SERJAHGE CONSULTANTS
Sustainability is Tomorrow's Usage Assurance
CC/2020/0010007

+264 81 407 5536
info@serjaconsultants.com
P.O. Box 27318, Windhoek
Namibia

Environmental Scoping Assessment (ESA) Study Report:

The Prospecting and Exploration Activities on Exclusive Prospecting License (EPL) No. 8521 Located Northwest of Usakos in the Erongo Region, Namibia - An Application for Environmental Clearance Certificate (ECC)

MEFT Application No.:	**APP-00569**
Document Version:	**Final for Submission**
Proponent:	**Haifo Mbaka Jr. Shilongo** **P. O. Box 91315 Klein Windhoek, Namibia**

May 2023

DOCUMENT INFORMATION

Title: Environmental Scoping Assessment (ESA) Study Report for the Prospecting and Exploration Activities on Exclusive Prospecting License (EPL) No. 8521 Located Northwest of Usakos in the Erongo Region, Namibia – An Application for Environmental Clearance Certificate (ECC)

Prepared by:

Author:	**Fredrika N. Shagama (Hydrogeologist & Environmental Consultant / EAP*)**
Qualifications:	**PhD. Student: Civil Engineering (Geotechnics & Hydrogeology)**, VSB - Technical University of Ostrava, Czech Republic **MSc. Geological Engineering** (*cum laude*) with primary focus in Hydrogeology, VSB - Technical University of Ostrava, Czech Republic **BSc. Geological Engineering**, VSB - Technical University of Ostrava, Czech Republic
Professional Affiliations:	International Association of Hydrogeologists (IAH) - Full Member, Membership No.139790 Namibian Hydrogeological Association (NHA) – Member Environmental Assessment Professionals of Namibia (EAPAN) - Ordinary Member Practitioner (Membership No. 183)
Contact Details:	Mobile: +264 81 749 9223 Email: eias.public@serjaconsultants.com Postal Address: P. O. Box 27318 Windhoek, Namibia
Signature:	
Date:	May 2023

EAP* - *Environmental Assessment Practitioner*

SERJA' STATEMENT OF INDEPENDENCE

As the Appointed Environmental Consultant to undertake the Environmental Scoping Assessment (ESA) Study for the proposed prospecting and exploration activities on Exclusive Prospecting License (EPL) No. 8521 located northwest of Usakos in the Erongo Region, Namibia, Serja Hydrogeo-Environmental Consultants cc declare that we:

- do not have, to our knowledge, any information or relationship with Haifo Mbaka Jr. Shilongo (the Proponent), the Ministry of Environment, Forestry and Tourism (MEFT)'s Department of Environmental Affairs and Forestry (DEAF) or the Competent Authority (Ministry of Mines and Energy (MME) that may reasonably have potential of influencing the outcome of this Environmental Assessment and the subsequent Environmental Clearance Certificate (ECC) applied for.
- have knowledge of and experience in conducting environmental assessments, the Environmental Management Act (EMA) No. 7 of 2007 and its 2012 Environmental Impact Assessment (EIA) Regulation as well as other relevant national and international legislation, guidelines, policies, and standards that govern the proposed project as presented herein.
- have performed work related to the ECC application in an objective manner, even if the results in views and findings or some of these may not be favorable to the Proponent.
- have complied with the EMA and other relevant regulations, guidelines and other applicable laws as listed in this document.
- declare that we do not have and will not have any involvement or financial interest in the undertaking/implementation of the proposed project, other than remuneration (professional fees) for work performed to conduct the ESA and apply for the ECC in terms of the EIA Regulations' requirement as an Environmental Assessment Practitioner (EAP).

Disclaimer: Serja Hydrogeo-Environmental Consultants will not be held responsible for any omissions and inconsistencies that may result from information that was not available at the time this document was prepared and submitted for evaluation.

……..

Signature:

Fredrika N. Shagama: Principal Environmental Assessment Practitioner & Hydrogeologist

Date: May 2023

EXECUTIVE SUMMARY

Haifo Mbaka Jr. Shilongo (The Proponent) applied to be granted the rights to Exclusive Prospecting Licence (EPL) No. 8521 by the Ministry of Mines and Energy (MME) on the 18th of November 2020. The EPL has only been provisionally granted to the Proponent as full granting / approval of the rights to explore is subject to an Environmental Clearance Certificate (ECC) as shown on the Namibia Mining Cadastre Map Portal (''pending ECC'') https://portals.landfolio.com/namibia/. EPL-8521 has a potential for commodities such as Base & Rare Metals, Dimension Stone, Industrial Minerals, and Precious Metals.

The Proponent intends to prospect and explore for the above-mentioned mineral commodities on the EPL, once it gets environmentally cleared. The 14,174.2723-hectare EPL located about 35km northwest of Usakos in the Erongo Region. The EPL covers some farms such as Farm Schwatz Spitzkoppe No. 69, and Pforte No. 65.

Proposed Project Activities

The project will be carried out using two groups of techniques:

- Non-invasive technique (Desktop Study). During the prospecting and exploration phase, the vital components include reviewing existing reports and composite stratigraphic, lithological-geochemical maps of the targeted areas to identify prospective lithostratigraphic packages. In addition to the literature review, fieldwork (lithological (soil/rock) mapping and sampling) will be conducted to verify desktop work. These works do not require physical disturbance.
- Invasive techniques (Detailed exploration): This will entail the verification of information collected during the desktop study and survey and obtain more/detailed information about the EPL. The invasive techniques include soil sampling, trenching, and drilling.

Communication with I&APs, and Means of Consultation Employed

Communication with I&APs with regards to the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing brief information about the proposed project was compiled and hand delivered to the Ministry of Environment, Forestry and Tourism (MEFT) accompanying the ECC application, and uploaded on the MEFT (ECC) Portal for project registration and shared with registered Interested and Affected parties (I&APs).
- A Stakeholders' (I&AP) List was developed and updated as new I&APs register for the ESA.
- Project Environmental Assessment notices were published in The Namibia Media Holdings' *Market Watch newspapers* (*Allgemeine Zeitung*, *Die Republikein, and Namibian Sun*) dated 28 November and 30 December 2022. The consultation period ran from the 28th of November to end of March 2023.

- Due to the fact that the EPL is located within the Gaingu Conservancy, a first consultation meeting held with the Gaingu Conservancy management on the 23rd of March 2023 in Tubusis. Another consultation meeting was held in Windhoek with the respective Head of the Traditional Authority for the area (Chief Gaseb) on the 01st of August 2023. The consultation meeting minutes for the two meetings were taken.
- Two A3 size posters were pasted in Usakos and Great/Big Spitzkoppe Settlement (local supermarket).

Some key potential positive and negative impacts were identified by the Environmental Consultant and based on issues and comments submitted by the I&APs.

Impact Assessment: The key negative impacts were described, assessed. The potential negative impacts indicated a medium rating significance. To minimize the significance, appropriate management and mitigation measures made thereof for implementation by the Proponent, their contractors, and workers to avoid and/or minimize their significance on the environmental and social components. The effective implementation of the recommended management and mitigation measures accompanied by monitoring will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from medium rating to low).

Conclusions

The public was notified as required by Section 21 to 24 of the EIA Regulations by placing adverts in three newspapers (*Allgemeine Zeitung, Die Republikein, and Namibian Sun*) dated 28 November 2022 and 05 December 2022. A consultation meeting was held in Tubusis with the Gaingu Conservancy Management on the 23rd of March 2023. The stakeholders made some comments to the proposed project activities.

The comments were addressed and incorporated into this Report and Draft EMP.

The Scoping assessment (ESA) Study was deemed sufficient and concluded that no further detailed assessments are required to the ECC application for the prospecting and exploration activities.

Serja Consultants are confident that the potential negative impacts associated with the proposed project activities can be managed and mitigated by the effective implementation of the recommended management and mitigation measures and with more effort and commitment put on monitoring the implementation of these measures.

It is therefore, recommended that the proposed prospecting and exploration activities be granted an Environmental Clearance Certificate, and provided that:

- All the management and mitigation measures provided herein are effectively and progressively implemented.

- All required permits, licenses and approvals for the proposed activities should be obtained as required. These include permits and licenses for land use agreements, services provision agreements (water provision) to explore and ensuring compliance with these specific legal requirements.
- The Proponent, their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.
- Site areas where exploration activities have ceased are rehabilitated, as far as practicable, to their pre-exploration state. This includes the levelling of stockpiled topsoil, backfilling of exploration trenches and closing/capping of exploration holes.

