 81 3332373 Email: rolandmushi@gmail.com
Declaration of Independence	I/we, TARO Archaeological & Heritage Consultants, hereby confirm my/our independence as an Archaeologist/Heritage specialist and declare that I/we have no interest in the business of our client, other than fair remuneration for work performed on this project/contract as well as the execution of archaeological sound fieldwork and the submission of a professional report to our client and Body of Authority (National Heritage Council of Namibia). This Archaeological & Heritage Assessment Report has been prepared according to the provisions of Section 51 (3) of the National Heritage Act, No 27 of 2004, and National Heritage Guidelines for Heritage Impact Assessment of 2021, Environmental Management Act, No 7 of 2007, and other relevant legislation.
Signature & Stamp	
Date	23/04/2026

The expertise of the Specialist

Roland Mushi has several years of experience working in desert environments, more specifically in Namib Naukluft National Park as a Researcher, and he has been working as a full-time archaeologist since 2021. Academically, he obtained an MSc in Natural Resources Assessment and Management and a BSc. A (*Hons*) in History and Archaeology with a special focus and interest in Lithic and Fauna Analysis in Archaeology, both degrees were obtained from the University of Dar Es Salaam. Roland is an accredited member of the following;

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- **SAfA** - Society of Africanist Archaeologists
- **SAMA** - South African Museums Association # **NCM 008**
- **MAN** - Museums Association of Namibia # **1311556**
- **EAPAN** - Environmental Assessment Professionals Association of Namibia # **179**
- **ICOM** – International Council of Museums # **177513**

SUBMISSION OF REPORT

Please note that the National Heritage Council of Namibia needs to comment on and review this report. The Project Proponent/Client is advised not to proceed with any action before receiving the necessary consent/comments from NHCN.

Executive Summary

TARO Archaeological & Heritage Consultants (TARO AHC) was appointed by ISF Trading Enterprises (Pty) Ltd (hereafter referred to as the Proponent), to undertake an Archaeological and Heritage Impact Assessment (AHIA) for the proposed Renewable Energy Power Plant Project in Walvis Bay. The combined total footprint of the proposed development is ±305,2795 ha.

Findings and Observation made

Identification, mapping, classification and assessment of the significance of the archaeological, historical and cultural heritage resources in the area were conducted accordingly to the National Heritage Guidelines of 2021. The site survey was undertaken on the 21st of April 2026. Key findings of this AHIA assessment include:

- **Historical Military Training Sites:** A small section within the boundaries of the proposed development footprint was recorded to have sites of historical significance, it is known that during South Africa Colonial Administration, Walvis Bay was a military area, and Rooikop was key military base, which is loosely bordering with farm 58 of the portion 46 in the south direction. It served as a key army, air force, and training base for over three decades until 1993. During the survey, 17 sites which are believed to be the SADF Military training sites were recorded with several of other heavily rusted corroded military devices, objects, debris such as used hand grenades, army helmet, boots, shoes, tins, nails, cans, bottles and of course 17 small military fortifications. These are significant in military historical context of Namibia.
- One of the preferred mitigation measures is the establishment of a strict buffer zone with a radius of 100 metres around the identified sites, to be maintained throughout the project lifecycle. No construction or disturbance should be permitted within this designated area in order to ensure the protection and preservation of the identified sensitive sites. Other recommendations and mitigations options are given on Section 11 & 11.1 under the Impact Summary.

As discussed throughout this report, the project area was historically used as a military base by the South African colonial administration during the period when Namibia was known as South West Africa. Consequently, there is a reasonable possibility that unexploded ordnance (UXO) or landmines may still be present within the project area. Areas of particular concern include sections where military debris and related objects were recorded during the site survey. These zones should be treated as potentially hazardous.

For precautionary purposes and to mitigate any unforeseen risks, it is recommended that a qualified team of landmine specialists from the Namibian Police Force (NAMPOL) Explosive Control Division, in coordination with the Namibian Defence Force (NDF), be notified and placed on standby prior to the commencement of any site-clearing activities. Any suspected or unidentified objects encountered during construction should be reported immediately and assessed by the relevant authorities, with de-mining operations conducted

where necessary. The Explosive Control Division remains the designated authority responsible for the management of unexploded ordnance (UXO) in Namibia.

Considering the proximity, and probability of impact on these historical sites, and before any clearance of the specific identified sites, the project developer will be required to have a permit from the National Heritage Council of Namibia (NHC) before recorded sites can be cleared. The permit application form should be submitted to the Director.

Conclusion and Recommendations

It is strongly recommended that all project development activities be confined strictly to the identified and approved areas designated for the renewable energy plant facilities. Full compliance with the recommendations and mitigation measures outlined in Section 12.2 is essential.

In addition, the adoption and implementation of Chance Find Procedures, as part of the Environmental Management Plan (EMP), is required and remains subject to approval by the relevant authority.

While the recommended mitigation measures relate specifically to historical, archaeological, and cultural heritage considerations, it is important to emphasize that overall project authorization is subject to regulatory approval. The proposed development activities may only proceed following formal review and approval by the National Heritage Council of Namibia (NHC).

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1. Introduction

1.1. Project Background Information

TARO Archaeological & Heritage Consultants (TARO AHC) was appointed by ISF Trading Enterprises (Pty) Ltd (hereafter referred to as the Proponent), to undertake an Archaeological and Heritage Impact Assessment (AHIA) for the proposed construction and operation a 500MW Renewable Energy Power Plant on Portion 46 of the Remainder of Farm 58, Walvis Bay, Erongo Region.

The Proponent applied for a portion of land located on Farm 58, Walvis Bay. Walvis Bay Town Council conditionally allocated Portion 46 ($\pm 305,2795$ ha), a Portion to be created from the subdivision of the Remainder of Farm 58, Walvis Bay, Erongo Region to the Proponent for the proposed project. The site will be used for the construction and operation of a 500MW Renewable Energy Power Plant.

This report, compiled by TARO AHC, draws extensively on data collected during the surface survey, as well as archaeological and historical records obtained from various sources, site reconnaissance, and other relevant documentation. The findings and conclusions presented herein are subject to the defined scope of work, the assumptions made during the assessment, and the limitations outlined in the respective sections of this report. The primary objective of this study is to provide specialist input into the screening process for the Environmental Application, which is necessary for the issuance of the Environmental Clearance Certificate (ECC). This input will inform the Environmental Scoping Assessment (ESA) Report and the Environmental Management Plan (EMP). Heritage Impact Assessments in Namibia are required under the National Heritage Act (No. 27 of 2004) and the Environmental Management Act (No. 27 of 2007).

This report, compiled by TARO AHC, draws extensively on data collected during the surface survey, as well as archaeological and historical records obtained from various sources, site reconnaissance, and other relevant documentation. The findings and conclusions presented herein are subject to the defined scope of work, the assumptions made during the assessment, and the limitations outlined in the respective sections of this report.

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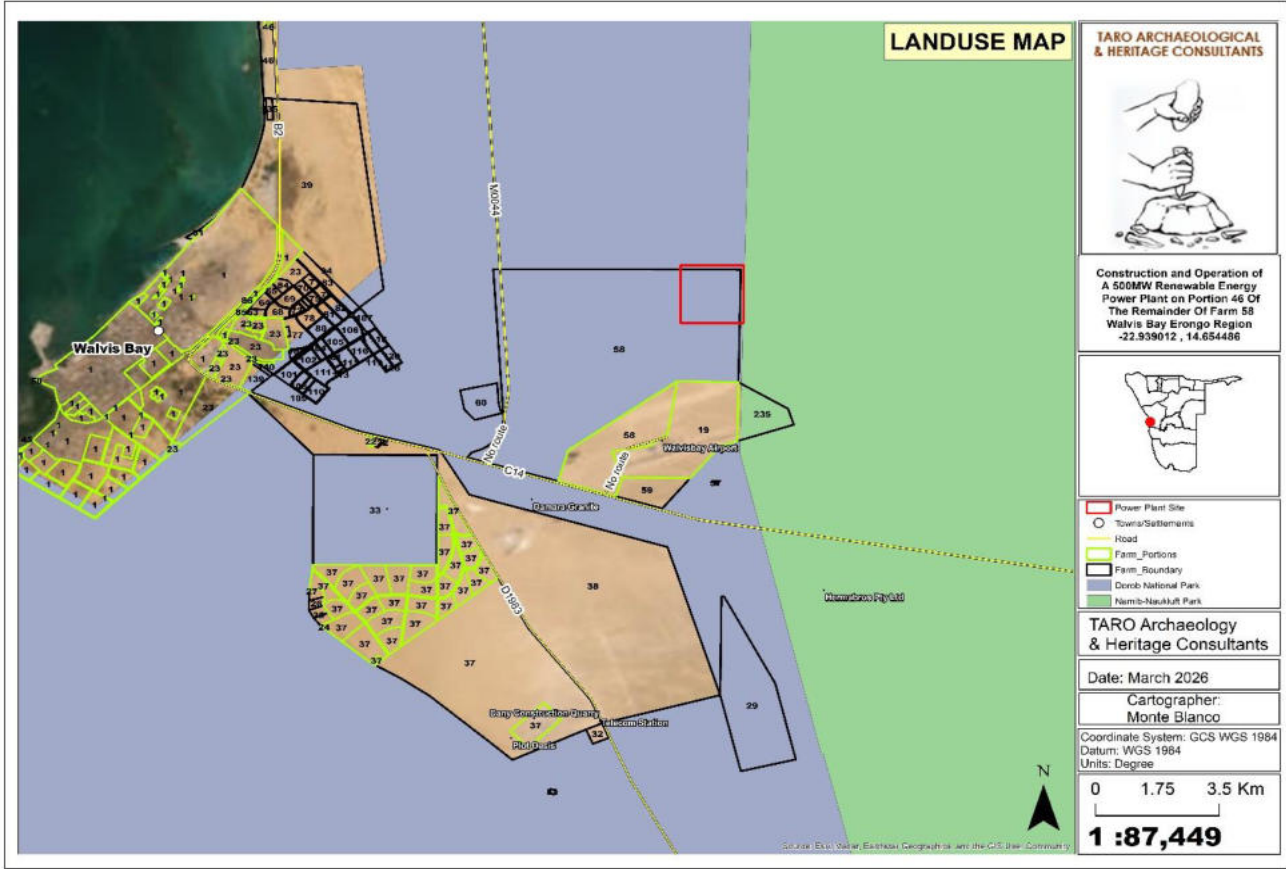


Figure 2: Land-use map of the Proposed Project area

1.2. Accessibility, Location and Landscape

The proposed project area is situated in Walvis Bay, near the airport. The Project proponent will obtain access from Main Road 44 via the newly created intersection and a new road to be constructed which will also provide access to other developments on Farm 58. The landscape is flat hence accessibility was easy and the surface survey was sufficiently conducted. The dune 7 can be seen on the western direction from the proposed project area.

Table 1: Approximate GPS Corners & Centre Coordinates of the Proposed Project Site

Geographic Positioning System Points in degrees, minutes & seconds			Total Area of the Proposed Development is about ±305,2795 ha
Corner Point A	22° 55' 51.1" S	14° 38' 45.8" E	
Corner Point B	22° 55' 51.1" S	14° 39' 43.5" E	

Corner Point C	22° 56' 45.8" S	14° 39' 43.5" E	
Corner Point D	22° 56' 45.8" S	14° 38' 45.8" E	
Centre Coordinates	22° 56' 18.4" S	14° 39' 14.8" E	

1.3. Terms of Reference

Terms of reference for this archaeological and heritage impact assessment study were to;

- Locate, identify all objects, record, photograph, and describe sites of archaeological, historical, or cultural interest located in the area of the proposed development,
- Record coordinate points (GPS) of identified areas as significant and photograph,
- Determine the levels of significance of the various types of heritage resources that might be affected by the proposed project (*if any*), and
- Suggest or propose appropriate management and mitigation measures for the historical, archaeological and cultural heritage resources that might occur in the area proposed for renewable energy/ green energy construction activities, which can be potentially destroyed in the course of construction and other related development.
- Review applicable legislative requirements.

2. Project Description and Site Details

ISF Trading Enterprises (Pty) Ltd (*The Proponent*), the Proponent intends to establish a 500MW Renewable Energy Power Plant in Walvis Bay. The proposed project will be built on land in the industrial area of Walvis Bay, Erongo Region. Therefore, Archaeological and Heritage Impact Assessment was conducted to identify the possible impacts on the archaeological or heritage resources on the site. Project components and the location is outlined in *Table 2* and *3* below.