To maintain the desirable rating and that the potential impacts are under control, the implementation of management and mitigation measures should be monitored by their Environmental Control Officer (ECO) and audited by an Independent Environmental Consultant on a bi-annual basis. The monitoring of this implementation will not only be done to maintain the reduce impacts' rating or maintain low rating but to also ensure that all potential impacts that might arise during implementation are properly identified in time and addressed immediately.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

Appendix A: The Copy of Environmental Clearance Certificate (ECC) Application submitted to the Ministry of Environment, Forestry & Tourism and uploaded on the ECC Portal

Appendix B: Draft Environmental Management Plan (EMP)

Appendix C: Curriculum Vitae (CV) of the responsible Environmental Assessment Practitioner (EAP)

Appendix D: EIA Notification in the newspapers: *Allgemeine* Zeitung, *Die Republikein* & *Namibian Sun*

Appendix E: Minutes from the Consultation Meetings with stakeholders / interested & affected parties (I&APs)

LIST OF ABBREVIATIONS

Abbreviation	Meaning
BID	Background Information Document
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSR	Corporate Social Responsibility
DEAF	Department of Environmental Affairs and Forestry
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exclusive Prospecting License
ESA	Environmental Scoping Assessment
GG	Government Gazette
GN	Government Notice
I&APs	Interested and Affected Parties
IFC	International Finance Corporation
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
NACSO	Namibian Association of CBNRM (Community-based Natural Resource Management) Support Organisations
NHC	National Heritage Council (NHC) of Namibia
PPE	Personal Protective Equipment
Reg	Regulation
S	Section

GLOSSARY (KEY TERMS) AS ADOPTED FROM EXCEL DYNAMIC SOLUTIONS

Term	Definition
Alternative	A possible course of action, in place of another that would meet the same purpose and need of the proposal. Baseline - Work done to collect and interpret information on the condition/trends of the existing environment.
Biophysical	The part of the environment that does not originate with human activities (e.g., biological, physical and chemical processes).
Cumulative Impacts / Effects Assessment	In relation to an activity, means the impact of an activity that in it may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decision-maker	The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal
Ecological Processes	Processes which play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy and biological diversity (as an expression of evolution).
Environment	As defined in Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water, and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values.
Environmental Management Plan (Draft EMP)	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled, and monitored.
Exclusive Prospecting Licence	A license that confers exclusive mineral prospecting rights over land of up to 1000km^2 in size for an initial period of 3 years, renewable twice for a maximum of 2 years at a time.
Interested and Affected Party (I&AP)	In relation to the assessment of a listed activity includes - (a) any person, group of persons or organization interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity. Mitigate - practical measures to reduce adverse impacts. Proponent – as defined in the Environmental Management Act, a person who proposes to undertake a listed activity. Significant impact - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment
Fauna and Flora	The animals and plants found in an area.
Mitigation	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment
Monitoring	Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends).

Term	Definition
Proponent	Organization (private or public sector) or individual intending to implement a development proposal.
Public Consultation/Involvement	A range of techniques that can be used to inform, consult or interact with stakeholders affected by the proposed activities.
Protected Area	Refers to a protected area that is proclaimed in the Government Gazette according to the Nature Conservation Ordinance number 4 of 1975, as amended.
Scoping	An early and open activity to identify the impacts that are most likely to be significant and require specialized investigation during the EIA work. Can, also be used to identify alternative project designs/sites to be assessed, obtain local knowledge of site and surroundings, and prepare a plan for public involvement. The results of scoping are frequently used to prepare a Terms of Reference for the specialized input into full EIA.

1 INTRODUCTION

1.1 Project Background and Location

Haifo Mbaka Jr. Shilongo (The Proponent) applied to be granted the rights to Exclusive Prospecting Licence (EPL) No. 8521 by the Ministry of Mines and Energy (MME) on the 18th of November 2020. The EPL has only been provisionally granted to the Proponent as full granting / approval of the rights to explore is subject to an Environmental Clearance Certificate (ECC) as shown on the Namibia Mines and Energy Cadastre Map Portal (''pending ECC'') https://portals.landfolio.com/namibia/ - Figure 1-1. EPL-8521 has a potential for commodities such as Base & Rare Metals, Dimension Stone, Industrial Minerals, and Precious Metals.

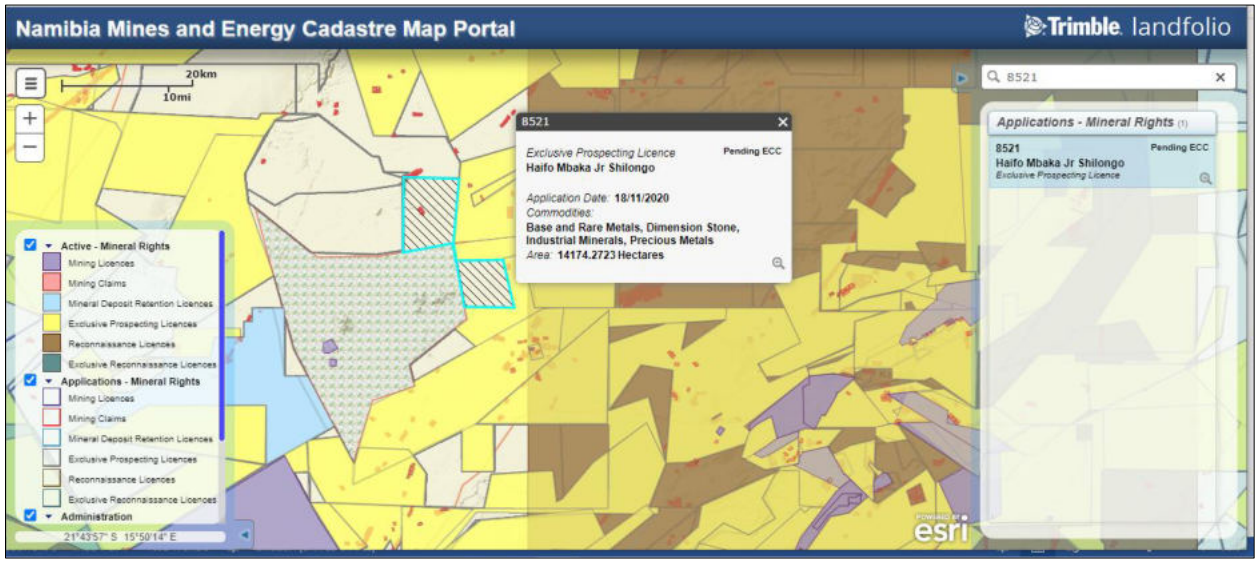

Figure 1-1: The status of EPL-8521 on the Namibia Mines and Energy Cadastre Map Portal (https://portals.landfolio.com/namibia/)

The Proponent intends to prospect and explore for the above-mentioned mineral commodities on the EPL, once it gets environmentally cleared. The 14,174.2723-hectare EPL located about 35km northwest of Usakos in the Erongo Region as shown on the locality map in Figure 1-2. The EPL covers some farms such as Farm Schwatz Spitzkoppe No. 69, and Pforte No. 65 - Figure 1-3.

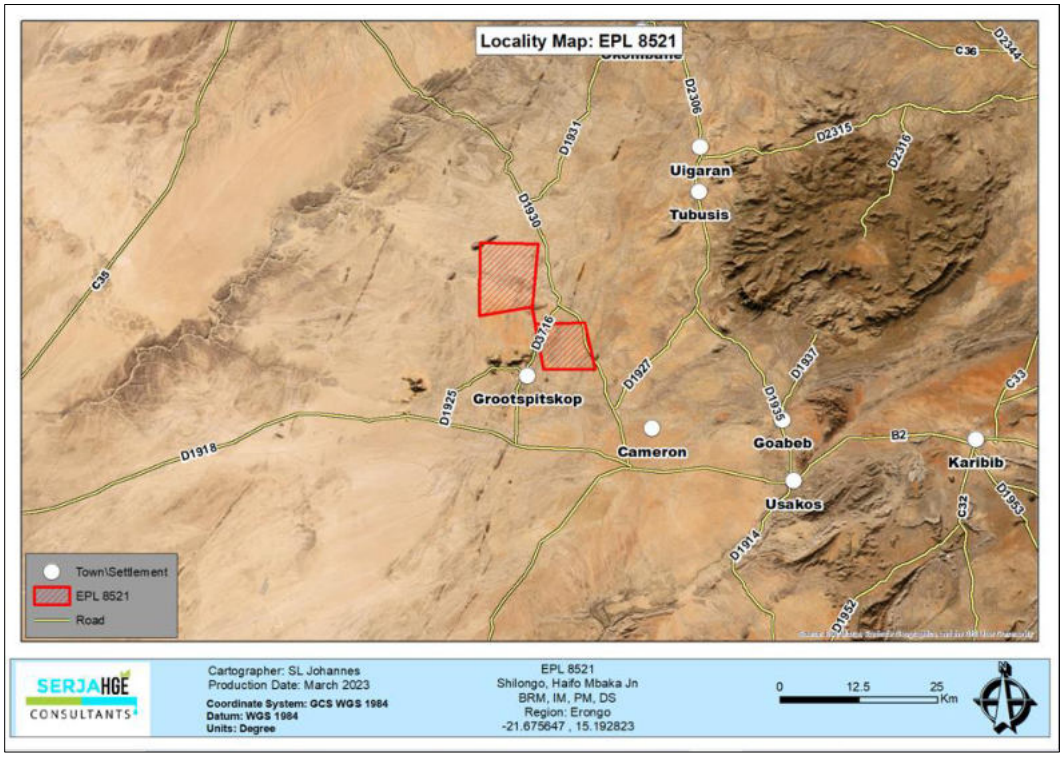

Figure 1-2: Locality Map of EPL-8521 in the Erongo Region

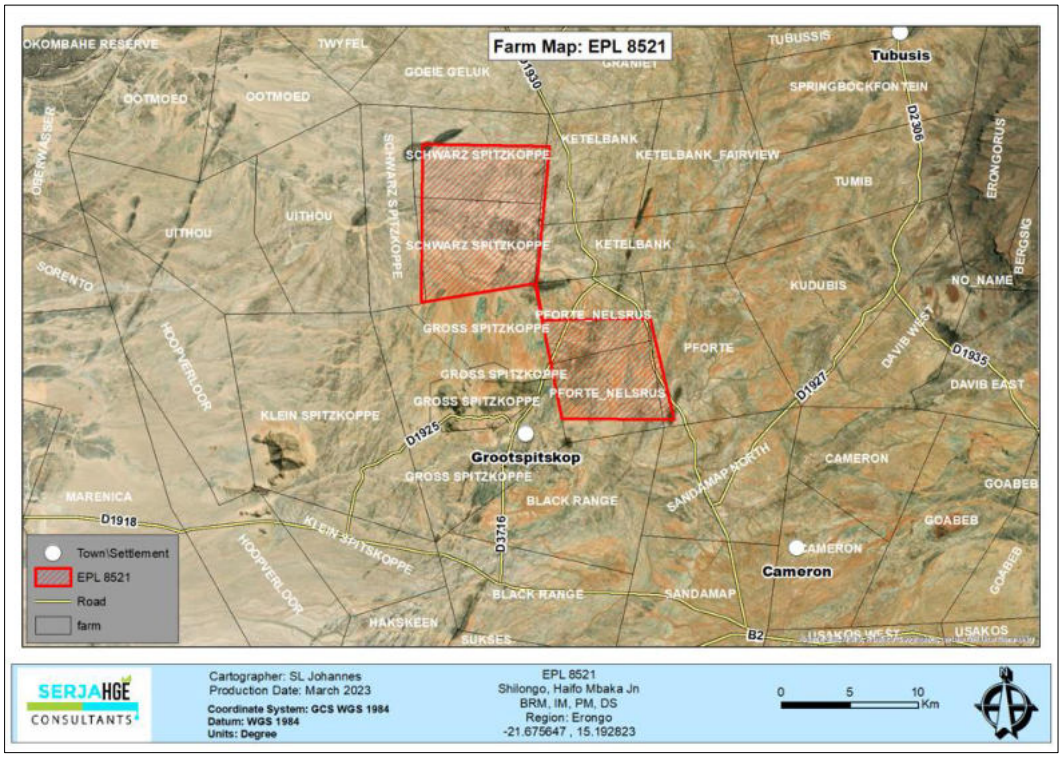

Figure 1-3: Locality Map with the significant land uses (farms) covered by EPL-8521