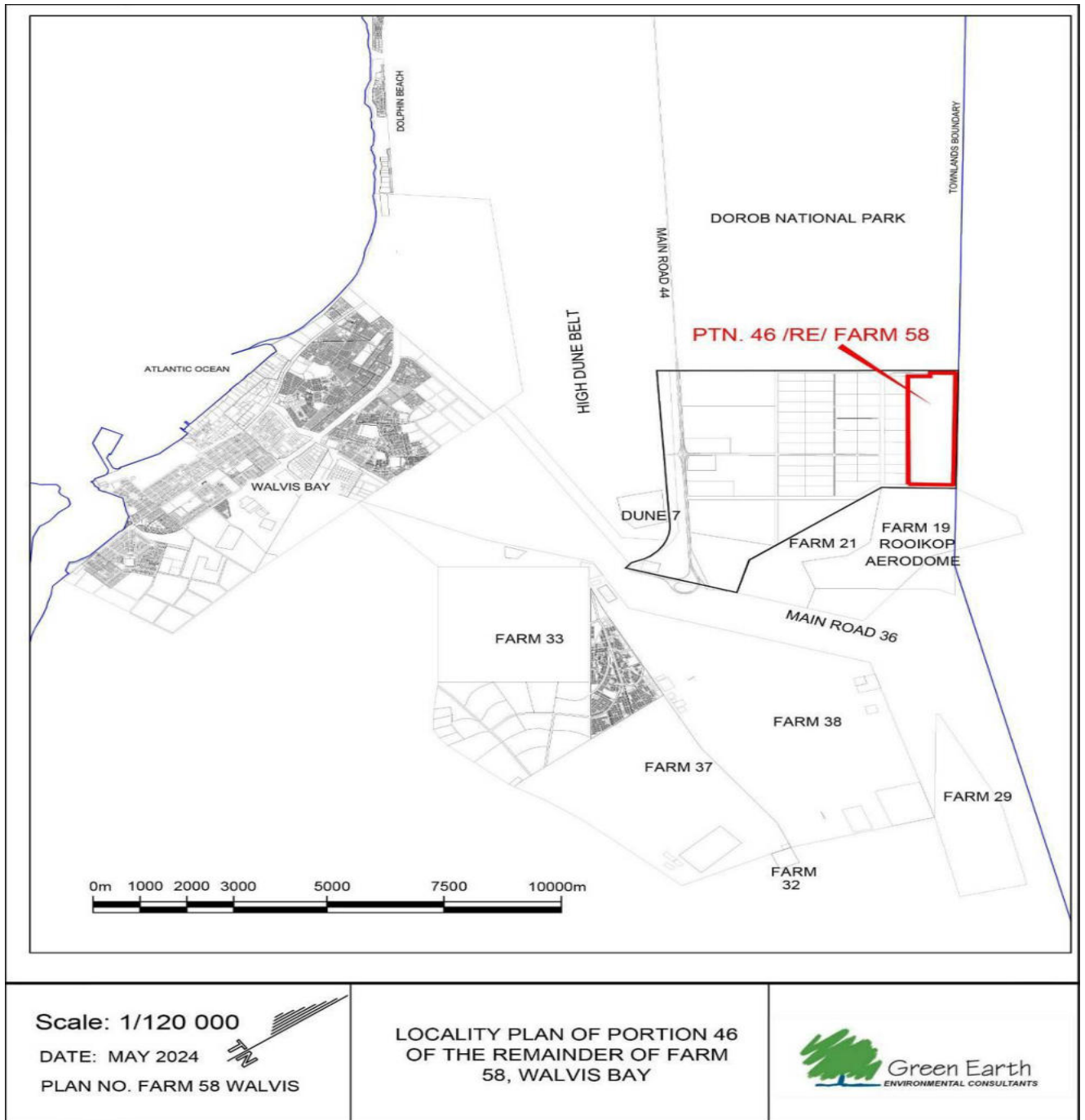


Figure 3: Site details of the proposed project

Table 2: Project Area

Project Area	The proposed development site is located in Walvis Bay
Project Site/Name of the area	Construction and operation a 500MW Renewable Energy Power Plant on Portion 46 of the Remainder of Farm 58, Walvis Bay, Erongo Region.
Magisterial District/Location	Walvis Bay Rural constituency in the Erongo Region

Table 3: Infrastructure and Project Activities

Types of Development	Construction and operation a 500MW Renewable Energy Power Plant
Size of the Proposed Project	(±305,2795 ha)
Construction and operation a 500MW Renewable Energy Power Plant	Construction and operation of a 500MW Renewable Energy Power Plant. It is the intention to install and operate a battery of GWE's Gensets to generate 500MW. This Genset does not require any fossil fuel or gas as a driver. The GWE's Genset is a new technological breakthrough that operates using a bank of Lithium Titanate Oxide (LTO) supercapacitors to initiate a Geared DC Motor to drive an Alternator which then produces the required electricity. The geared motor is continuously powered by the bank of LTO supercapacitors. The LTO supercapacitors are supported by a specially designed inverter, that converts alternating current (AC) energy from the Alternator to direct current (DC) energy.
Site Clearance	Limited clearing of vegetation may be required to establish building footprints, access routes, and supporting infrastructure. This may result in the loss of small patches of vegetation and minor habitat disturbance.
Site Access	The Project proponent will obtain access from Main Road 44 via the newly created intersection and a new road to be constructed which will also provide access to other developments on Farm 58
Expected impacts	<p>Renewable energy provides significant positive impacts, including reduced greenhouse gas emissions, improved public health by lowering air pollution, and enhanced energy security through diversified, inexhaustible power sources. It stimulates the economy by creating jobs in manufacturing and installation, while lowering long-term energy costs and supporting rural development.</p> <p>Key Positive Impacts of Renewable Energy:</p> <ul style="list-style-type: none"> • Environmental Benefits: Renewable energy sources (wind, solar, hydro) produce little to no greenhouse gas emissions or pollution, helping to combat climate change, protect ecosystems, and reduce water consumption. • Economic Growth and Jobs: The sector creates millions of jobs in manufacturing, installation, and maintenance, often providing a boost to local and regional economies. • Improved Public Health: By replacing fossil fuels, renewable energy reduces air pollutants such as sulfur dioxide and nitrogen oxides, which are linked to respiratory illnesses and other serious health issues. • Energy Security and Reliability: Using domestic, renewable resources reduces dependence on imported fuels and, by decentralizing energy production, strengthens grid resilience against disruptions. • Cost-Effectiveness and Stability: As technologies mature, the cost of generating electricity from solar and wind has dropped significantly,

	<p>often making them more cost-effective than fossil fuels, with stable operating costs over time.</p> <ul style="list-style-type: none"> • Energy Access: Renewable energy, such as solar mini-grids, can provide electricity to remote or rural areas that lack traditional grid infrastructure. <p>While renewable energy is cleaner than fossil fuels, it causes significant environmental and logistical issues, including substantial land use requirements, habitat destruction for wildlife, and the creation of toxic waste from decommissioned solar panels and batteries and other drawbacks include high upfront costs.</p> <p>Environmental and Ecological Impacts</p> <ul style="list-style-type: none"> • Habitat Disruption & Wildlife: Solar and wind farms require vast areas of land, leading to habitat loss. Wind turbines can cause bird and bat deaths, while solar projects can destroy desert ecosystems. • Waste Generation: Solar panels and batteries have finite lifespans (20-30 years), and disposing of them can create large amounts of electronic waste. <p>Logistical and Economic Challenges</p> <ul style="list-style-type: none"> • Intermittency: Solar and wind are not available 24/7, requiring reliable storage (batteries) or backup energy sources. • High Initial Cost: While operating costs are low, the initial capital investment for building renewable infrastructure is very high. • Resource Mining: Mining for rare materials like lithium and cobalt for batteries causes pollution. <p>Land Use and Infrastructure</p> <ul style="list-style-type: none"> • Large Footprint: Renewable energy installations often require much more space per unit of energy produced compared to conventional power plants. • Transmission Infrastructure: Because many renewable sites are located in remote areas, significant investment is needed to build transmission lines, leading to potential energy losses.
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3. Legislative context

This chapter outlines the regulatory framework applicable to the proposed project. Table 4 provides a brief list of applicable legislation and its relevance to the project.

National Heritage Act of Namibia (No. 27 of 2004)

This Act provides for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. The Client should ensure that if any archaeological or palaeontological objects, as described in this Act, are found in the course of the development, such findings are reported to the line Ministry immediately. If necessary, the relevant permits must be obtained before disturbing or destroying any heritage significance as envisaged by this Act.

Therefore, this AHIA report is a component of a broader Environmental Impact Assessment (EIA)/ Scoping Assessment (ESA) study and addresses the requirements of the National Heritage Act, No. 27 of 2004 and National Heritage Regulations (Government Notice 106 of 2005), in line with EIA Terms of Reference, and regarding the assessment of impacts of the proposed development on the archaeological, cultural and heritage resources associated with the receiving environment.

In principle, the National Heritage Act, 2004 (Act No. 27 of 2004) provides for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. Special provision is given for the protection and management of certain heritage resources in Namibia, these are listed in **Part VI from paragraphs (53-58)** including listed buildings which are 50 years old or more than that, archaeological objects or paleontological interest in existence which is 50 years or more years old, meteorite, historic shipwrecks and shipwreck objects (Underwater heritage) this include the remains of all ships that have been situated on the coast or in the territorial waters or the contiguous zone of Namibia for 35 years or more are historic shipwrecks for this section.; and other heritage resources.

Part I, Section1 paragraph (a) and (b) defines "archaeological" concerning a place or an object, which means (a) any remains of human habitation or occupation that are 50 or more years old found on or beneath the surface on land or in the sea; and (b) rock art, being any form of painting, engraving or other representation on a fixed rock surface or loose rock or stone which is 50 or more years old. While **Part V Section 46** of the Act prohibits the removal, damage, alteration, or excavation of heritage Sites or remains. **Section 48** sets out the procedure for the application and granting of permits, such as might be required in the event of damage to a protected site occurring as an inevitable result of development.

Furthermore, **Section 51 (3)** sets out the requirements for impact assessment. **Part VI Section 55 Paragraphs (3) and (4)** require that any person who discovers an archaeological site should immediately notify the National Heritage Council.

Table 4: Summary of the relevant Act(s) and Ordinance

National Regulatory	Summary	Applicability to the Project
National Heritage Act, No. 27 of 2004.	<p>The Act makes provision for the protection and conservation of places and objects with heritage significance</p> <p>Section 55 compels exploration companies to report any archaeological findings to the National Heritage Council after which a permit needs to be issued before the find can be disturbed.</p>	<p>There is potential for heritage objects to be found during the clearance of land and operations, therefore the Stipulations in the Act have been taken into consideration and are incorporated into this A/HIA report and the overall project EMP.</p> <p>The Proponent should ensure compliance with these Acts'</p>

<p>National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979.</p>	<p>No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: Meteorites, fossils, petroglyphs, ornamental infrastructure graves, caves, rock shelters, middens, shells that came into existence before the year 1900 AD: or any other archaeological or paleontological finds.</p>	<p>requirements. The necessary management measures and related permitting requirements must be taken. This will be done by consulting with the National Heritage Council of Namibia.</p>
<p>Burial Place Ordinance, Act No. 27 of 1966.</p>	<p>To prohibit the desecration or disturbance of graves in burial places and to regulate matters relating to the removal or disposal of dead bodies.</p> <p>The Municipal Ordinance 13 of 1963 has been replaced by the Local Authorities Act 23 of 1992.</p> <p>(3) No person shall, except with the permission of the Administrator, in any way disturb, damage, remove or destroy a grave, monument, gravestone, cross, inscription, rail, enclosure, chain or erection of any kind whatever, or part thereof in any burial place.</p>	<p>Graves and burial places such as stone cairns/mounds can occur anywhere (on surface and sub-surface) within the landscape, therefore this Act is very relevant, and adoption of Chance find should be mandatory for envisaged prospected works.</p> <p>The Chance Find Procedure is commonly included in archaeological and heritage impact assessments (AHIA) and project management plans to ensure the protection of heritage sites when such discoveries happen. These procedures often outline the steps to follow when an unanticipated find is made, ensuring the preservation and respectful treatment of the cultural material, while allowing the project to continue with minimal disruption</p>
<p>Environmental Management Act (7 of 2007) Government Notice 232 27th December 2007</p>	<p>PART I: The definition of the environment employed by the Environmental Management Act (7 of 2007) Specifically includes "anthropogenic factors" such as archaeological remains or any other evidence of human activity.</p> <p>PART II: Environmental impact assessment (EIA) in Namibia is governed by this legislation and usually includes a specialist archaeological survey and</p>	<p>Archaeological materials, heritage resources, historical, cultural landscapes or topographical settings are part of the environment in its context; hence this Act is very relevant to the proposed project and the Proponent is henceforth mandated to take into consideration all the necessary steps so as not to affect or destroy the environment where heritage resources are found.</p>

	assessment, following the stated Principles of Environmental Management which require that Namibia's cultural heritage must be protected and respected for the benefit of present and future generations.	
Environmental Assessment Policy of Namibia 1995	The policy seeks to ensure that environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and the term environment is broadly interpreted to include biophysical, political, economic, social aspects, traditional norms, cultural and historical components.	This Archaeological and Heritage Assessment study considers the term environment to be part and parcel of archaeological and cultural heritage in its contexts.

4. Approach and Methodology

4.1. Literature Review

The methodology for the study includes a survey of available literature conducted to extract data and information on the area in question to provide a general heritage context into which the proposed project would be set. This literature search included published material and unpublished reports, papers, EIA reports, and internet search engines, including online material from various websites, followed by a field assessment. The latter was conducted according to generally accepted HIA Guidelines 2021 practices and was aimed at locating all possible objects, sites, and features of cultural significance in the area of the proposed project sites.

4.2. Documentation

All recorded sites, features, artefacts, and objects identified were documented according to the general minimum standards accepted by the archaeological standard, heritage impact assessment guidelines, and profession in Namibia. Co-ordinates of individual localities were determined by means of the Global Positioning System (GPS).

4.3. GIS Spatial analysis

Google Earth and topographic maps of the area were utilized to identify the geologic and topographic elevation of the area and possible places where sites of heritage significance might be located. Also, the GIS spatial database was utilized to collect any useful information on any of the above-mentioned topics in the area, as well as for geo-referencing purposes.

4.4. Advertisements Stakeholder Engagements, Public Consultation and Advertisements

The public was invited to give input, comments and opinions regarding the proposed project. Notices were placed in the Namibian, Namib Times and New Era on two consecutive weeks (10, 15 and 17 May 2024) inviting public participation and comments on the proposed project. The closing date for any questions, comments, inputs or information was 31 May 2024. A public meeting was held on 24 May 2024 at 10h00 at the Narraville Community Hall.



Figure 4: Public meetings

4.4.1. Results of Public Consultation and Stakeholder Engagement

Another engagement was done on the 21st of April 2026, with someone who is very familiar with the area and the landscape in general (**see Appendix 4 for Minutes**).



Figure 5: On-site surface inspection

Table 5: Placement of Newspaper adverts

Newspaper	Date of placement
<i>New Era</i>	10 May 2024, 15 May 2024 & 17 May 2024
<i>Namib Times</i>	10 May 2024, 15 May 2024 & 17 May 2024
<i>The Namibian</i>	10 May 2024, 15 May 2024 & 17 May 2024

4.5. Site Investigation/Survey

The site visit aimed to; (a) survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest (*if any*); (b) record GPS points of sites/areas identified as significant areas; (c) determine the levels of significance, grading of the various types of heritage resources recorded in the project area. Site surveying is the process by which archaeological sites are located and identified on the ground. Archaeological site surveys often involve both surface inspection and subsurface testing, however the latter was not part of the survey. For the purposes of heritage investigations, archaeological sites refer to any site with heritage potential (i.e., historic sites, cultural sites, rock art sites etc.).

TARO Archaeological & Heritage Consultants inspected the environments in which the proposed project is located, including its surrounding areas, on the 21st of April 2026 (**Table 6**). Sufficient and extensive surface surveys of the ground were conducted for the claims that are targeted for salt production. Among others, the site surveys comprised the pre-planned foot investigation along the targeted areas for the proposed salt production. **Table 6** below highlights the situation during the field survey on the proposed development area.

4.6. Detailed Assessment

Table 6: Site Investigation Details

General Site Investigation	
Date of a visit	The site visit was undertaken on the 21 April 2026 by the TARO Archaeological & Heritage Consultants personnel.
Season/Weather conditions and site visibility	Cool weather and clear visibility.
Details of equipment used in the survey (GPS)	All readings and site positions were determined in the field by hand-held Garmin <i>etrex 32x GPS</i> and <i>GPSmap 60CSx</i> (Accuracy levels is ± 3 meters). The Global Positioning System receiver was set to the <code>hddd°mm'ss.s"</code> . Real-time aerial orientation, by means of a mobile QField application, was also employed to navigate and survey the areas.
Details of equipment used in the survey (Camera)	Photographs were taken using a Digital Camera - Nikon DX D3200.



Figure 6: The view toward the western side from the proposed project site

5. Site Significance Rating

The presence and distribution of archaeological, historical, cultural, or heritage resources define a 'heritage or cultural landscape' of an area. In this particular landscape, every site is relevant, and because heritage resources are non-renewable, heritage surveys are needed to investigate the proposed project area or a representative sample, depending on the nature of the project. In all the initial investigations and surface surveys, however, the undersigned TARO Archaeological & Heritage Consultants (TARO AHC) is responsible only for the identification of resources visible on the surface.

Table 7: Grading of Heritage Significance and Field Rating

Level of significance	Grading	Description
Exceptional/upper higher	5	<ul style="list-style-type: none"> • Major national heritage resources • A rare and outstanding example • Containing unique evidence of the high regional and national significance
Considerably high	4	<ul style="list-style-type: none"> • Very important to the heritage of the region • A high degree of integrity/ authenticity • Multi-component site and objects • High research potential
Moderate	3	<ul style="list-style-type: none"> • Contributes to the heritage of the locality and region • Have some altered or modified elements, not necessarily detracting from the overall significance of the place • Forming part of an identifiable local distribution or group • Research potential
Low	2	<ul style="list-style-type: none"> • Isolated minor finds in an undisturbed primary context, with diagnostic materials • Makes some contribution to the heritage of the locality, usually in combination with similar places or objects
Little	1	<ul style="list-style-type: none"> • Makes a little contribution to the heritage resources of the locality • Heritage resources in a disturbed or secondary context, without diagnostic or associated heritage
Zero/ no significance	0	<ul style="list-style-type: none"> • Absence of heritage resources • Highly disturbed or secondary context, without diagnostic or associated heritage

5.1. Impact Assessment Methodology as developed by QRS Namibia

This Archaeological and Heritage Impact Assessment followed a two-stage process of assessment: desktop and field-based assessments. The methodologies were adopted in line with the standards for environmental assessment and the protocol developed for archaeological heritage assessment in Namibia that reflect Namibian conditions and are accepted as a basis of evaluation by the National Heritage Council. To establish the heritage significance of the resources and their vulnerability to possible disturbance in the

course of development activities, the assessment criteria below, developed by QRS (Kinahan, 2012), established parallel 0-5 scales, as summarized in *Table 7, Table 8 and Table 9*.

Table 8: Archaeological Significance and Vulnerability Rankings (Kinahan, 2012)

Scale	Significance Ranking	Scale	Vulnerability Ranking
0	no significance	0	Not vulnerable
1	Disturbed or secondary context, without diagnostic material	1	No threat posed by current or proposed development activities
2	Isolated minor finds in an undisturbed primary context, with diagnostic material	2	low or indirect threat from possible consequences of development (e.g., soil erosion)
3	Archaeological site (s) forming part of an identifiable local distribution or group	3	Probable threat from inadvertent disturbance due to the proximity of development
4	Multi-component site (s), or central site (s) with high research potential	4	High likelihood of partial disturbance or destruction due to the proximity of development
5	Major archaeological site (s) containing unique evidence of the high regional significance	5	The direct and certain threat of major disturbance or destruction

Table 9: Assessment Criteria for the Evaluation of Cumulative Impacts on Archaeological Sites.

Criteria	Category	Description
The extent or spatial influence of impact	National Regional Local	Within Namibia Within the Region On-site or within 200 m of the impact site impact
The magnitude of impact (at the indicated spatial scale)	High Medium Low Very Low Zero	Social and/or natural functions and/ or processes are severely altered Social and/or natural functions and/ or processes are notably altered Social and/or natural functions and/ or processes are slightly altered Social and/or natural functions and/ or processes are negligibly altered Social and/or natural functions and/ or processes remain unaltered
Duration of impact	Short Term Medium Term Long Term	Up to 3 years 4 to 10 years after construction

Criteria	Category	Description
		More than 10 years after construction

Table 10: Reversibility Rating Criteria

Reversibility Ratings	Criteria
Irreversible	The activity will lead to an impact that is permanent.
Reversible	The impact is reversible within a period of 10 years.

6. Literature Survey/ Background Study

6.1. Description of the Study Area

Topographically, Walvis Bay is characterized by a low-lying, flat coastal plain and a highly active, sandy peninsula forming a protected lagoon. It sits on the edge of the Atlantic Ocean, surrounded by the arid Namib Desert's wind-blown sand dunes and vast gravel plains (Figure 7).

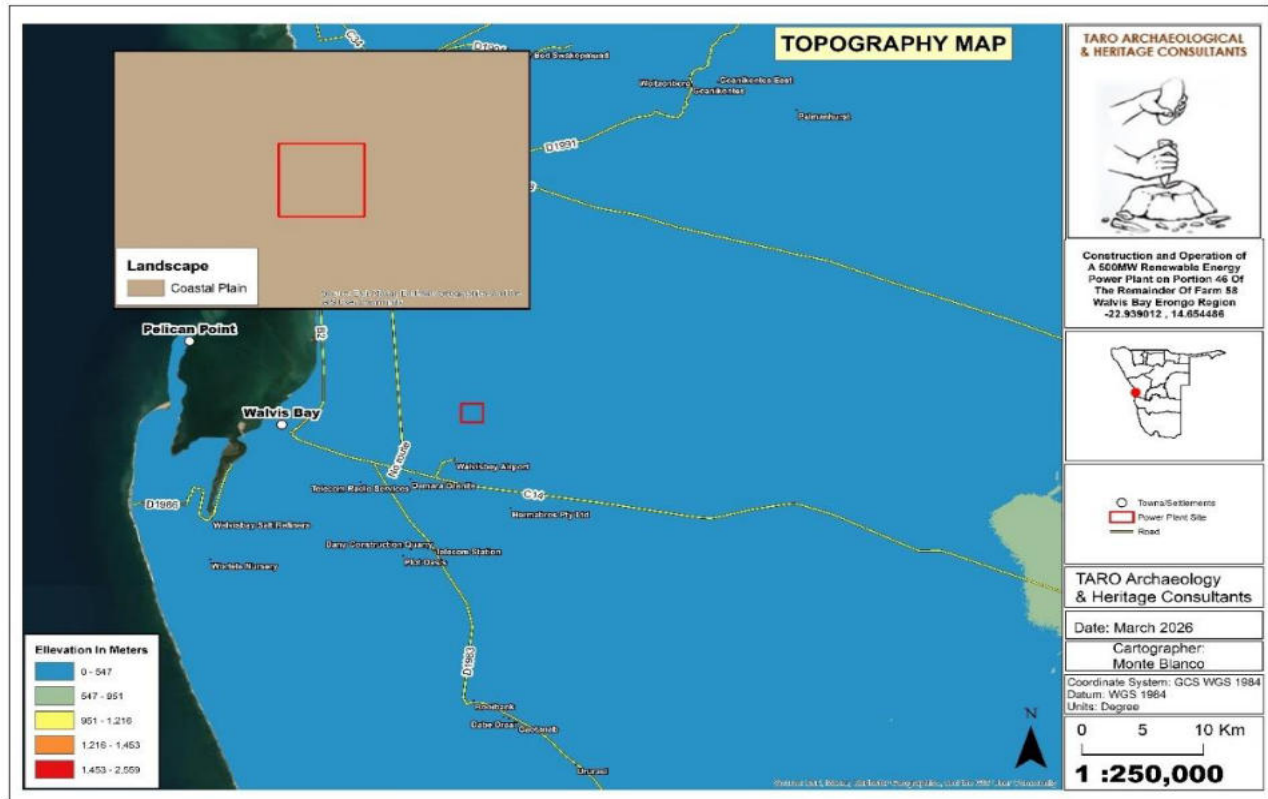


Figure 7: Topographic map of the area of interest.

6.2. Geology of the Project Area

Walvis Bay's geology is dominated by active coastal, aeolian, and lagoonal processes within the hyper-arid Namib Desert. It lies on the Kuiseb Delta, characterized by Holocene sediments, extensive evaporites, and rapidly moving longitudinal dunes, with the coastline constantly changing due to high-energy longshore drift. The area is part of the Damara Orogen structurally, though mostly obscured by younger deposits.

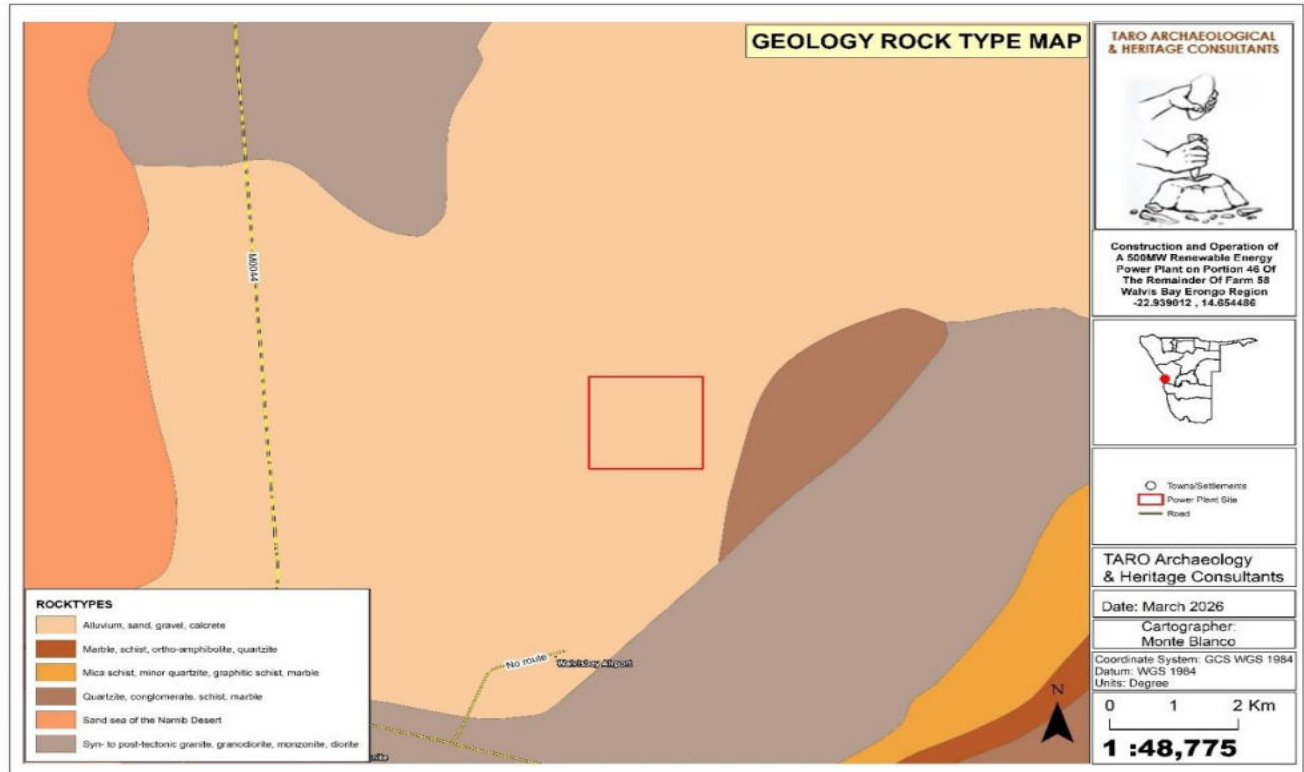


Figure 8: A Geological map of the proposed project site.

7. Background and general Heritage Context of the area

7.1. Regional Archaeological and Heritage Context

Some of the earliest human populations lived in southern Africa, and evidence from sites there has inspired key debates on human origins and on the emergence of modern humans. The sub-continent has one of the world's richest heritages of rock art, and specialists have developed innovative theories about its meaning and significance that have influenced the understanding of rock art everywhere (Mitchell 2024).