The approximate coordinates of the EPL are presented are as follows:

- Point A: 21°45'40" S 15°8'35" E / -21.761111, 15.143056
- Point B: 21°39'25" S 15°8'37" E / -21.656944, 15.143611
- Point C: 21°39'30" S 15°13'41" E / -21.658333, 15.228056
- Point D: 21°44'51" S 15°13'07" E / -21.747500, 15.218611
- Point E: 21°46'21" S 15°13'22" E / -21.772500, 15.222778
- Point F: 21°50'15" S 15°14'06" E / -21.837500, 15.235000
- Point G: 21°50'13" S 15°18'33" E / -21.836944, 15.309167
- Point H: 21°46'14" S 15°17'34" E / -21.770556, 15.292778.

1.2 The Need and Desirability of the Proposed Project

The Proponent is committed to contribute to the socio-economic development of Namibia through different industrial sectors, which includes mining that contributes about 12% towards the country's Gross Domestic Product (GDP). The proposed prospecting and exploration activities on EPL-8521 has great potential to enhance and contribute to the development of other sectors and its activities provide temporary employment, taxes and levies as well as social responsibilities. Additionally, the industry produces a trained workforce and small businesses that can serve communities and may initiate related businesses. The successful exploration on the EPL would then lead to the mining of economic feasible commodity(ies) based on the results of exploration. This would contribute towards achieving the goals of the national development plans such as the National Development Plan 5 (NDP5) and Harambee Prosperity Plans (HPPs) I and II. Mining is therefore, essential to the development goals of Namibia in contributing to meeting the ever-increasing global demand for minerals, and for national prosperity. Thus, the need for exploration activities.

1.3 The Need for an ESA and Environmental Clearance Certificate (ECC)

Prospecting, exploration of and mining of mineral resources is one of the listed activities in the Environmental Impact Assessment (EIA) Regulations (2012) of the Environmental Management Act (EMA) No. 7 of 2007 that may not be undertaken without an Environmental Clearance Certificate (ECC). The activities that are relevant to proposed project activities are as follows:

- *3.1 The construction of facilities for any process or activities which require a license, right of other forms of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting and Mining Act, 1992).*
- *3.2 other forms of mining or extraction of any natural resources whether regulated by law or not.*
- *3.3 Resource extraction, manipulation, conservation, and related activities.*

The purpose of the ESA Study and subsequent issuance of the ECC is therefore to ensure that the proposed project activities are undertaken in an environmentally & socially friendly and sustainably manner, through the effective implementations of recommended environmental management measures to minimize the adverse identified impacts while maximizing the positive impacts.

1.4 Application for the Environmental Clearance Certificate

The application for the ECC process was done as follows:

- Preparation of prepared Background Information Document (BID) for the proposed project,
- Launching of the ECC application on the ECC Portal of the Ministry of Environment, Forestry and Tourism (MEFT) with the Proponent details (accompanied by the BID) for project registration purposes and obtaining a MEFT application / reference number (APP-00569),
- Completion of the Form 1 (Section 32) of the EIA Regulations with the required project and Proponent information,
- Submission of the printed hard copy of the ECC application (with affixed NAD300 revenue stamps as application fees) accompanied by the BID was submitted to the MEFT on the 07th of December 2022. The MEFT's date stamped copy of the ECC application (Appendix A) was uploaded on the ECC Portal as proof of application and payment.

The next component of the ECC application was to undertake an Environmental Scoping Assessment (ESA) process, which entails Baseline Assessment of the Biophysical and Social environments as well as Public Consultation & Engagement. The findings of the ESA process are then incorporated into an ESA Report and a Draft EMP (Appendix B) is also developed for the mitigation of potential adverse impacts anticipated from the proposed project activities. The two documents and associated documents (appendices) are then submitted to the Environmental Commissioner at MEFT's Department of Environmental Affairs and Forestry (DEAF) for evaluation and consideration of the ECC.

1.5 Appointed Independent Environmental Consultant

To comply with the EMA and its Regulations and ensure environmental management, protection, and sustainability, the Proponent appointed Serja Hydrogeo-Environmental Consultants CC, Independent Environmental Consultants to apply for the ECC and conduct the required Environmental Assessment Process, which includes Public Consultation and prepare the Environmental Assessment Report and Management Plan (EMP).

The ESA process, including public consultation and engagement as well as compilation of the associated documents were conducted and compiled by Ms. Fredrika Shagama. Ms. Shagama is a qualified and experienced Hydrogeologist and Environmental Assessment Practitioner (EAP) by training and experienced with over 7 years' experience in Groundwater and Environmental Management Consulting. Her CV is attached to this Report as Appendix C.

1.6 Scope of Work and Report Contents

This Study has been conducted according to the EMA No. 7 of 2007, and its 2012 EIA Regulations as mentioned in the preceding subsections, i.e., the proposed project may not be undertaken without an ECC. Therefore, the process has been undertaken as required and guided by the Regulations. Furthermore, the ECC is required by the MME for consideration to grant EPL rights. This Report has been compiled as a required output of an environmental assessment process after the ECC application has been submitted to the MEFT. The ESA Report, together with the EMP and all its appendices will be submitted to the DEAF.

The document (Report) covers the following chapters or sections, in addition to the introductory chapter:

- Project description and associated activities - (Chapter 2).
- Project alternatives considered (that were found to be environmentally friendly and technically feasible) - Chapter 3).
- The Legal requirements governing the proposed project and its related activities, i.e., the legislations that the proposed project must comply with (Chapter 4).
- The Environmental and Social Baseline of the project area - Chapter 5.
- The Public Consultation & Engagement Process undertaken to inform, invite and engage the public (stakeholders and interested & affected parties) on the proposed project- Chapter 6.
- The Assessment of identified potential impacts associated with the proposed project (Chapter 7) - This chapter presents both the positive and negative (adverse) as well as cumulative impacts, assessment methodology and the assessment of the negative impacts. The mitigation measures in the form of management action plans, with timeframe and implementation responsibilities are given in Draft Environmental Management Plan (EMP).
- The recommendations and conclusions to the environmental assessment are presented under Chapter 8. The data sources (literature/references) consulted for the assessment are listed under Chapter 9.

Based on the information provided by the Proponent and the EAP's experience, description of the project activities is presented under the next chapter.

2 DESCRIPTION OF THE PROPOSED PROJECT ACTIVITIES

Prior to mobilizing to site and undertaking any groundwork for the proposed activities at the site (EPL-8521), the Proponent will be required to sign land access and use agreements with the land custodians (the Oe-Gan Traditional Authority) and the land users (Gaingu Conservancy), and obtain consent letters from the two custodians.

2.1 Duration of Mineral Exploration

The exploration programmes are based on an iterative, results-driven and phased nature. Therefore, it is not possible at an early stage of exploration to give exact areas for future drilling or an exact duration of the exploration activities (Resilient Environmental Solutions, 2019). Soil sampling programmes for instance may last from between one week to a month at a time over specific areas, until the explored area is fully sampled as desired. Drilling programmes may initially range from two weeks to a month at a time, depending on the planned programme or based on the results of the programme. The Proponent undertakes to work with all relevant stakeholders to keep them informed of exploration progress to facilitate site visits and access to ongoing field exploration programmes. In general terms, the minerals exploration activities can take up to a maximum of seven years, with different projects at various stages of the exploration phase (Resilient Environmental Solutions, 2019).

The Proponent intends to adopt a systematic and standard prospecting and exploration approach for the 2 exploration categories of the commodities (Base & Rare Metals, Dimension Stone, Industrial Minerals, and Precious Metals) potentially occurring on the EPL. The exploration methods are presented under the subsections below.

2.2 Base& Rare Metals, Industrial Minerals, and Precious Metals

2.2.1 Prospecting Stage (Non-Invasive Technique)

This stage of the project is known as Non-invasive technique (Desktop Study). During the prospecting and exploration phase, the vital components include reviewing existing reports and composite stratigraphic, lithological-geochemical maps of the targeted areas to identify prospective lithostratigraphic packages. In addition to the literature review, fieldwork (lithological (soil/rock) mapping and sampling) will be conducted to verify desktop work. These works do not require physical disturbance.

Upon issuance of the ECC, prospecting during the advanced exploration phase will require the Proponent to assess the EPL area through detailed geological mapping, and geophysical surveys.

2.2.1.1 Geophysical surveys

This will entail data collection of the substrata (in most cases service of an aero-geophysical contractor will be soured), by air or ground, through sensors such as radar, magnetic and electromagnetic to detect any mineralization in the area and are conducted to ascertain the mineralisation.