Modern humans and their ancestors have lived in the Namib Desert for more than one million years, leaving a rich legacy of archaeological remains which lie scattered over the landscape. This is by far the longest archaeological record in all the deserts of the southern hemisphere, and it contains unique evidence of how humankind learned to cope with one of the most hostile environments on earth. Indigenous communities,

the descendants of people who lived in the Namib over thousands of years, still maintain important cultural links with the desert (Kinahan 2012). Much of the Namib is enclosed by national parks and wildlife reserves, but this is no wilderness. Desert plants and animals, and the landscape itself, are an integral part of the cultural heritage of desert communities.

Archaeological reports on the Namib Desert reveal a 1-million-year record of human occupation, with significant Middle Stone Age (MSA) sites, such as Narabeb, indicating ancient human life around former lakes, according to this Environmental Information Service Namibia report. Key findings include Early Stone Age (ESA) tools, evidence of hunter-gatherer settlement, and coastal trading, often documented during mining compliance surveys. Key archaeological findings within the Namib Desert are;

- Narabeb Site Investigations: Recent studies (2021-2022) at Narabeb in the northern Namib Sand Sea confirm Middle Stone Age activity around 220,000 to 130,000 years ago near paleolakes.
- Namib IV Site: Identified as a key site, it contains Large Cutting Tools (LCTs) and fossils assigned to the Middle Pleistocene (over 300,000–500,000 years ago).
- Holocene Occupation: Research documents hunter-gatherer, and later nomadic pastoralist, activity in the southern Namib, with evidence of specialized, episodic strategies, according to this Namibia Brand report.
- Coastal Trade Evidence: The *Antiquity Journal* notes, that reports highlight, exceptional evidence of early colonial contact and coastal trade.

The hyper-arid Namib Desert extends approximately 2000km along the south-western coast of Africa, mainly within Namibia, and reaches up to 200km inland (*Figure 9*). Archaeological investigations have been carried out intermittently for almost a century, and the mid-Pleistocene to Holocene sequence is well known in outline (Mitchell 2002).

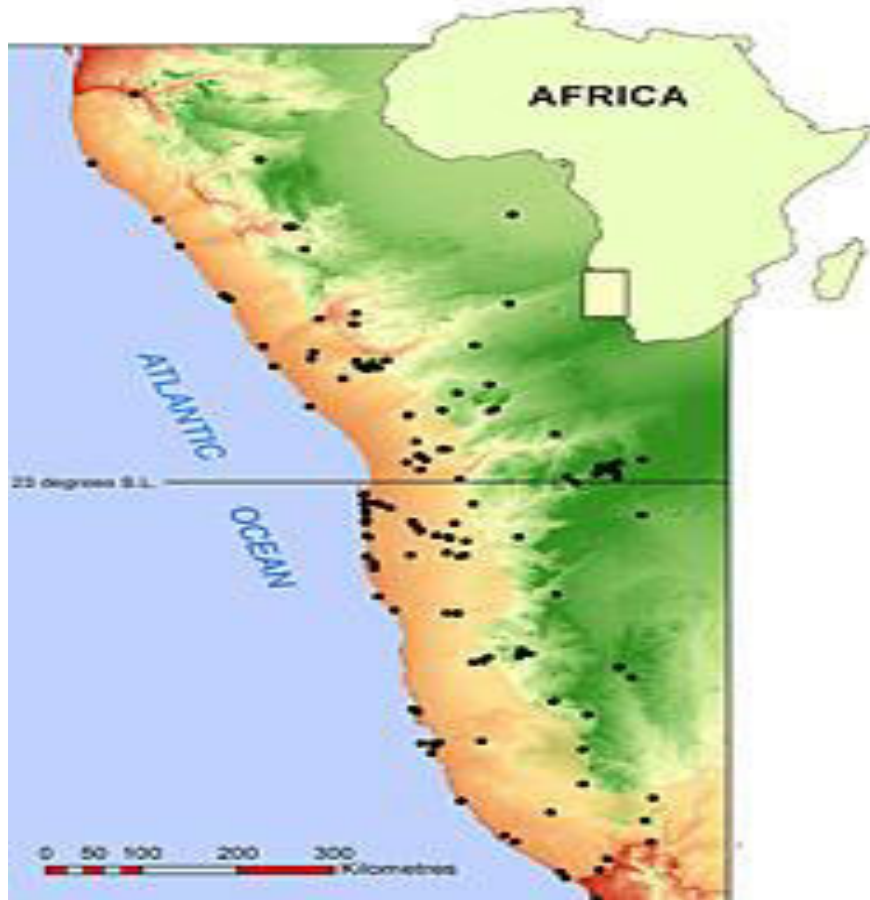


Figure 9. The Namib Desert: regional setting and distribution of dated archaeological sites (Source: Kinahan 2012)

Among the most remarkable archaeological features of the Namib is the wealth of rock art associated with some of the larger granite mountain areas. Excavations at some of these sites have documented the Holocene archaeological record of hunter-gatherer settlement and the transition to nomadic pastoralism over the last 1000 years (J. Kinahan, 2001). There is also exceptionally well-preserved evidence of early colonial contact and coastal trade (J.H.A. Kinahan 2000). The earlier record of human occupation is not as well understood; deep stratified deposits are extremely scarce, and most of the Pleistocene material occurs as surface lag deposits (Vogelsang 1998).

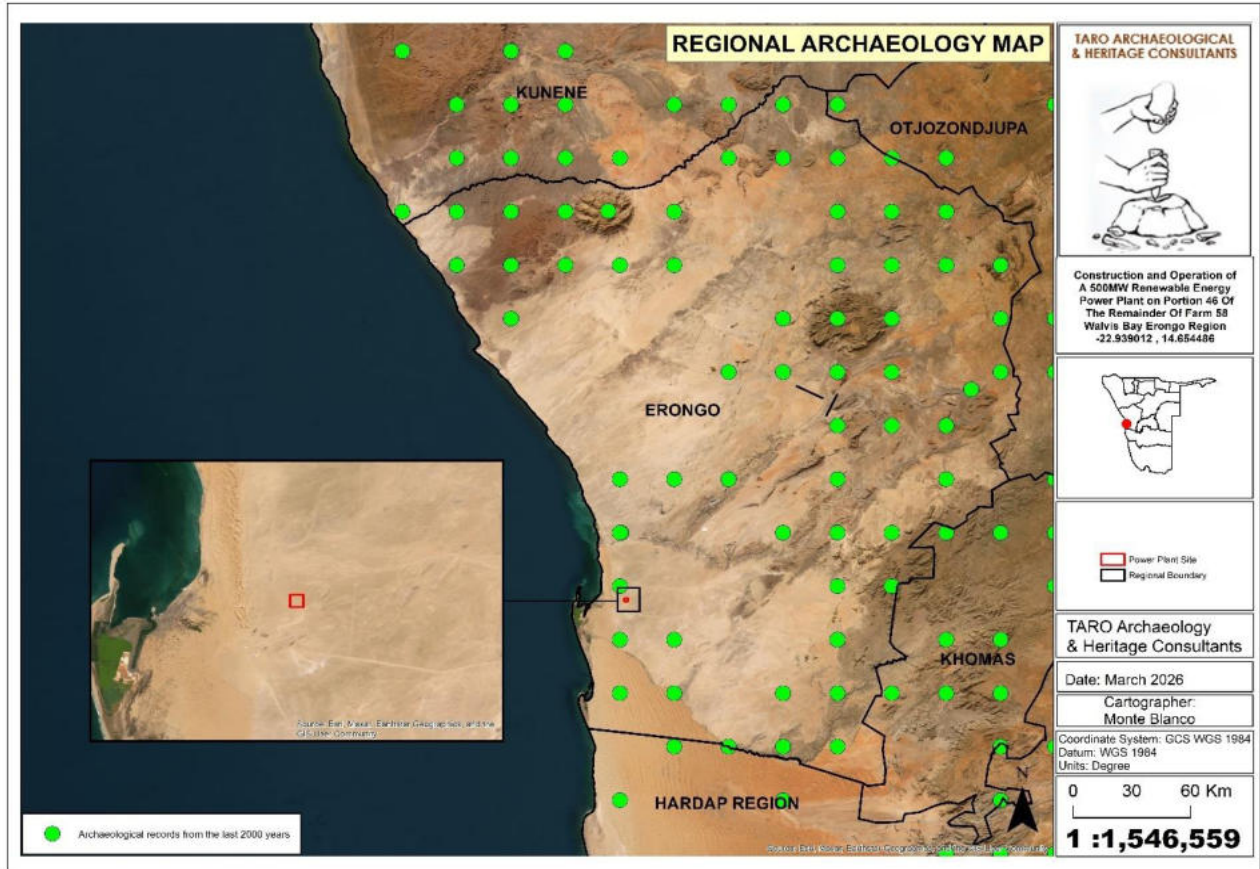


Figure 10: A Regional map of archaeological distribution in the Erongo Region

7.2. The Historical and Archaeological Background of the Subject land

The Walvis Bay Military Area was a designated militarized zone encompassing South African Defence Force (SADF) installations in the enclave of Walvis Bay, a South African-administered territory surrounded by South West Africa (modern Namibia), serving as a strategic deep-water port and logistical hub during the apartheid era. Established amid the South African Border War (1966–1989), it supported SADF operations through bases such as Rooikop for air force communications and training, a naval bunker for secure operations, and facilities equipped with armored vehicles like Ratels and tanks.

These installations facilitated equipment storage, electronic warfare monitoring of Angolan, Cuban, and SWAPO communications, and rapid deployment for counter-insurgency in Namibia and cross-border incursions into Angola. The area hosted specialized units, including training centers for South West Africa Territorial Force elements, underscoring its role in maintaining South African control over the enclave annexed in 1977 against insurgent threats. Following Namibia's independence in 1990, the military presence was reduced, with full handover of Walvis Bay to Namibia occurring in 1994, after which SADF bases were repurposed or abandoned by the Namibian Defence Force.

Walvis Bay is situated on the Atlantic coast of present-day Namibia, within the Namib Desert's arid coastal plain. Its geographical isolation as a South African exclave amid South West Africa (SWA, now Namibia) enhanced its military value, providing secure access for shipping military equipment and supplies during regional conflicts, while its proximity to the Angolan border about 1,200 kilometers north supported rapid deployment capabilities¹.

Historically, British annexation of Walvis Bay in 1878 integrated it into the Cape Colony, distinct from the German protectorate of SWA established in 1884, due to its pre-existing harbor claims. Following the Union of South Africa's formation in 1910, control transferred to South Africa, formalized in 1922, maintaining its status separate from the mandated SWA territory administered after World War I².

During World War I, Walvis Bay served as a staging point for the South African invasion of German South West Africa, hosting a Union Defence Force garrison that performed dual military and policing roles under martial law until 1920. In World War II, the site hosted the South African Air Force's 16 Bomber Squadron from September 22, 1939, equipped with three Ju 86 aircraft, alongside contingents from the 1st SWA Infantry Battalion for artillery and air defense before their redeployment in 1940.

The Walvis Bay Military Area emerged as a formalized militarized zone in the post-1945 era, particularly amid escalating insurgencies. On October 1, 1961, the South African Air Force assumed control of the expanded Rooikop airfield near the town, facilitating air operations. By January 1, 1962, the 2 South African Infantry Battalion Group was established there, supported by a lagoon-side garrison accommodating up to 3,000 troops, serving as a supply depot for South African Defence Force equipment³. During the South African Border War from 1966, all three SADF branches—army, navy, and air force—maintained bases in the area, with expansions announced in 1984 involving \$9-13 million in upgrades by 1989 to bolster logistics against SWAPO operations in Angola and northern SWA. South Africa retained sovereignty until March 1, 1994, when it transferred control to Namibia after bilateral negotiations, despite UN resolutions asserting integration since 1978.

7.2.1. Rooikop as a Military Base

Rooikop, located just south of Walvis Bay, served as a vital, strategic military base for the South African Defence Force (SADF) during the South African Border War (roughly 1966–1989) and up until Namibia's

¹ <https://www.icwa.org/wp-content/uploads/2015/09/CCK-8.pdf>

² <https://sadf.sentinelprojects.com/mf/walvis01.html>

³ <http://samilitaryhistory.org/diaries/swamilsa.html>

independence in 1994⁴. It acted as a key component of the Walvis Bay Military Area, supporting SADF infantry, armor, and air force operations, particularly for operations in South West Africa (now Namibia)⁵. Key SADF military activities at Rooikop included:

- Mechanised Infantry and Armour Operations: 61 Mechanised Battalion Group was stationed at Rooikop, often serving as a highly mobile reserve force, equipped with Ratel infantry fighting vehicles and tanks (Olifant main battle tanks).
- Training and Selection: Rooikop was the home of 2 South African Infantry Battalion Group (2 SAI), established in 1962. It was famously used to train new National Servicemen, with the nearby Dune 7 serving as a notorious site for endurance training.
- Aerial and Communication Support: The base featured a low-altitude airfield with a long runway used by the South African Air Force (SAAF) for coastal reconnaissance. It also hosted a major transmitting relay station and a long-range communications system.
- Signals Intelligence: From 1989 to 1990, a monitoring Electronic Warfare (EW) station was active, tracking Angolan, Cuban, SWAPO, and UN communications.
- Secretive Naval Operations: A highly secret navy bunker, designed to withstand direct aircraft hits, was located at Rooikop.
- Training SWATF: From 1981, 2 SAI was responsible for training national servicemen for the South West African Territorial Force (SWATF).

The base was often in use right up until the transfer of Walvis Bay to Namibia, with 61 Mech using it for logistical support and training until they redeployed to South Africa in the early 1990s



Figure 11: SADF 2 SAI exercise on Dune 7 (Credit: Peter Dickens)

⁴ <https://samihistory.com/tag/2-sai/>

⁵ https://en.wikipedia.org/wiki/Walvis_Bay_Military_Area

7.2.2. Post-1994 Developments and Legacy

Following the formal handover of Walvis Bay and its offshore islands to Namibia on 1 March 1994, pursuant to the Treaty on Walvis Bay signed on 28 February 1994, South African military forces had already begun withdrawing from the area in 1993, with units such as the 2nd South African Infantry Battalion redeploying to bases within South Africa ahead of the transfer⁶. This marked the end of the Walvis Bay Military Area as a prepositioning and training hub for South African Defence Force operations, including logistics support during the South African Border War, with stored equipment and fortifications largely dismantled or repurposed for civilian use. Post-transfer, the former military zone transitioned to commercial and economic priorities, with the port of Walvis Bay

The legacy of the Walvis Bay Military Area endures in South African military historiography as a rigorous training environment, exemplified by the "Dune Sea" exercises that built infantry resilience for border operations, while for Namibia, reintegration symbolized the completion of territorial sovereignty and bolstered bilateral ties with South Africa, facilitating economic cooperation without reverting to fortified control (*Ibid*).

7.3. Archaeological Sequence in Namibia

To contextualize Namibian heritage and archaeological resources, the following overview provides essential information on the occurrence of archaeological materials and their associated time periods. These time frames reflect the known sequence of human occupation in Namibia and, more broadly, in Southern Africa. This background is important for understanding long-term human adaptations, settlement patterns, and cultural developments within the region. According to Nankela (2017), the archaeological sequences of Namibia can be summarized as follows (Table 11).

Table 11: Archaeological Sequences in Namibia

Period	Year	Area/Location	Evidence	Description
Pleistocene	400 000 - 100 000	Namib Plains, Namib Desert & Lower Kuiseb	Bone fragments of extinct elephants and stone tools	
Holocene	10 000 - 1 000	Around Namibia	Scattered artefacts, rock art sites, potsherds, beads, grave cairns, hut circles, human remains, axes, pointed flakes, cleavers, and blades.	Sites are fragile, inaccessible due to inadequate archaeological investigations in some sites.
Historic Period	500	Around Namibia	Cemeteries, old mine workings, waste rock walling, architectural heritage, and WWI military engagements.	Namibia indicates intensive settlements between indigenous people and Europeans.

⁶ https://gropedia.com/page/walvis_bay_military_area

8. Physical and Environmental Context of the Area (Physiography)

The proposed project site is located within the Namib Desert and is characterized by a sparsely vegetated landscape. Based on field observations and the prevailing desert habitat, only limited plant life is present within the area. Species such as *Tetraena simplex* (formerly *Zygophyllum simplex*) were sparsely observed and are typical of arid environments in the Namib Desert.



Figure 12: Vegetation types as recorded within this arid landscape.

8.1. Topographically and environmental settings of the proposed development footprints

The proposed site is characterized by arid landscape, gravel plains and sand dunes. In general, the entire area is of Namib Desert environments (Figure 13).



Figure 13: Landscape views of the Subject land

9. Assessment of the Findings within the Proposed Project

9.1. On-site findings

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Namibia's unique and non-renewable archaeological and palaeontological heritage sites are protected in terms of the National Heritage Act No. 27 of 2004 and may not be disturbed at all without a permit from the relevant heritage authority, such as the National Heritage Council.

Overall, the surveyed area is considered to be of predominantly low heritage significance. The majority of the land within the project boundaries shows limited cultural or historical value due to prior disturbance.

However, one discrete site within the project area is assessed as having high historical significance. This site contains visible evidence of past pre-independence South African Defence Force (SADF) military activities, including small military fortifications or defensive fighting positions, as well as scattered artefacts such as discarded military objects, tins, bottles, and corroded metal cans.



Figure 14: Observed artefacts and military debris within the environment

Table 12: Archaeological/Historical and Cultural Heritage Resources within the Landscape

Heritage resource type	Observation and recording made
Landscapes and Natural Features	Sand dunes to the west, gravel plains, flat arid landscape i.e., Arid Namib Desert environments.
Holy Places	None were recorded
Rock shelters and Caves	None were recorded

Archaeological/Historical sites	SADF Military Training sites were recorded, in total they are about 17 sites.
Graves and burial places	None
Places associated with oral traditions or living heritage	None
Public monuments and memorials	None
Movable objects	Scattered stone artefacts and Military debris confined in one section of the land.

9.2. Sensitivity of the Receiving Environs

Sites of high sensitivity are primarily associated with former South African Army military training areas identified within the proposed project site. Detailed descriptions of these sites are provided in Table 14.

In addition, GIS-based spatial analysis identified four sites of significance located at considerable distances from the project area. These sites are situated approximately 6.6 km to the northwest, 20 km to the south, and 29.6 km to the southeast of the project site. (Figure 15).

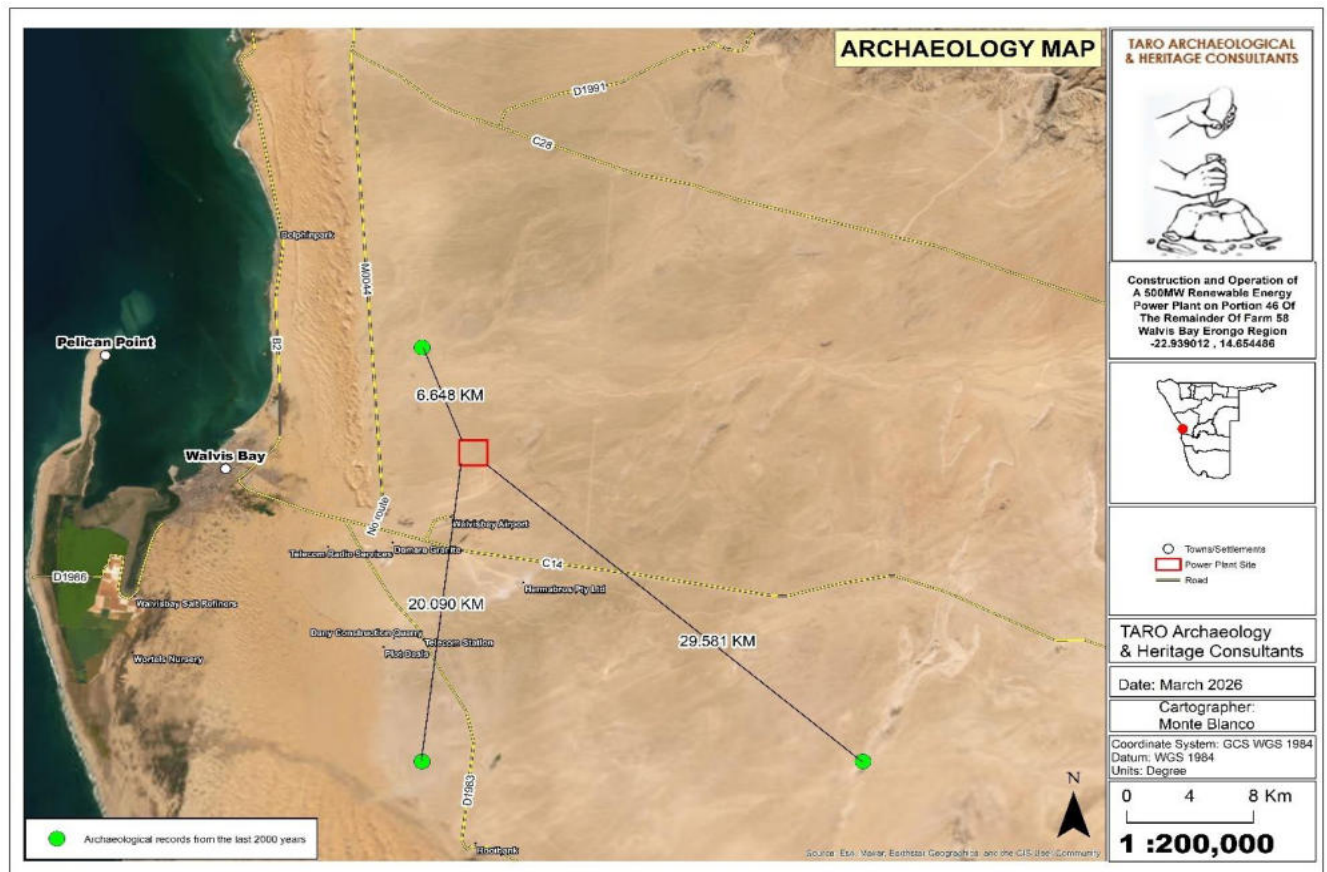


Figure 15: Landscape Archaeological Map

9.3. Photographic Documentation of the recorded features within the traversed areas.

All sites, objects, and features that were identified during the surface walk over are documented according to the general standards accepted by the NHC Guidelines 2021 and the Archaeological Profession.

Coordinates of individual localities are determined by means of the Global Positioning System (GPS) and plotted on a map. This information is usually added to the description in order to facilitate the identification and grading of each locality.

9.4. Tracklog Surveys of the selected tracking of the survey was conducted by using the QField program.

Tracklogs are useful in archaeological surveys because they provide a detailed record of the paths traversed during fieldwork (Figures 16), allowing for accurate spatial documentation and analysis of archaeological sites. The QField program was used to track the paths taken, as seen below. This helps in mapping the distribution of artifacts, identifying potential areas of interest, and creating comprehensive site plans. The assessment of significance and grading of Archaeological and Heritage Resources on the Proposed Project are presented in Table 13.



Figure 16: Map indicating the track log of the field survey within the proposed development.

9.5. General Findings and Features observed and recorded

It should be noted that the proposed development site Farm 58 portion 46 borders with the Rooikop area to the south (Farm 19 Rooikop), which served as home to the 2 SA Infantry Battalion (2 SAI) and later 61 Mechanised Battalion Group, focusing on arid and urban desert training. Owing to this proximity, the broader area is considered to be of historical significance though there are some claims that, the areas were cleared soon after Namibia got her independence.

Rooikop was the principal military installation within the Walvis Bay Military Area, where the South African Air Force (SAAF) assumed control of an expanded airfield on 1 October 1961. These facilitated air operations and supported a garrison of up to 3,000 troops. The base, later known as Air Force Base Rooikop, incorporated adjacent army facilities and functioned as a key logistical hub for the prepositioning of equipment during the South African Border War (1966–1989)⁷. A military depot established in 1962 further strengthened supply capabilities for South African Defence Force (SADF) operations in the region. Key army units included the 2 South African Infantry Battalion Group, activated on 1 January 1962 and stationed at the Rooikop garrison to provide ground defence and operational support (Ibid).

Used Military Objects/Artefacts recorded



Figure 17: Artillery Fuse or Projectile

⁷ <http://samilitaryhistory.org/diaries/swamilsa.html>



Figure 18: Military objects as recorded at the site



Figure 19: Commemorative marker

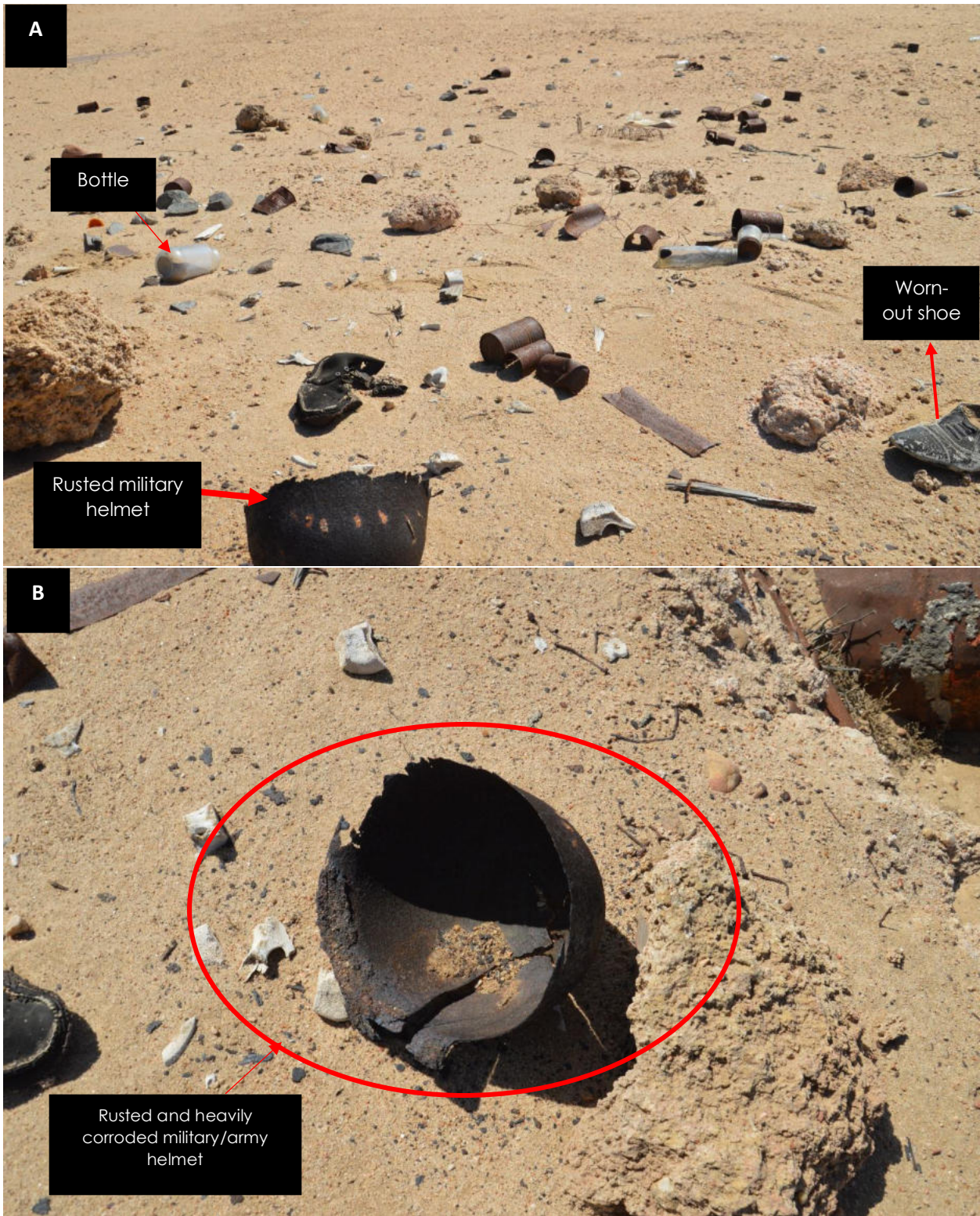


Figure 20: Military artefacts and other related objects

The items recorded at the site appear to be rocket hand fired single star yellow signal flares, specifically the R1M2 variant. These are military-grade pyrotechnic devices used primarily for illumination and signaling during ground force operations.