Ground geophysical surveys shall be conducted, where necessary using vehicle-mounted sensors or handheld by staff members, while in the case of air surveys the sensors will be mounted to an aircraft, which then flies over the target area. These surveys (mapping and as supported by geophysics) are crucial in defining targets for test pitting, trenching, and drilling. The exploration program will then commence with ground geophysical surveys.

After a successful exploration activity, the EPL would be converted into a Mining License by submitting exploration results and an application to convert to the MME. Upon approval of the application by MME, feasibility study and full EIA Study (with an approved ECC for mining activities), the site would be prepared for mine development and actual mining and subsequent mine closure.

2.2.2 Planned Exploration Methods (Invasive Techniques)

This stage (Detailed Field Evaluation) following the Non-Invasive techniques will be carried out by simple collection of soil and rock samples from target EPL areas to verify desktop/non-invasive information. These detailed techniques will include activities and as described under subsection:

- Soil and rock sampling,
- Trenching, and
- Exploration drilling (Reverse Circulation (RC) and diamond drilling).

2.2.2.1 Lithology geochemical surveys

Rock and soil samples shall be collected and taken for trace element analysis to be conducted by analytical chemistry laboratories to determine if enough Base & Rare, Precious Metals or other minerals of interest are present. Also, trenches or pits may be dug depending on the commodity (in a controlled environment e.g., fencing off and labelling activity sites) adopting manual or excavator to further investigate the mineral potential.

Soil sampling consists of small pits (±20cm X 20cm X 30cm) being dug where 1kg samples can be extracted and sieved to collect 50g of material. As necessary, and to ensure adequate risks mitigation, all major excavations will either be opened or closed immediately after obtaining the needed samples or the sites will be secured until the trenches or pits are closed. At all times, the landowner/custodian and other relevant stakeholder will be engaged to obtain authorization, where necessary. A typical example of soil sampling in the field for exploration is shown in Figure 2-1 below.

Figure 2-1: Example of soil sample collection and equipment (Resilient Environmental Solutions, 2019)

2.2.2.2 Detailed Exploration Drilling

Should analyses by an analytical laboratory be positive, holes are drilled, and drill samples collected for further analysis. This will determine the depth of the potential mineralization. If necessary new access tracks to the drill sites will be created and drill pads will be cleared in which to set up the rig. Two widely used drilling options may be adopted, these are either Reverse Circulation (RC) drilling and/or diamond-core drilling. RC drilling uses a pneumatic hammer, which drives a rotating tungsten-steel bit. The technique produces an uncontaminated large volume sample, which is comprised of rock chips. It is relatively quicker and cheaper when compared to other techniques like Diamond Drilling. However, diamond drilling may also be considered for this exploration programme, for better geological control and to perform processing trials.

A typical drilling site will consist of a drill-rig and support vehicles as well as a drill core and geological samples store. A drill equipment parking and maintenance yard may be set up (including a fuel and lubricants storage facility). A typical example of drilling activities on active EPLs in Erongo and Omaheke Regions are shown in Figure 2-2 and Figure 2-3.

Figure 2-2: A-typical drill rig on an EPL (Resilient Environmental Solutions, 2019), B- drill rig on active EPL precious metals exploration site visited by the Author in Erongo Region (photo by Author, 2022)

Figure 2-3: A drill rig on an EPL in the Omaheke Region (Resilient Environmental Solutions, 2022)

2.3 Dimension Stone Exploration

The Proponent intends to adopt a systematic prospecting approach of the following:

- Non-invasive techniques: Geological mapping, reviewing of existing geological maps and historical drilling/quarrying data, Field evaluation and sampling, and
- Invasive techniques: Detailed exploration (Down-The-Hole drilling).

The proposed activities are summarized as follows.

2.3.1 Desktop Study

The exploration program will commence with a review of geological maps and historical drilling and/ or quarrying data for the area, if any.

2.3.2 Field Evaluation

The field evaluation is to be carried out by a qualified geologist, aimed at locating suitable host rock outcrops in the field from where the:

- General soundness (intactness).
- Appearance (patterns and colour), and
- Joint and vein spacing can be evaluated.

Small samples (about 30 cm^3 in dimension) will be removed for cutting and polishing to provide insights on whether the stone can be polished to an acceptable finish, as well as to give an indication of the hardness of the stone from a sawing and finishing point of view. Where field evaluation indicates a potentially economical viable deposit, detailed geological mapping will be conducted by means of mapping transversely across exposed / cleaned segments of the rock unit. Where cleaning of the rock unit is required to aid geological mapping, air compressors will be used to expose the rock. The mapping is aimed at delineating major geological structures such as fault and shear zones (zones of weakness), the extent of veins, as well as further delineation of fracture / discontinuity frequencies.

Collectively, field evaluation and detailed geological mapping will result in the production of a refined and detailed geological map for the targeted sites on the EPL.

2.3.3 Detailed Exploration

The refined geological map would then assist in target generation for subsequent detailed exploration such as drilling and possibly test quarrying.

2.3.3.1 Feasibility Study: Exploration Component

Where exploration drilling yields positive results, small blocks will be obtained using the butterfly cutting method. This will be done to fully evaluate the recovery of the small saleable blocks, and better optimize the extraction methods, production rates and operational costs in future. The exploration test quarrying will only be carried out on select targeted areas of the EPL and shall be performed on as small areas as possible to minimize environmental impacts. The outcomes / results of the test quarrying will be recorded and archived by the Proponent for future use (when mining will be considered depending on the outcome of exploration).

It is important to note that the test quarrying referred to above is only a component of exploration activities, to be done at a very small-scale level on targeted sites of the EPL to enable the Proponent to get sufficient and reliable exploration data, but not for mining purposes. Therefore, this ESA process only covers exploration activities.

2.4 Project Resources and Services Infrastructure

The following services and infrastructure as provided below will be required for the project activities.

2.4.1 Human resources

The prospecting stage will require but not limited to one or two geologists, GIS specialist, and geophysicist to collect the data. During the detailed (invasive) exploration stage, the project crew will consist of about 8 people, comprising 2 to 3 skilled (geologist and geotechnician), 2 semi-skilled, 4 or more casual workers (assistants). However, this number may vary depending on the actual workload and requirement onsite.

The workforce requirement will entail the need for geologist(s), drilling personnel, sampling team, supervisor / exploration manager, casual workers to clear the sites and perform other required jobs onsite, cleaner(s), machine operator, truck & light vehicle drivers, etc.

2.4.2 Project Crew Accommodation

Exploration workers will be housed in prefabricated accommodation units (tented camps) during the exploration stage (within the EPL boundaries). However, prior to setting up the accommodation units, an agreement and a consent will need to be reached and signed between the Proponent and Gaingu Conservancy.

The onsite accommodation is selected to ensure that the exploration crew commences with site work on time (early) and to prevent putting pressure on the local roads to transport workers to and from site daily (commuting).

2.4.3 Project Equipment, Material, Machinery and Vehicles

The following equipment and machinery will be required for the exploration stage:

- A minimum of two (4X4) pickup trucks (vehicles), and heavy truck,
- Air compressor,
- Drill rigs, and drilling machines
- Down-The-Hole (DTH) drilling rig (for Dimension Stone exploration),
- Two-way radios (for communication),
- Water supply tanks with dispersion pipelines, and fuel bowser,
- Power generators (minimum two), and
- Biodegradable drilling fluids stored in manufacturers approved containers.

Equipment and vehicles will be stored at a designated area near the accommodation site (campsite), or a storage site established within the EPL site area.

2.4.4 Water Supply

During exploration onsite water will be required for cooling down and washing of equipment, exploration related activities such as drilling, test quarrying, domestic (drinking, cooking, and ablution). For exploration related activities such as cooking, drinking and personal use, about 300 litres of water will be required per week (1,200 litres per month). Exploration drilling, specifically diamond requires a lot of water, and it would require approximately 10,000 to 25,000 litres (10 to 25m^3) per day, in instances where for example fractured formations are encountered) per hole during drilling.

To ensure that the already low potential local groundwater resources are not stressed or significantly impacted by the project activities such as drilling, the Proponent will be carting water from outside the area (where water supply is not an issue). The water will then be stored in relevant industry standard water storage tanks onsite that will be refilled as and when necessary.

2.4.5 Fuel supply (For Cooking)

The Proponent will provide a 10kg liquid gas cylinder to be used for food preparation by the site workers. Therefore, no project related firewood will be collected from the Conservancy.

2.4.6 Fuel Supply (Machinery and Equipment)

Diesel will be used for machinery and equipment and fuel generator. A trailer mounted and bunded 10,000-litre fuel tank will be onsite to ensure an interrupted fuel supply to the project activities.

2.4.7 Accessibility (roads)

The EPL is accessible via gravel roads such as D1930 and D3716 that passes through western side of the EPL. The site-specific areas (EPL) are then accessed via local gravel roads.

2.4.8 Waste management

The onsite waste types will be managed as follows:

- Sewage: Portable ablution facilities with septic tanks will be provided on site and emptied according to manufacturers' instructions.
- General and domestic waste: Sufficient waste bins (containers) will be availed at both exploration sites and campsites for waste storage. The waste containers will be emptied into the main onsite container for disposal at the nearest approved landfill site, upon reaching a waste disposal agreement with the nearest municipal council such as Usakos.
- Hazardous waste: All vehicles, machinery and fuel consuming equipment will be provided with drip trays to capture potential fuel spills and waste oils. The waste fuel/oils will be carefully stored in a standardized container to be disposed of at the nearest approved hazardous waste management facility such as Walvis Bay or Swakopmund.