Figure 21: Military artefacts recorded.



Figure 22: The piece of rusted metal object and military worn-out boot

Military fortification/field fortifications: A series of rusted metal barrels and drums embedded into a mound of sand. This specific arrangement of barrels filled with sand or earth is characteristic of defensive fighting positions or field fortifications, as discussed earlier in this report, part of this landscape was a SADF military base from 1960s to 1989. In total, there are about 17 sites in this section of the land, within a 100 meters' radius.



Figure 23: Historical military training site



Figure 24: Historical military training sites



Figure 25: Historical military training sites



Figure 26: More military training sites recorded



Figure 27: Rusted hand Grenades and other military devices

Stone tools recorded: Few of isolated finds were made during the surface inspection.

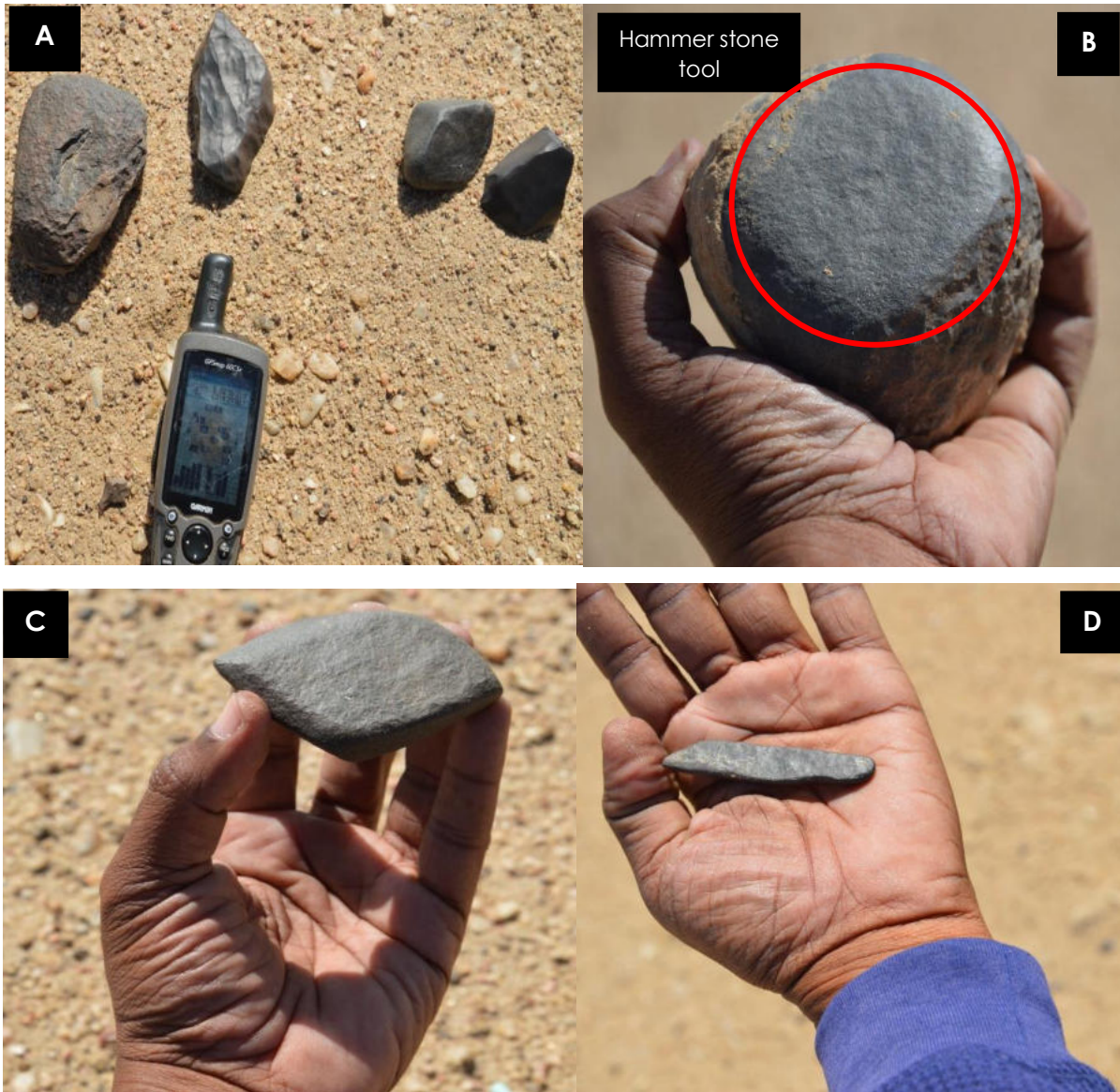


Figure 28: Various lithic tools

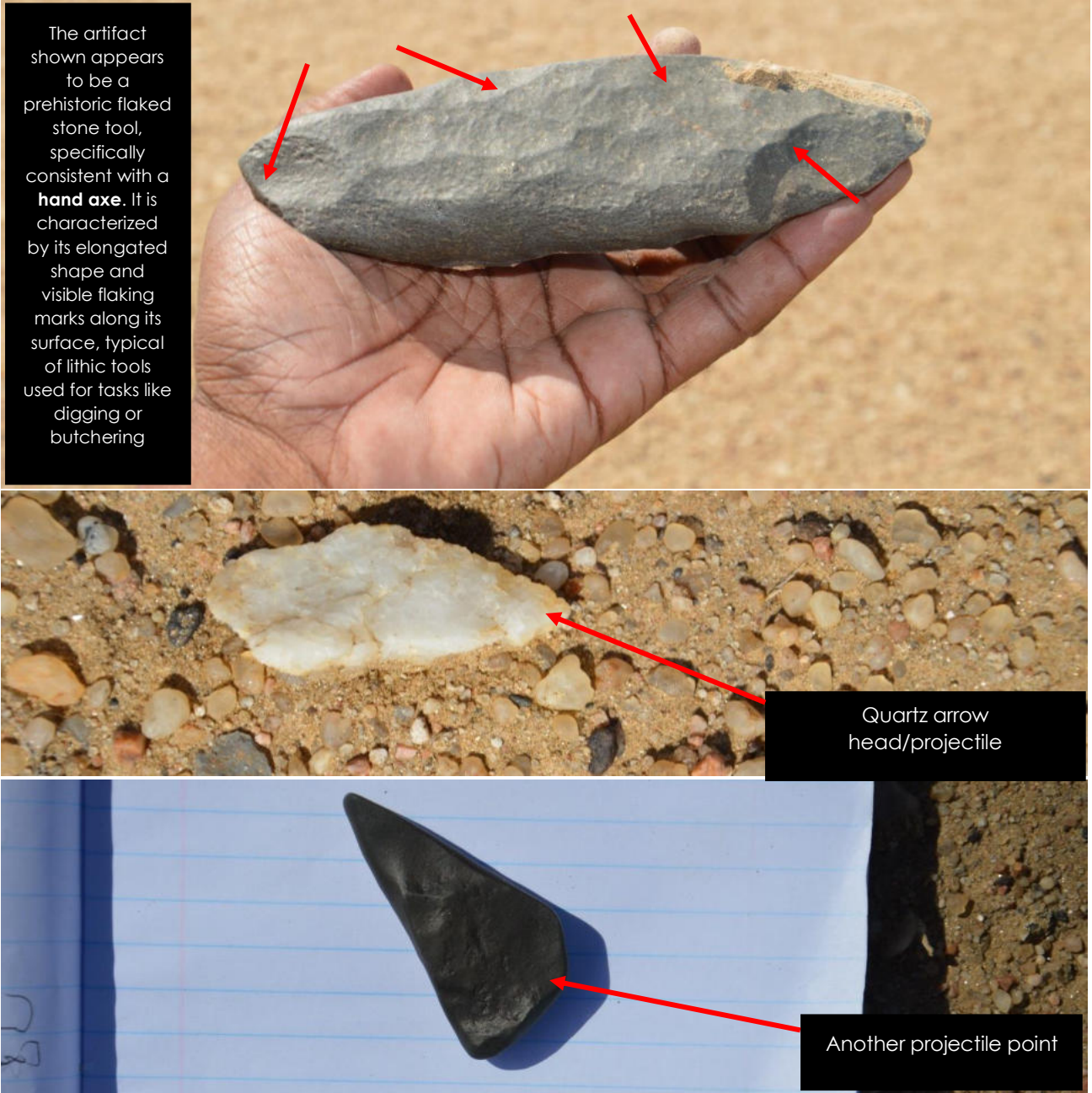


Figure 29: Lithic tools

Table 13: Assessment of Significance and Grading of Archaeological and Heritage Resources on the Proposed Project

Waypoint	Location	Elevation	Description of the findings	Heritage Significance	Grading	Vulnerability Description
Remainder of Farm 58 Portion 46						
TAHC 718	S 22° 56' 37.4" E 14° 38' 55.2"	96 m	Surface scatter-open and flat landscape	Little	1	3
TAHC 719	S 22° 56' 36.6" E 14° 38' 56.8"	95 m	Surface scatter- a single microlithic tool was recorded.	Little	1	3
TAHC 720	S 22° 56' 33.2" E 14° 39' 08.1"	99 m	Surface scatter	Little	1	3
TAHC 721	S 22° 56' 33.2" E 14° 39' 08.5"	99m	Stone tool	Little	1	3
TAHC 723	S 22° 56' 32.7" E 14° 39' 14.0"	101 m	Stone tool- A digging tool	Little	1	3
TAHC 726	S 22° 56' 34.5" E 14° 39' 29.4"	106 m	Stone tool	Little	1	3
TAHC 729	S 22° 56' 33.8" E 14° 39' 31.1"	106 m	Stone tool-Hammer stone	Little	1	3
TAHC 730	S 22° 56' 33.8" E 14° 39' 30.7"	104 m	Unknown piece of rusty metal	Little	1	3
Historical Sites within the boundaries of the proposed development-SADF Military training sites about 100 meters radius						
TAHC 734	S 22° 56' 22.9" E 14° 39' 13.6"	100 m	Disturbed area- This area, of which is about 100m radius was being used as a military training area during the South African colonial administration in South West Africa (now Namibia. Lots of military devices, debris and other equipment can be found lying around.	Moderate	3	3
TAHC 735	S 22° 56' 22.0" E 14° 39' 14.7"	102 m	SADF Military training site	Moderate	3	3
TAHC 736	S 22° 56' 20.8" E 14° 39' 15.0"	103 m	SADF Military training site	Moderate	3	3
TAHC 737	S 22° 56' 19.7" E 14° 39' 15.7"	100 m	SADF Military training site	Moderate	3	3

TAHC 738	S 22° 56' 19.0" E 14° 39' 17.0"	101 m	SADF Military training site	Moderate	3	3
TAHC 739	S 22° 56' 18.6" E 14° 39' 18.6"	100 m	SADF Military training site	Moderate	3	3
TAHC 740	S 22° 56' 18.6" E 14° 39' 20.0"	103 m	SADF Military training site	Moderate	3	3
TAHC 741	S 22° 56' 20.4" E 14° 39' 19.0"	105 m	SADF Military training site	Moderate	3	3
TAHC 742	S 22° 56' 22.2" E 14° 39' 18.7"	105 m	SADF Military training site	Moderate	3	3
TAHC 743	S 22° 56' 21.5" E 14° 39' 17.0"	104 m	SADF Military training site	Moderate	3	3
TAHC 744	S 22° 56' 23.6" E 14° 39' 14.4"	104 m	SADF Military training site: 5 rusty used grenades were recorded at this waypoint	Moderate	3	3

10. Identification of the Archaeological and Heritage Sensitivity Map

The map below illustrates the significant site findings identified during surveys of the proposed area for renewable energy power plant. The majority of the recorded historical sensitive which are of pre-independence SADF Military Training sites such are concentrated in one small area of about 100 meters radius. A recommended 100 metres radius as a buffer zone should be implemented during the construction and operation of the proposed project (Figure 30). Refer to Table 13, from waypoint 734-744.