2.4.9 Health and Safety

The following measures will be implemented onsite to ensure safety and security:

- Adequate and appropriate Personal Protective Equipment (PPE) will be provided to every project personnel and visitor/inspector while on and working at site and visiting the site, respectively.
- First aid: A minimum of two first aid kits will be readily available at exploration and camp sites to attend to potential minor injuries, while major injuries will need to be attended to further by transporting the injured to the nearest health centre for treatment. At least two personnel will be trained on administer first aid.
- Potential Accidental Fire Outbreaks: As a control measure for accidental fire outbreaks, a basic firefighting equipment, i.e., a fire extinguisher will be readily available in vehicles, at the working sites and campsite (accommodation units). The site personnel will be trained on and provided with firefighting skills.
- Open exploration trenches and boreholes: The trenches dug for sampling will be temporary fenced off to prevent potential injuries of mainly wildlife in the area. Once sampling is completed, the trenches will be progressively backfilled and levelled and fencing removed for storage or donation to the land custodians for the communities. Similarly, for exploration boreholes that are no longer required after rock samples, they will be backfilled and closed off.

Warning signage at hazardous site areas such as open trenches will be erected.

2.5 Decommissioning and Rehabilitation of Disturbed Sites

Once the exploration activities on the EPL come to an end, the Proponent will need to put site rehabilitation measures in place. Decommissioning and rehabilitation are primarily reinforced through a decommissioning and rehabilitation plan, which consists of safety, health, environmental, and contingency aspects. The economic situation or unconvincing exploration results might force the Proponent to cease the exploration program before predicted closure. Therefore, it is of best practice for the Proponent to ensure the project activities are ceased in an environmentally friendly manner and site is rehabilitated by carrying out the following:

- Dismantling and removal of campsites and associated infrastructures from the project site and area,
- Carrying away all exploration equipment and vehicles, and
- Clean up of site working areas and transporting the recently generated waste to the nearby approved waste management facility (as per agreement with the facility operator/owner),

Further decommissioning and rehabilitation practice onsite will include:

- Backfilling of pits and trenches used for sampling,
- Closing and capping of exploration boreholes to ensure that they do not pose a risk to both people and animals in the area, and
- Levelling of stockpiled topsoil. This will be done to ensure that the disturbed land sites are left close to their original state as much as possible.

2.6 Post-Exploration Activities

After a successful exploration activity, the EPL would be converted into a Mining License by submitting exploration results and an application to the MME to convert the EPL into a Mining License. Upon pre-approval of the application by MME, feasibility study and full EIA Study (with an approved ECC for mining activities), the approved area would be prepared for mine development and actual mining and subsequent mine closure.

The next chapter is the presentation different and relevant alternatives considered for the project activities.

3 PROJECT ALTERNATIVES

Alternatives are defined as the “different means of meeting the general purpose and requirements of the activity” (EMA, 2007). This section will highlight the different ways in which the project can be undertaken and to identify the alternative that will be the most practical, but least damaging to the environment is identified.

Once the alternatives have been established, these are examined by asking the following three questions:

- *What alternatives are technically and economically feasible?*
- *What are the environmental effects associated with the feasible alternatives?*
- *What is the rationale for selecting the preferred alternative?*

The alternatives considered for the proposed project are discussed below.

3.1 The "No-Go" Alternative

The “no action” alternative implies that the status quo remains, and nothing happens. Should the proposal of exploration activities on the EPL, be discontinued, none of the potential impacts (positive and negative) identified would occur. If the proposed project is to be discontinued, the current land use for the proposed site will remain unchanged. This option was considered and a comparative assessment of the environmental and socio-economic impacts of the “no action” alternative was undertaken to establish what benefits might be lost if the project is not implemented.

Considering the above losses, the “no-action/go” alternative was not considered a viable option for this project.

3.2 Exploration Location

The prospecting/exploration location is dependent on the geological setting (regional and local), and economic geology. Therefore, finding an alternative location for this planned exploration activities for the specific commodities in the area is not possible. This means that the mineralization of the target commodities is area-specific, which means exploration targets are primarily determined by the geology (host rocks) and the ore-forming mechanism. The location of the EPL also depend on the availability of license areas that the different applicants and Proponents applied for and interested in (specific minerals).

Furthermore, the national mineral resources’ potential locations are also mapped and categorized by the Ministry of Mines and Energy in exclusive prospecting licenses, mining licenses and claims, mineral deposit retention licenses, reconnaissance licenses and exclusive reconnaissance licenses. Available information on EPL-8521 and other licenses are available on the Namibia Mining Cadastral Map.

3.3 Exploration Methods

Both invasive and non-invasive exploration activities as indicated under the project description chapter are expected to take place. These were found to be appropriate and reliable for the type of commodities explored for. Other alternative viable exploration methods are found to achieve the purpose more effectively and/or efficiently without aggravating any environmental measures put in place, it can be implemented.

3.4 Services Infrastructure

Alternatives were considered for different supporting infrastructures to ensure that the most feasible options were selected. The technological, economic, and environmental limitations were considered to select the most feasible option. The alternative considered in this regard are presented in Table 3-1 below.

Table 3-1: The presentation of service infrastructure alternatives considered for the project activities

Category of Infrastructure	Alternatives Considered	Justification for selected option
Ablution facilities	Install fixed facility with septic tank -Portable facilities with septic tank	-To minimize rehabilitation costs portable facilities were selected as the best option
Water supply	-Bring water from elsewhere -Abstract from site boreholes	-The project water will be brought from elsewhere to minimize the impact on the local resources
Fuel storage	-Trailer mounted diesel tank -Fixed bunded fuel tank	-During exploration use trailer mounted diesel tank for fuel storage due to great mobility requirements during exploration.
Power supply	-Diesel generator set and if considered, solar power. -Powerline (grid) supply	-The diesel and or solar power are the most practical & economically viable options for exploration (in case of no favourable results of exploration).
Offices, accommodation	-Erect dis-mantable prefabricated units -Fixed structures	-Favoured due to: (a) Ease of installation, (b) Low installation costs and (c) Ease of dismantling & moving.
Accommodation site	-Setting up campsites tented campsite within the EPL -Commuting from Big Spitzkoppe.	-Set up temporary camps onsite (within the Conservancy), instead of commuting to and from Usakos or Spitzkoppe The bad (gravel) roads and time needed to travel to the EPL area, would affect the works and eventual productivity. Therefore onsite camp (for trenching and drilling crew) would be feasible. An agreement to set up camp should be made with the Conservancy.

The following chapter presents the national and international legal requirements that are applicable and relevant to project.

4 APPLICABLE LEGAL FRAMEWORK

The project's activities or some of them may be regulated and governed by certain legal or policies. Therefore, it is necessary to review and consider these legislations and legal requirements. These legal requirements are either on a local (institutional), national (Namibian) and international legislation, policies, guidelines, etc. This review serves to inform the project Proponent, Interested and Affected Parties, and the decision-makers at the DEAF of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled to establish the proposed prospecting and exploration activities.

4.1 Environmental Management Act No. 7 of 2007

The Environmental Management Act No.7 of 2007 and its 2012 EIA Regulations aims to ensure that the potential impacts of the development on the environment are considered carefully and in good time; that all interested and affected parties have a chance to participate in the environmental assessments and that the findings of the environmental assessments are fully considered before any decisions are made about activities which might affect the environment.

The Act aims at promoting sustainable management of the environment and use of natural resources. The Environmental Management Act (EMA) is broad; it regulates land use development through environmental clearance certification and/or Environmental Impact Assessments. The Act provides for the clearance certification for '' ***mining and quarrying activities''.***

4.2 Minerals (Mining & Prospecting) Act No. 33 of 1992

The most applicable Sections to the project are as follows:

- Section 54 requires written notice to be submitted to the Mining Commissioner if the holder of a mineral license intends to abandon the mineral license area.
- Section 68 stipulates that an application for a mineral license shall contain the particulars of the condition of, and any existing damage to, the environment in the area to which the application relates and an estimate of the effect which the proposed prospecting operations may have on the environment and the proposed steps to be taken to prevent or minimize any such effect.
- Section 91 requires that rehabilitation measures should be included in an application for a mineral license.

Implication for the proposed project: The Proponent should carry out an assessment of the impact on the receiving environment. The Proponent should include as part of their application for the EPL, measures by which they will rehabilitate the areas where they intend to carry out exploration activities.

Other applicable legal framework and policies relevant to the proposed project are presented in Table 4-1.

Table 4-1: List of applicable legislation for the proposed prospecting and exploration activities

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
The Constitution of the Republic of Namibia, 1990 as amended	The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include: "…the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia…" Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the: "…Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State."	By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability. Ecological sustainability will be main priority for the proposed development.
Nature Conservation Amendment Act, No. 3 of 2017	National Parks are established and gazetted in accordance with the Nature Conservation Ordinance, 1975 (4 of 1975), as amended. The Ordinance provides a legal framework with regards to the permission of entering a state protected area, as well as requirements for individuals damaging objects (geological, ethnological, archaeological, and historical) within a protected area. Though the Ordinance does not specifically refer to mining as an activity within a protected area (PA) or recreational area (RA), it does restrict access to PA's and prohibits certain acts therein as well as the purposes for which permission to enter game parks and nature reserves may be granted.	The Proponent will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity of protected areas and other State land

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
The Parks and Wildlife Management Bill of 2008	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas, to conserve biodiversity and to contribute to national development.	
Traditional Authority Act (Act No. 25 of 2000):	The Act also stipulates that Traditional Authorities (TAs) should ensure that natural resources are used on a sustainable basis that conserves the ecosystem. The implications of this Act are that TAs must be fully involved in the planning of land use and development for their area. It is the responsibility of the TA's customary leadership, the Chiefs, to exercise control on behalf of the state and the residents in their designated area.	The EPL considered under this project is within the predominantly communal land under the Oe-Gan Traditional Authority (TA). Therefore, they should be consulted for the land use consent and engagement should continue throughout the Project.
Mine Health & Safety Regulations, 10th Draft	Makes provision for the health and safety of persons employed or otherwise present in mineral licenses area. These deal with among other matters; clothing and devices; design, use, operation, supervision, and control of machinery; fencing and guards; and safety measures during repairs and maintenance.	The Proponent should comply with all these regulations with respect to their employees.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that "No person shall possess [sic] or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area"	The Proponent should obtain the necessary authorisation from the MME for the storage of fuel on-site.
The Regional Councils Act (No. 22 of 1992)	This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning point of view, their duties include, as described in section 28 "to undertake the planning of the development of the region for which it has been established with a view to physical, social and economic characteristics, urbanisation patterns, natural resources, economic development potential, infrastructure, land utilisation pattern and sensitivity of the natural environment.	The relevant Regional Councils are I&APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Erongo Regional Council; therefore, they should be consulted.
Water Act 54 of 1956	The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force:	The protection (both quality and quantity/abstraction) of water resources should be a priority.

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
	Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duly of care to prevent pollution (S3 (k)). Provides for control and protection of groundwater (S66 (1), (d (ii)). Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).	Relevant permits and or agreements to abstract and use water should be applied for and obtained.
Water Resources Management Act (No 11 of 2013)	The Act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to: Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).	
National Heritage Act No. 27 of 2004	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	The Proponent should ensure compliance with these Acts requirements. The necessary management measures and related permitting requirements must be taken. This done by the consulting with the National Heritage Council (NHC) of Namibia. A Chance Finds Procedure provided to the Draft EMP should be implemented upon discovery of archaeological and heritage resources.
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	
Soil Conservation Act (No 76 of 1969)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.
Forestry Act (Act No. 12 of 2001	The Act provides for the management and use of forests and forest products.	The proponent will apply for the relevant permit under this Act if it becomes necessary.

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
	Section 22. (1) provides: "Unless otherwise authorised by this Act, or by a licence issued under subsection (3), no person shall on any land which is not part of a surveyed erven of a local authority area as defined in section 1 of the Local Authorities Act, 1992 (Act No. 23 of 1992) cut, destroy or remove - (a) vegetation which is on a sand dune or drifting sand or on a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully; or (b) any living tree, bush or shrub growing within 100 m of a river, stream or watercourse."	
Public Health Act (No. 36 of 1919)	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.
Public and Environmental Health Act No. 1 of 2015	The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.	
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	
Atmospheric Pollution Prevention Ordinance (1976)	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.	The proposed project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality. Mitigation measures should be put in place and implemented.
Hazardous Substance Ordinance, No. 14 of 1974	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	The Proponent should handle and manage the storage and use of hazardous substances on site so that they do not harm or compromise the site environment

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
Road Traffic and Transport Act, No. 22 of 1999	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for.
Labour Act (No. 6 of 1992)	Ministry of Labour, Industrial Relations and Employment Creation is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act No. 6 of 1992.	The Proponent should ensure that the prospecting and exploration activities do not compromise the safety and welfare of workers.

4.3 International Policies, Principles, Standards, Treaties and Conventions

Given the fact that the proposed project is likely to be partly funded by international investors and the financing require the project to comply with certain requirements. Therefore, it is crucial to include the relevant legal requirements in this ESA Study and these are listed below:

- Equator Principles (EP):
  - *EP1: Review and Categorization*
  - *EP2: Environmental and Social Assessment*
  - *EP 3: Applicable Environmental and Social Standards*
  - *EP 4: Environmental and Social Management System and Equator Principles Action Plan*
  - *EP5: Stakeholder Engagement*
  - *EP6: Grievance Mechanism*
  - *EP7: Independent Review*
  - *EP8: Covenants*
  - *EP9: Independent Monitoring and Reporting*
  - *EP10: Reporting and Transparency.*
- International Finance Corporation (IFC) Performance Standards (PS):
  - *PS1: Assessment and Management of Environmental and Social Risks and Impacts*
  - *PS2: Labour and Working Conditions*
  - *PS3: Resource Efficient and Pollution Prevention and Management*
  - *PS4: Community Health and Safety*
  - *PS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement*

  - *PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources*
  - *PS7: Indigenous Peoples/Sub-Saharan African Historically Undeserved Traditional Local Communities*
  - *PS8: Cultural Heritage*
- The United Nations Convention to Combat Desertification (UNCCD) 1992
- Convention on Biological Diversity 1992
- Stockholm Declaration on the Human Environment, Stockholm (1972)

Other relevant international Treaties and Protocols ratified by the Namibian Government are:

- Convention on International Trade and Endangered Species of Wild Fauna and Flora (CITES), 1973.
- Convention on Biological Diversity, 1992, and
- World Heritage Convention, 1972.

In addition to the project description, alternatives, and legal framework, it is also important to note that the proposed project activities will be undertaken in a specific environment, in terms of biophysical and social. Therefore, understanding these existing environmental features before the project activities, is crucial for the assessment of the potential impacts stemming from the project activities on the features.

5 BIOPHYSICAL AND SOCIAL BASELINE

The proposed exploration activities will be undertaken in specific environmental and social conditions. Therefore, understanding the pre-project conditions of the environment will aid in describing the status quo versus future projections of environmental conditions once the project is implemented. The baseline information also aids in identifying the sensitive environmental features and how best suitable management and mitigation measures can be recommended for implementation. The summary of selected biophysical and social baseline information about the project area is given below.

The baseline information presented below is sourced from site visit, online sources ranging from old reports, books and publishing as well as other relevant research information in the broader area. The project baseline that is deemed necessary to the project activities are as follows.

5.1 Biological Environment

According to Erongo Regional Council (2015), the hyper-arid Namibian coastal ecosystem is home to a significant and unique array of biological and ecological diversity, including uniquely adapted plants and animals, rich estuarine fauna and a high diversity of migratory shore and seabirds. Namibia's coastal zones are considered as refuge for several of endangered species.

5.1.1 Fauna

In terms of fauna, the area is homes to wildlife such as Elephant, black rhino, leopard, cheetah, mountain zebra, kudu, gemsbok, ostrich, springbok, steenbok, black-backed jackal, klipspringer (NACSO, 2023). The faunal species expected to occur on-site are expected to occur in similar habitats within the wider project area.

There were no observed wildlife during the site visit, but this does not imply their absence, as this would be due to the time limit spent by the Environmental Consultant on site, time of the day when the site visit was done when animals were probably seeking shelter in far vegetation and rock outcrops.

5.1.2 Flora

The EPL area is found within two vegetation structure types, namely the sparse shrubland as shown on the map in Figure 5-1.

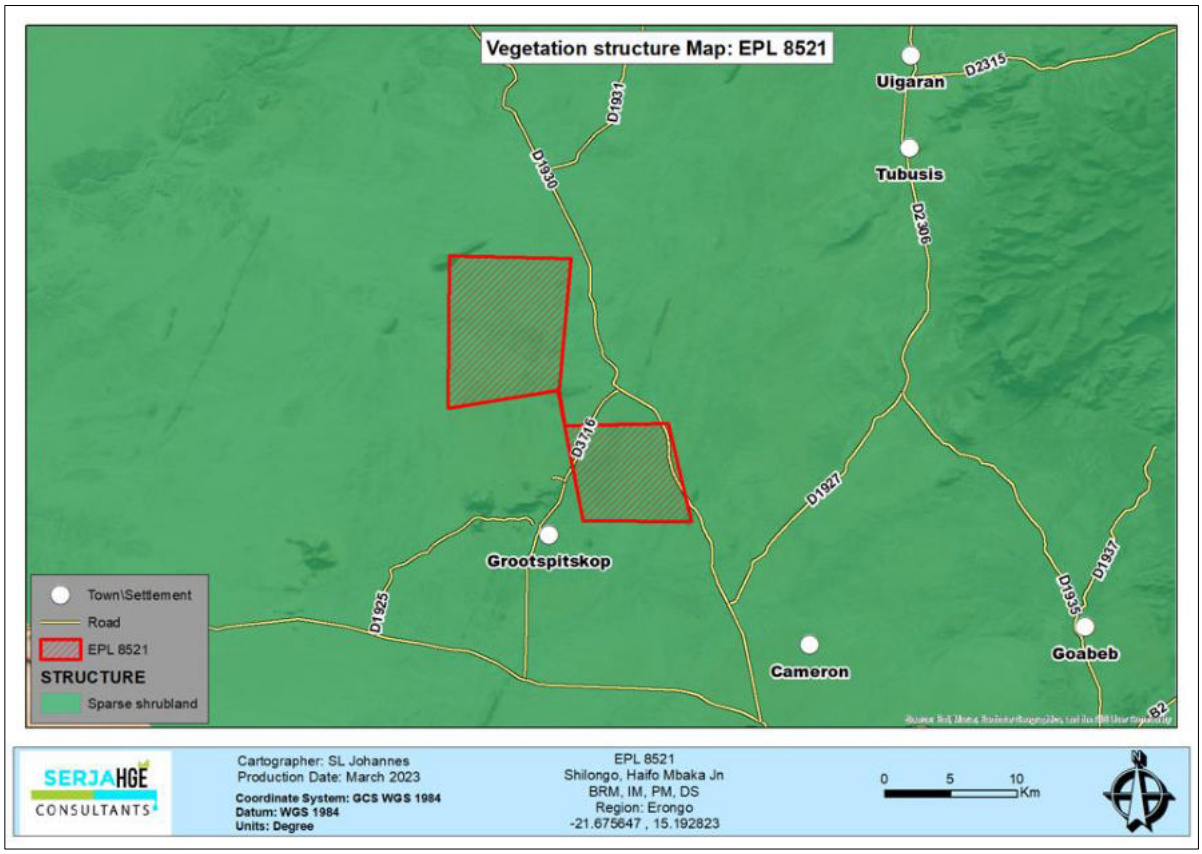

Figure 5-1: Dominant vegetation map within and around the EPL

Based on the site visit conducted on 23 March 2023, the following plants were observed onsite and surroundings (as per Figure 5-2):

- Few shrubs of *Acacia (Vachellia) reficiens (red*-bark acacia, false umbrella thorn*), and erioloba*.