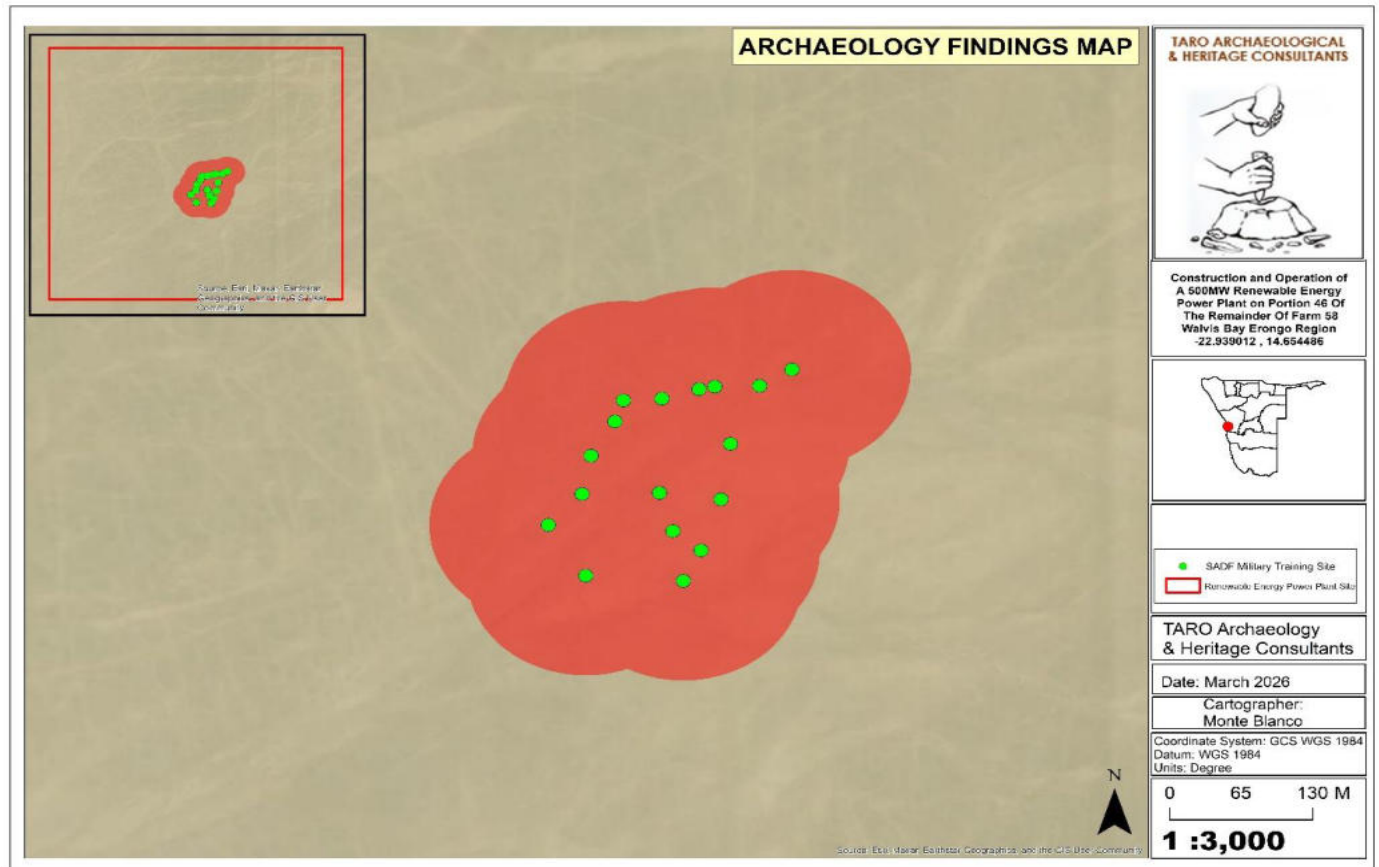


Figure 30: Archaeological finding map

10.1. Sensitivity Analysis Summary Statement

The field survey conducted has revealed that the majority of the areas within the proposed development are actually of **low sensitivity**. The only recorded sites of **high sensitivity** within the boundaries were the historical military training sites which there are about 17 of them within a 100 meters radius as shown above figure 30.

10.2. Identification and Description of the Potential Impact on Historical, Cultural Heritage Resources

10.2.1. Impact Assessment

Data collected during the site surveys for the archaeological and cultural heritage assessment indicate that the proposed project activities are likely to result in low-level negative impacts, both direct and indirect, during the construction and operational phases.

The project area has been previously disturbed by various activities, including historical and post-independence military operations, which have reduced the likelihood of intact heritage resources occurring within most of the site. The purpose of this assessment was to identify any areas or features of archaeological, cultural, or historical significance, evaluate the potential impacts of the proposed development on such resources, and recommend measures to enhance positive outcomes while minimizing adverse effects.

Based on these findings, the potential impact of the proposed project on historical, archaeological and cultural heritage resources is assessed as follows on **Table 15**:

Table 14: Impact Assessment/Impact Evaluation

Potential Impact	Impact Criteria		Significance Ranking (Without mitigation)	Potential Mitigation Measures	Significance Ranking (With mitigation)	Confidence Levels
Damage/destruction of archaeological sites or materials	Extent or Spatial of impact	Local	Moderate/high	<p>Construction and operational activities of the renewable energy power plant should be implemented on designated sites only.</p> <ul style="list-style-type: none"> - Minimise cut-and-fill and landscape scarring in general - Ensure effective rehabilitation of areas not needed during construction works. - Ensure proper micro-siting of infrastructure and construction equipment to avoid impacts - Avoid drilling or digging near identified military training sites. - Report any chance finds - Protect <i>in situ</i> materials 	Low	High
	Duration of impact	Long-term				
	Probability (Threat)	Unlikely				
	Magnitude of impact	Low/little				
	Reversibility	Non-reversible				
	Can impacts be mitigated?	N/A				

Damage/destruction of graves and burial grounds	Extent or Spatial of impact	Local	Moderate/high	Construction and operational activities of the renewable energy power plant should be implemented on designated sites only. - Minimise cut-and-fill and landscape scarring in general - Ensure effective rehabilitation of areas not needed during construction works. - Ensure proper micro-siting of infrastructure and construction equipment to avoid impacts - Avoid drilling or digging near military training sites. - Report any chance finds - Protect <i>in situ</i> materials	Low	High
	Duration of impact	Long-term				
	Probability (Threat)	Unlikely				
	Magnitude of impact	Zero				
	Reversibility	Non-reversible				
	Can impacts be mitigated?	Yes				
Damage to the historical sites	Extent or Spatial of impact	Local	Moderate/high	Construction and operational activities of the renewable energy power plant should be implemented	Low/little	High
	Duration of impact	Long-term				

	Probability (Threat)	Likely		on designated sites only. - Minimise cut-and-fill and landscape scarring in general - Ensure effective rehabilitation of areas not needed during construction works. - Ensure proper micro-siting of infrastructure and construction equipment to avoid impacts - Avoid drilling or digging near identified military training sites. - Report any chance finds - Protect <i>in situ</i> materials		
	Magnitude of impact	High				
	Reversibility	Non-reversible				
	Can impacts be mitigated?	Yes				
Cumulative impacts	Archaeological sites are non-renewable and the impact on any archaeological context or material will be permanent and destructive.			<ul style="list-style-type: none"> • Ensure proper micro-siting and siting of infrastructure and construction equipment to avoid a proliferation of destruction of archaeological sites and or historical materials. 		
Residual impacts	With the implementation of mitigation measures mentioned herein, the significance level of the impacts identified will be reduced to either minor adverse/low or negligible.			<ul style="list-style-type: none"> • The undertaking of the mitigation measures outlined here before and during the construction and operation of the power plant will lead to <i>Minor</i> overall residual effects on archaeology. The recommended buffer zone of known archaeological sites in the vicinity of the application area to at least a distance of 100 m radius from the visual edge of the targeted site will ensure that these sites are preserved <i>in situ</i> and thus will not be impacted by the intended activities. 		

11. Summary of the Impacts

Direct or indirect impacts or risks of impact on archaeological sites located near or in the vicinity of the proposed 500MW renewable energy plant project can be reduced to acceptable levels by the adoption of appropriate recommended mitigation measures including integration of the archaeological heritage record and *Chance Finds procedure* in the project EMP (see *Appendix 1, & recommended mitigations*). Special efforts should be made to reduce and avoid impacts on any discovered site, artefacts or yet-to-be-discovered archaeological sites.

11.1. Historically Significant Sites

Historical sites were recorded at one particular section; these sites are related to the pre-independence SADF Military training activities.

Mitigation Recommendations; These are strictly recommendations for the identified historical military training sites only. Key recommended mitigation measures include:

- UXO Clearance: This involves systematic detection and removal of unexploded ordnance (*if there is any*), discarded military munitions, and munitions constituents (lead, explosives).
- Site Surveying & Mapping: Using geophysical surveys to identify buried munitions and map high-risk areas (*if there is any*).
- Signage and Fencing: Physical barriers and warning signs to restrict access to dangerous areas where immediate clearance is not feasible.
- *Alternatively, a buffer-zone of 100 meters radius is highly recommended to ensure protection and safety of all involved.*

11.2. Archeological/ Cultural Heritage Sites

No archaeological or cultural heritage sites were identified apart from the historical sites which are within the project's boundaries.

Mitigation: *No need for mitigation*

11.3. Built Environment

No sites associated with the built environment is located within the proposed development's boundaries.

Mitigation: *No mitigation is recommended.*

Low Overall Impact: The conclusion that the overall impact on archaeological and cultural heritage is considered "low" is somewhat a good sign, but it does not absolve the project of responsibility and compliance. Environmental, Archaeological and Heritage Impact Assessments (EIA/AHIA) should always plan for the unexpected.

Table 15: Archaeological & Heritage consideration for Inclusion in the Project EMP

Expected Impacts	Mitigation/management objectives & outcomes	Mitigation/management actions	Monitoring		
			Methodology	Frequency	Responsibility
Impacts on archaeology, historical and graves					
Damage or destruction of archaeological or historical sites or graves (known or unknown)	Avoid any impacts, if not possible or locate and sample or rescue sites/burials before disturbance	Pre-construction survey, micro-siting of infrastructures & equipment	Appoint an archaeologist to conduct a survey well before construction	Once-off	Project Proponent
	Rescue information, artefacts or burials before extensive damage occurs	Reporting chance finds as early as possible, protect <i>in-situ</i> and stop work in the immediate area	Inform staff and carry out inspections of excavations	On-going basis Whenever on site (at least weekly)	Contractors ECO
Impacts on the cultural landscape					
Visible landscape scarring	Minimize landscape scarring	Ensure disturbance is kept to a minimum and does not exceed project requirements. Rehabilitate areas not needed during operation.	Monitoring of surface clearance relative to approved layout	Ongoing basis Whenever on site (at least weekly)	Construction Manager or Contractor ECO

12. Management Plan and Mitigation Measures

Detailed mitigation measures are given herein in the form of recommendations (refer to the bulleted list in **Section 12.2** below under the conclusion and recommendation section). These mitigation measures will be included and implemented along with the general EMP of the project, as well as the implementation of the *Chance Find Procedures* and *Heritage Monitoring Plan* for the proposed project, as set out in *Appendix 1* below.

12.1. Conclusion and Recommendation

The survey findings indicate that the proposed development area is generally of low cultural heritage significance, with the exception of one section identified as being of high historical significance. It is therefore recommended that a strict buffer zone with a radius of 100 metres be established around this sensitive area and clearly demarcated or fenced off. No development or construction activities should be permitted within the buffer zone. In addition, awareness of the historical significance and sensitivity of the identified military training location should be promoted among project personnel and construction crews. This will assist in ensuring the safety, effective protection, management, and long-term preservation of the site throughout the project lifecycle.

12.2. Recommended Mitigation Measures

It is extremely important for the Project Proponent, and all those involved in the project to fully understand that all archaeological and palaeontological objects and meteorites are the property of the State, except such an archaeological or palaeontological object the private possession and ownership of which (a) was acquired not in contravention of **Section 12** of the National Monuments Act, 1969 (Act No. 28 of 1969) or a law repealed by that Act; and thus, as part of mitigation measures, it should be noted that according to National Heritage Act No. 27 of 2004 that all activities that will involve digging or excavating the ground will require a permit from National Heritage Council of Namibia. Therefore, to prevent accidental damage to the archaeological landscape, including any potential sub-surface archaeological finds or features, the **following are general recommended mitigation strategies are proposed and recommended;**

- *If any archaeological materials or human burials or skeletal remains are uncovered during construction activities, then the work in the immediate area should be halted, the finds would need to be reported to the Heritage Authority and may require inspection by an Archaeologist. The ECO should have the area fenced off and contact NHC (Tel: +264 61 244 375), National Forensic Laboratory (+264 61 240 461) immediately.*
- *A 100 meters' buffer zone is recommended around the recorded historical sites.*
- *Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Act (Act No. 27 of 2004), Section 52 (2).*

- *Staff Training: Ensure that all construction workers involved in the project are trained to recognize potential military objects, debris, archaeological or historical materials, whether on the surface or subsurface. This can help avoid delays and ensure the process is efficient.*
- *Any pile of stones or mound of the earth looking even remotely like a grave should be avoided at all costs.*
- *A "No-Go-Area" should be put in place where there is evidence of sub-surface archaeological materials, archaeological sites, gravesites, historical, or past human dwellings. It can be a demarcation by fencing off or avoiding the site completely by not working closely or near the known site. The 'No-Go Option' might have a NEUTRAL impact significance.*
- *Cognizance must be taken of the larger historical, cultural & heritage landscape of the area to avoid the destruction of previously undetected heritage sites. Should any previously undetected heritage or archaeological resources be exposed or uncovered during the development phases of the proposed project, these should immediately be reported to the heritage specialist or heritage authority (National Heritage Council of Namibia).*
- *The Proponent and Contractors should adhere to the provisions of **Section 55** of the National Heritage Act in the event significant heritage and cultural features are discovered in the course of developmental works.*
- *It should be noted that the subterranean presence of archaeological and/or historical sites, features or artefacts is always a distinct possibility. Care should therefore be taken when development commences that if any of these are discovered, work on site cease immediately and a qualified archaeologist be called in to investigate the occurrence.*
- *Documentation and Reporting: All findings should be documented thoroughly. Even minor artifacts or features should be recorded, as they can help build a broader understanding of the region's history, or they may be relevant to future heritage projects or conservation efforts.*
- *The Chance Finds procedure submitted with this assessment as Appendix 1 should be included as part of the license holder's EMP.*
- *Bi-annual auditing is highly recommended.*

It should be taken into consideration that, according to **Part VI sub-section (1), (2) or (3)**, A person who contravenes these provisions commits an offence and is liable to a fine not exceeding N\$100 000 or to imprisonment for a period not exceeding 5 years, or to both such fine and such imprisonment. A Project Proponent should heed these recommendations and comply with the existing legislation and Act as reflected in this report.

12.3. Statement and Reasoned opinion of the specialist

It is the reasoned opinion of the undersigned archaeologist that the overall impact of the proposed project is considered to be low. Residual impacts can be managed to an acceptable level through the implementation of the recommendations provided in this report. Furthermore, the anticipated socio-economic benefits of the energy utilization and other related development are considered to outweigh the

potential impacts, provided that appropriate recommended mitigation measures are effectively applied throughout the project lifecycle.

13. References

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Appendix 1: Archaeological “Chance Finds Procedure”

A **Chance Find Procedure (CFP)** outlines the actions to be taken when previously unknown cultural heritage resources, especially archaeological sites or artifacts, are discovered during a project. This procedure ensures that such discoveries are handled responsibly, potentially halting construction or development activities while assessments are conducted. The CFP aims to protect these resources and ensure compliance with relevant regulations.

Key Steps in a Chance Find Procedure:

1. **Discovery and Reporting:** Anyone who discovers a potential heritage resource must immediately halt work and report the find to their supervisor or the project manager.
2. **Site Security:** The supervisor or project manager ensures the site is secured to prevent further damage or disturbance.
3. **Expert Assessment:** A qualified archaeologist or heritage specialist is consulted to assess the significance of the discovery and determine appropriate actions.
4. **Further Action:** Based on the assessment, the project may proceed with caution, construction may be halted, or further investigation (e.g., archaeological excavation) may be required.
5. **Compliance:** The project must comply with relevant regulations and guidelines for handling heritage resources.

Examples of Chance Finds:

- Burials or remains of deceased individuals
- Palaeontological, archaeological sites, such as settlements, burial grounds, or rock art
- Isolated artifacts, like pottery, tools, or other objects of potential cultural significance

Purpose of the Chance Find Procedure (CFP):

- **Protection of Heritage:** To prevent damage or destruction of cultural heritage resources.
- **Legal Compliance:** To ensure compliance with heritage protection laws and regulations.
- **Preservation of Information:** To document and potentially preserve important information about the past.
- **Public Education:** To raise awareness of the importance of cultural heritage and encourage responsible stewardship.

The Project Manager or ECO/Site Manager/Supervisor must report the findings to the following competent authorities:

- **National Heritage Council of Namibia (061 244 375)**
- **National Museum (+264 61 276800),**
- **National Forensic Laboratory (+264 61 240461).**

Heritage Monitoring and Management Requirements

Throughout the development phases of the proposed project, monitoring is necessary to ensure compliance with measures agreed upon in the recommended mitigation as well as to assess how effective the mitigation measures are in protecting the values and significance of the heritage resources. This can be achieved through regular monitoring of the project site or random visits to ensure compliance with measures outlined in the recommendation section is monitored, recorded, and reported. However, in principle, heritage monitoring and management should be conducted and implemented by archaeologist/heritage specialist or trained personnel, while other activities, especially day-to-day monitoring, can be done by an Environmental Control Officer (ECO) or, in some cases, a trained Site manager can be responsible for this.

Site monitoring: As most heritage resources occur below the surface, all earth-moving activities need to be routinely monitored in case of accidental discoveries. The greatest potential impacts are the initial soil removal and subsequent earthworks during the construction or development of the area. The ECO should monitor all such activities daily. If any heritage resources are found, the *chance finds procedure* must be followed as outlined in Appendices 1 and 2.

Monitoring is generally only considered appropriate where changes are probable or likely, and where these changes could be significant and would require remedial or specific management measures. This process can be done in all stages of the development of the proposed project, and during the actual operational phases, where more impact on archaeological and heritage resources is probable.

Appendix 2: Archaeological and Heritage Monitoring Measures for the Proposed Development

Table 16: Chance Find and Heritage Monitoring Measures

Area/Site	Archaeological/Heritage Aspect	Potential Impact	Mitigation Measures	Responsible Party	Method Statement required
<p>Chance Find (Chance Archaeological, historical and Heritage sites (Accidental discoveries)</p>	<p>General area where the proposed project is taking place (i.e., proposed development which may yield archaeological, cultural materials, historical or human remains.</p> <p>This means that there are possibilities of encountering unknown archaeological sites during subsurface construction work, which may disturb previously unidentified chance finds.</p>	<p>Possible damage to previously unidentified Archaeological, historical and heritage sites during the power plant construction activities.</p> <p>Unanticipated impacts on archaeological sites where project actions inadvertently uncovered significant Archaeological sites.</p> <p>Loss of historic cultural landscape;</p> <p>Destruction of burial sites and associated graves (<i>if any</i>)</p> <p>Loss of aesthetic</p>	<p>In situations where unexpected impacts occur, construction activities must be stopped, and the heritage authority should be notified immediately.</p> <p>Where remedial action is warranted, minimize disruption in construction scheduling while recovering archaeological or historical data. Where necessary,</p> <p>Implement emergency measures to mitigate.</p> <p>Where burial sites are accidentally disturbed</p>	<p>Project Proponent- Contractor/ Mining crews, Project Manager (PM) / Environmental Control Officer (ECO) or Site Manager.</p>	<p>Monitoring measures should be issued as instruction within the Project EMP.</p> <p>PM / ECO / Site Manager / Archaeologist</p> <p>Should monitor development works on sites where such development projects commence within the project site.</p>

Area/Site	Archaeological/Heritage Aspect	Potential Impact	Mitigation Measures	Responsible Party	Method Statement required
		<p>value due to construction activities/ work</p> <p>Loss of sense of place</p> <p>Loss of intangible heritage value due to a change in land use.</p>	<p>during construction, the affected area should be demarcated as a 'no-go zone' by use of fencing during construction, and access thereto by the construction team must be denied.</p> <p>Accidentally discovered burials in a development context should be salvaged and rescued to safe sites as may be directed by relevant heritage authorities.</p> <p>The heritage officer responsible should secure the relevant heritage and health</p>		

Area/Site	Archaeological/Heritage Aspect	Potential Impact	Mitigation Measures	Responsible Party	Method Statement required
			<p>authorities permit for possible relocation of affected graves</p> <p>accidentally encountered during construction and operation work.</p>		
Compliance Review	<p>A review of historical, archaeological and cultural heritage incidents, their impacts, mitigation used, and the success of mitigation should be conducted at a certain stage of the project. The review should be looking at mitigation measures in place, and ways of improvement if needed. This exercise can be done after every 6 months or whenever the Project Proponent sees fit. The overall objective is to ensure full compliance with relevant legislation, especially under Section 5 (4) of the National Heritage Act No. 27 of 2004, Chance Find Procedure, and the recommendations made by the Heritage Specialist.</p>				

Knowledge Gaps

Due to the subsurface nature of heritage resources, the possibility of the discovery of any historical, archaeological or heritage resources during the intended activities phases cannot be excluded. However, this limitation is successfully mitigated with the adoption and implementation of a **Chance Find Procedure** as elaborated above in Table 17.

Appendix 3: Newspaper Adverts and Site Notices

CALL FOR PUBLIC PARTICIPATION/COMMENTS

ENVIRONMENTAL IMPACT ASSESSMENT TO OBTAIN AN ENVIRONMENTAL CLEARANCE TO CONSTRUCT AND OPERATE A GREEN ENERGY COMPLEX (INCLUDING A 300,000 BPSO OIL REFINERY, 500MW RENEWABLE ENERGY POWER PLANT AND RELATED STORAGE TANK FARMS) ON PORTION 46 OF THE REMAINDER OF FARM 58 WALVIS BAY, ERONGO REGION

Green Earth Environmental Consultants have been appointed to attend to and complete an Environmental Impact Assessment and Environmental Management Plan (EMP) to obtain an Environmental Clearance Certificate as per the requirements of the Environmental Management Act (No. 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 in GG 4875 of 6 February 2012) to construct and operate a green energy complex (including a 300,000 BPSO Oil Refinery, 500MW Renewable Energy Power Plant and related Storage Tank Farms) on Portion 46 of the Remainder of Farm 58 Walvis Bay, Erongo Region.

Name of proponent: ISF Trading Enterprises (Pty) Ltd
Project location and description: It is the intention of the Proponent to develop a Green Energy Complex which will include a 300,000 BPSO Modular Oil Refinery, 500MW Renewable Energy Power Plant including a BESS (Battery Energy Storage System), related Storage Tank Farms, Warehouse and Offices on Portion 46 of the Remainder of Farm 58, Walvis Bay, Erongo Region. Walvis Bay Town Council conditionally allocated Portion 46 (305,2795 ha) to the Proponent for the proposed project. The final transfer of the portion to the Proponent is subject to obtaining an Environmental Clearance as well as other statutory approvals. A locality plan of the site is displayed at the Walvis Bay Municipal Notice Board or available from the offices of Green Earth Environmental Consultants at Budgewee Offices, No. 4 Dr Kwame Nkrumah Avenue, Main Windhoek. Interested and affected parties are hereby invited to register in terms of the assessment process to give input, comments, and opinions regarding the proposed project. A Background Information Document will be available to the I & AP's who registered.

A public meeting will be held on 24 May 2024 at 10h00 at the Namaville Community Hall.
 The last date for comments and/or registration is 31 May 2024.
 Contact details for registration and further information:

Green Earth Environmental Consultants
 Contact Persons: Charlie Du Toit/Carole van der Walt
 Tel: 0611272145 | E-mail: carole@greenearthnambwa.com



CALL FOR PUBLIC PARTICIPATION/COMMENTS

ENVIRONMENTAL IMPACT ASSESSMENT TO OBTAIN AN ENVIRONMENTAL CLEARANCE TO CONSTRUCT AND OPERATE A GREEN ENERGY COMPLEX (INCLUDING A 300,000 BPSO OIL REFINERY, 500MW RENEWABLE ENERGY POWER PLANT AND RELATED STORAGE TANK FARMS) ON PORTION 46 OF THE REMAINDER OF FARM 58 WALVIS BAY, ERONGO REGION

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Project location and description: It is the intention of the Proponent to develop a Green Energy Complex which will include a 300,000 BPSO Modular Oil Refinery, 500MW Renewable Energy Power Plant including a BESS (Battery Energy Storage System), related Storage Tank Farms, Warehouse and Offices on Portion 46 of the Remainder of Farm 58, Walvis Bay, Erongo Region. Walvis Bay Town Council conditionally allocated Portion 46 (305,2795 ha) to the Proponent for the proposed project. The final transfer of the portion to the Proponent is subject to obtaining an Environmental Clearance as well as other statutory approvals. A locality plan of the site is displayed at the Walvis Bay Municipal Notice Board or available from the offices of Green Earth Environmental Consultants at Budgewee Offices, No. 4 Dr Kwame Nkrumah Avenue, Main Windhoek. Interested and affected parties are hereby invited to register in terms of the assessment process to give input, comments, and opinions regarding the proposed project. A Background Information Document will be available to the I & AP's who registered. A public meeting will be held on 24 May 2024 at 10h00 at the Namaville Community Hall.

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 Tel: 0611272145
 Email: carole@greenearthnambwa.com



Figure 31: Newspaper Adverts

Appendix 4: Meeting Minutes

CONSULTATION MEETING MINUTES

For Archaeological and Heritage Impact Assessment for the Proposed Construction and operation a 500MW Renewable Energy Power Plant Walvis Bay in the Erongo Region.

Date: 21 April 2026

Venue: Portion 46 of the Remainder of Farm 58

Project Proponent: ISF Trading Enterprises (Pty) Ltd

Meeting Agenda & Presentation

Mr. Roland Mushi (*An Archaeologist*) explained the AHIA purpose and the reason for doing this interview to the respondent, and introduce the purpose of the heritage assessment such as assessing the impact of a proposed project on the landscape and cultural heritage of the area.

Engagement: The person who was interviewed was born and grew up in Walvis Bay, hence he knows the area in question, and he knows the history behind the subject land. The interview took place in Walvis Bay.

The Archaeologist asked general questions to all interviewees, such as;

- How long have you lived in this community/area?
- Are there any specific places in the within or outside project area that have historical, archaeological, or cultural significance?
- Are there areas used for traditional ceremonies, rituals, or gatherings?
- Are there burial sites, cemeteries, or sacred sites (e.g., graves, shrines, sacred trees)?
- Are there stories, legends, or oral histories associated with specific locations in the area?

Response/Description/Views and Comments
Interviewee: Mr Adriano de Koe 081 128 9728
-Mr. Adriano was born and raised in Walvis Bay, and knows these environments so well. -According to him, back in the days when they were growing up in the 80s and 90s, they that this part of the land was being used as a military base for shooting, fighting and other related military techniques. Also, Dune 7 was part of training areas. -The whole area, according to Mr. Adriano over 20 km, SADF soldiers and other military personnel used to practise shooting or (a shooting range) and other military techniques. There was an airfield station as well. Also, not only South African soldiers but other nationalities such as some Namibians and Angolans, who were fighting alongside South Africans were brought here for intensive military training. -There are some areas with big holes, probably from bomb explosions or something in relation to military trainings. -The Project area is bordering with Farm Rooikop which was the exactly the military base stations and airfield station by the South African Defence Force. -There are no known graves around here. It was strictly a military training area by the SADF during those days.

-It is known that, after independence, or more so after Walvis Bay returned to Namibia in 1994, the government decided to clear this area i.e., de-mining of unexploded ordinance (UXO), but he believes that the clearance was not thorough done as some areas can be seen with the remnants of various military devices such as hand grenades and other artillery shells.