Figure 5-2: Some vegetation in the EPL area (shurbs of *red-thorn with some grass cover)*

5.2 Physical Environment

5.2.1 Climate

The climatic conditions of the area overlain by the EPL and surrounding areas receive an average annual rainfall between 150 and 250mm. The annual temperatures of the project area range between 8 and 22°C, and minimum ranging from 16 to 20°C and maximum temperatures ranging from 32 to 36°C (Mendelsohn *et al.,* 2002).

5.2.2 Landscape and Topography

The EPL is mainly within the Coastal Plains Landscape (Figure 5-3). The Central-Western Plains landscape stretches back from the coast. A coastal plain is a flat, low-lying piece of land next to the ocean. Coastal plains are separated from the rest of the interior by nearby landforms, such as mountains (National Geographic, 2023). The EPL is situated in a flat area with some hills and mountains. The elevations range between 951 and 1,216 meters above sea level as shown on topographic map in Figure 5-3.

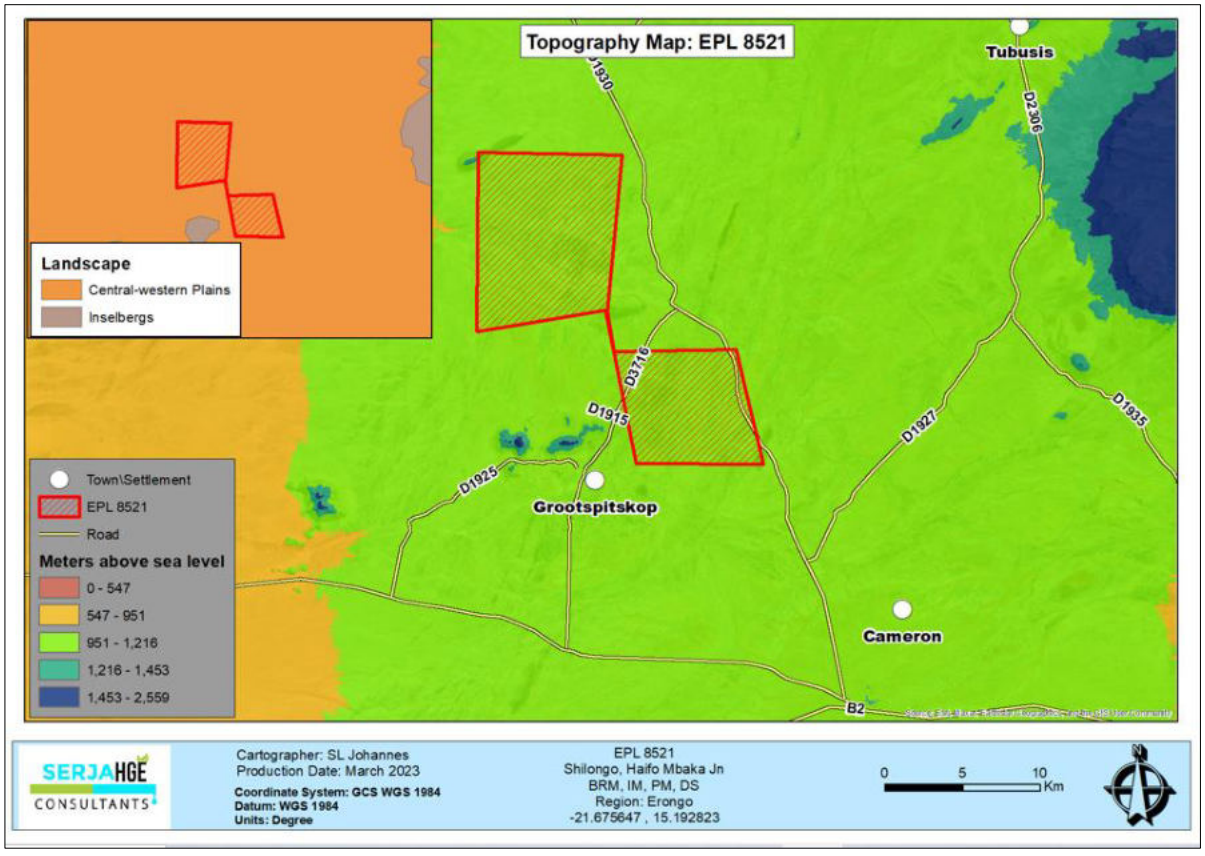

Figure 5-3: The topography and landscape of the EPL area

5.2.3 Geology and Soils

The EPL falls within the Damara Granites and Swakop Group geological groups (Mendelsohn *et al.,* 2002). The typical rock outcrops and units occurring within the EPL (as shown in Figure 5-4: local geological and immediate surroundings map) are outcrops of schist, granite, diorite, quartzite and marble). Furthermore, the site geology is characterized by syn-to-post-tectonic granite, granodiorite and diorites. The geological settings of the area (the rock units and their nature to potentially host ores of the sought commodities) triggered the need to prospect and explore within the EPL.

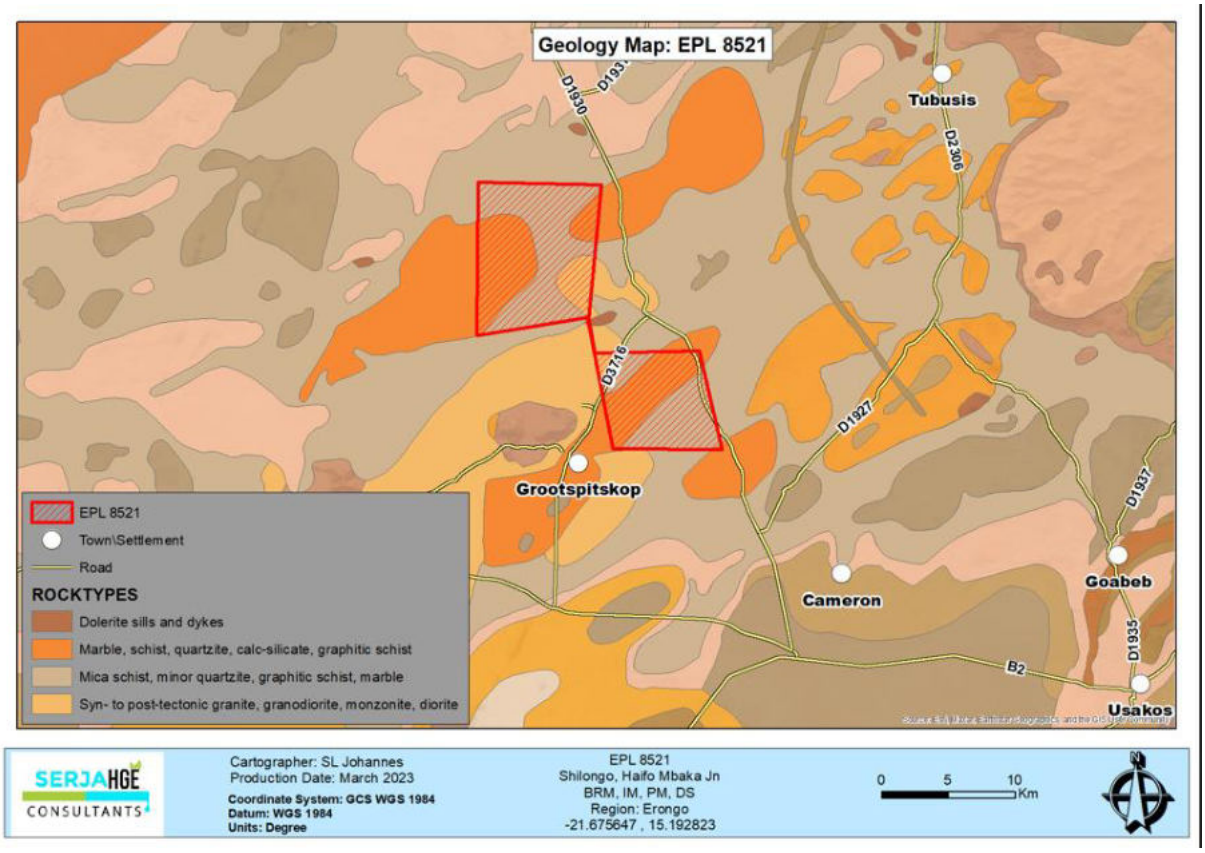

Figure 5-4: The geology of the EPL and surrounding project area

The project site area is characterized by some of the outcrops of schist, granite, diorite, quartzite and marble shown in Figure 5-5.

Figure 5-5: The rock units of dolerite and marble observed within the EPL

In terms of soil, EPL-8521 is mainly overlain by petric calcisols as shown in Figure 5-6. According to Mendelsohn *et al* (2002), petric soils have a solid layer at a shallow depth that remains hard even when wet, and calcisols are found in depressions or low-lying areas of the landscape, and typically contain accumulations of calcium carbonate (often in a cemented form called calcrete). These soils are potentially fertile but iron and zinc may not be available to plants because of the high concentration of calcium.

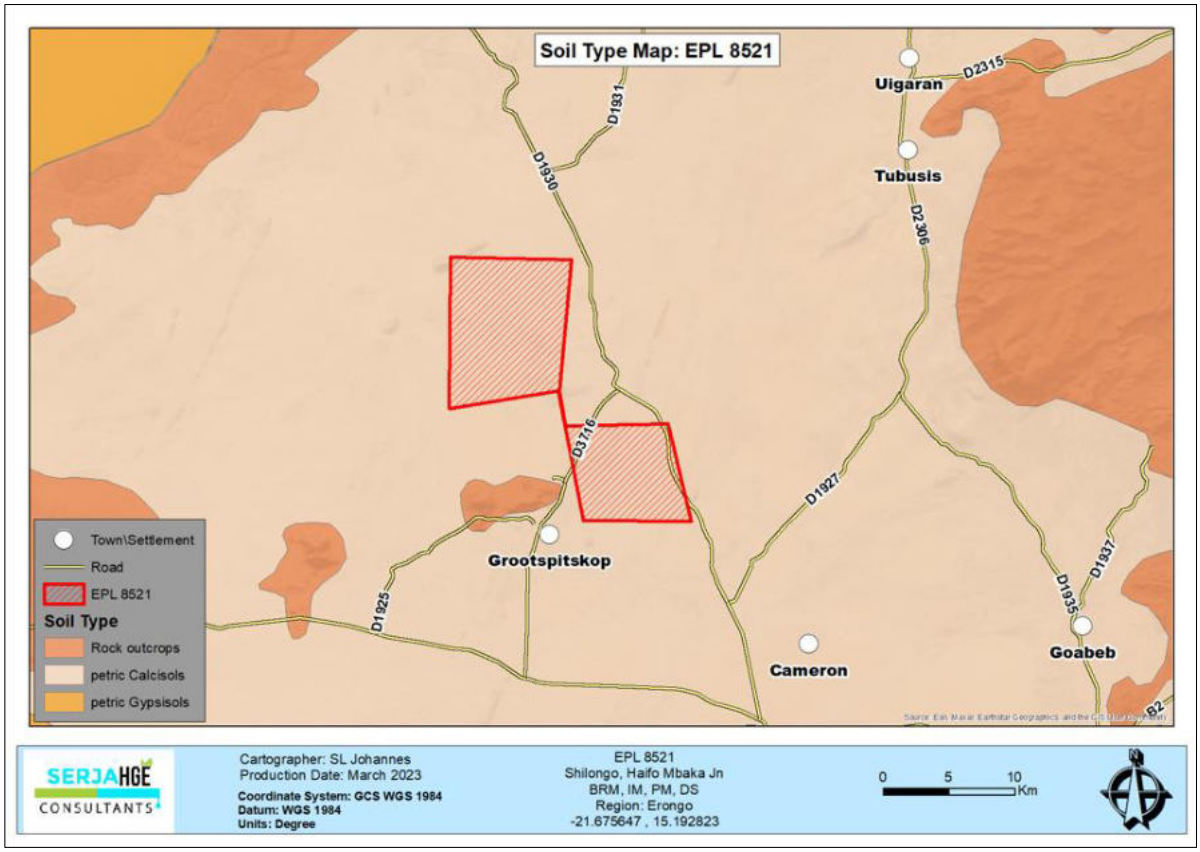

Figure 5-6: The dominant soil types found within the EPL

5.2.4 Water Resources: Groundwater (Hydrogeology) and Surface water (Hydrology)

With regards to groundwater (hydrogeology), the EPL is mainly covered by the rock bodies with little groundwater potential as shown on the map in Figure 5-7. Porous aquifers can only only found along major ephemeral rivers such as Omaruru and Khan in the broader area. The low/little groundwater potential in the EPL area is attributed to the low rainfall (influenced by the arid climate), type of rock units underlying the EPL and their non-fractured/faulted nature that limit the storage, transmission, and flow of groundwater. Therefore, the local rocks are not good aquifers (groundwater resources).

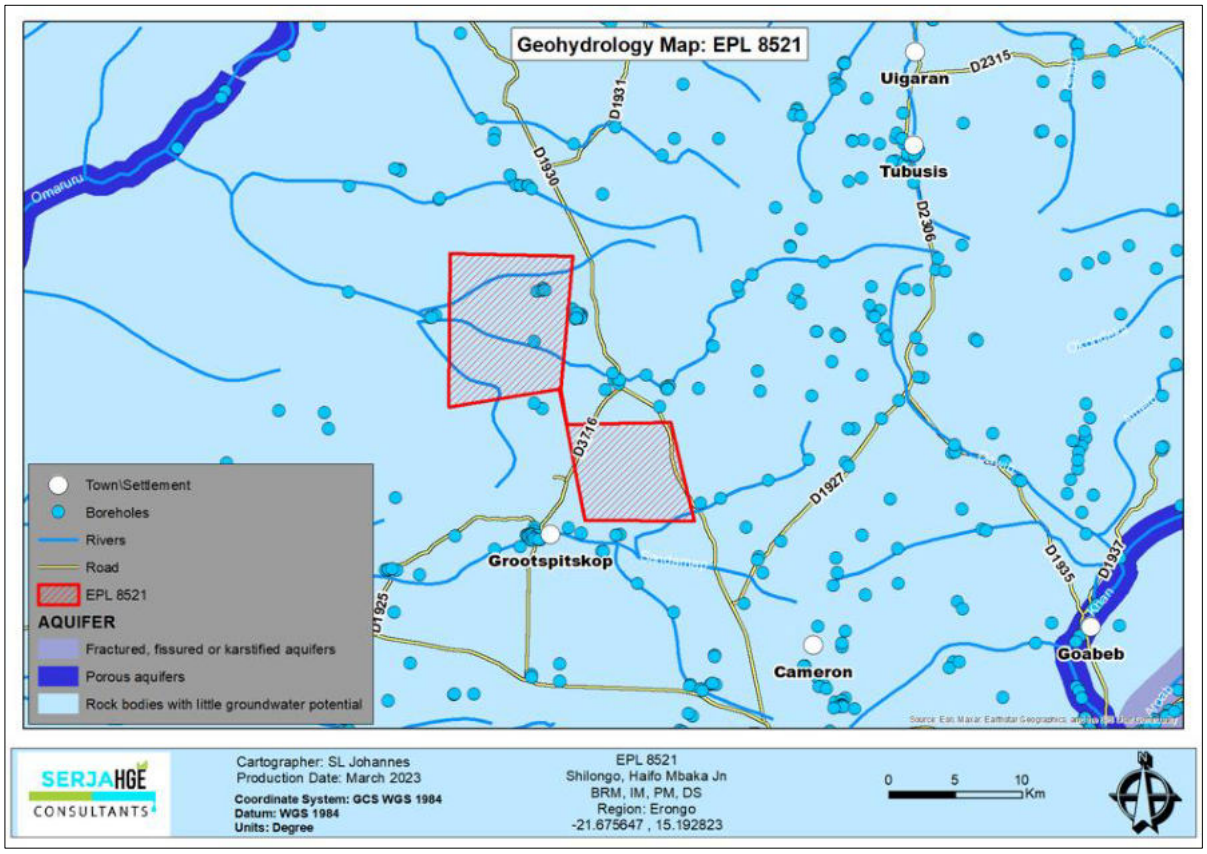

Figure 5-7: The geohydrology (surface and groundwater) map of the EPL area

5.3 Social and Economic Environment

5.3.1 Demography

The Erongo Region has a population of 150,809 people, accounting to a 7.1% of the country's total population of Namibia of 2,104,900 in 2011. The population density for the Region was 2.7 people per square kilometres (Namibia Statistics Agency, 2014). The EPL site falls within the Daures Constituency which had a population of 11,350 in 2011.

5.3.2 Economic Activities

According to the Erongo Regional Council (2015), the economy of the Erongo Region mainly depends on mining, fishing, agriculture, and tourism. The fishing industry is the third largest economic sector contributed about 6.6% to the Gross Domestic Product (GDP). The Region's whole eastern part and certain western parts are characterized by livestock farming on commercial farms in the districts of Karibib, Usakos and Omaruru, and in the communal areas (Erongo Regional Council, 2015).

According to the Namibia Statistics Agency (2014), the main source of income in households in the Erongo Region comes from farming (3%), wages and salaries (73%), cash remittance (5%), business and non-farming (9%) and pension (8%).

5.3.2.1 Agriculture

According to the, from the 2000 statistics, the Erongo Region accommodated more than 110,000 goats, nearly 36,000 heard of cattle, and about 50,000 sheep. Cattle from commercial and communal farmers can be marketed to the national abattoir and processing facility, Meatco (Erongo Regional Council, 2021).

The economic activities practiced in the Daures Constituency are farming (livestock and game) and tourism. The farming involves livestock and tourism is centered on eco-tourism, game drive and trophy hunting on commercial farms inland. There are no farming nor agricultural activities within or near the EPL area.

5.3.2.2 Exploration and Mining

The mining activities are undertaken near mining towns of Arandis and settlements such as Uis, Omatjete where commonalities such as nuclear fuels (Uranium), Dimension Stone (marble and granite), Base & Rare Metals (Copper), Precious Metals (Gold) and Industrial Minerals, etc. are mined. There are other active EPLs around EPL-8521, whereby exploration works may or may not be undertaken currently.

5.3.2.3 Tourism

With regards to tourism, the Erongo Region offers some of the most spectacular and popular tourist destinations as well as a variety eco-, wildlife, cultural and adventure tourism opportunities. The EPL area is mainly aimed for tourism purposes.

5.3.3 Infrastructure and Services

The Erongo Region has good coverage of services and infrastructure. This includes a good road network from the central areas of the country and many access roads, tarred and untarred. The power is supplied either through ErongoRed in the coastal and central western areas of the Region.

There is also a good water reticulation system in both towns/village/settlements and rural (farm) areas. The water is mainly supplied through water supply schemes operated by NamWater either through boreholes (direct borehole or treated water) such as Omaruru Delta Aquifer Scheme for Omaruru Town and private boreholes on farms.

The summary of current services infrastructure in and around Big Spitzkoppe and to the EPL area include:

- **Water supply**: Water is supplied from moderate and low yielding solar powered boreholes on farms area and possibly nearby water users are supplied from NamWater Scheme.
- **Power supply:** The broader areas such as towns and settlements (including Spitzkoppe) are supplied by ErongoRed regional electricity provider. Some areas (including some farms) depend on solar energy and generators for power supply.

5.3.4 Land Uses: Gaingu Conservancy

The EPL is found in the Gaingu Conservancy (Khoekhoegowab name for 'Spitzkoppe Mountain') was registered in March 2004 and covers an area of 7,731km^2. The Conservancy with the EPL - Figure 5-8.

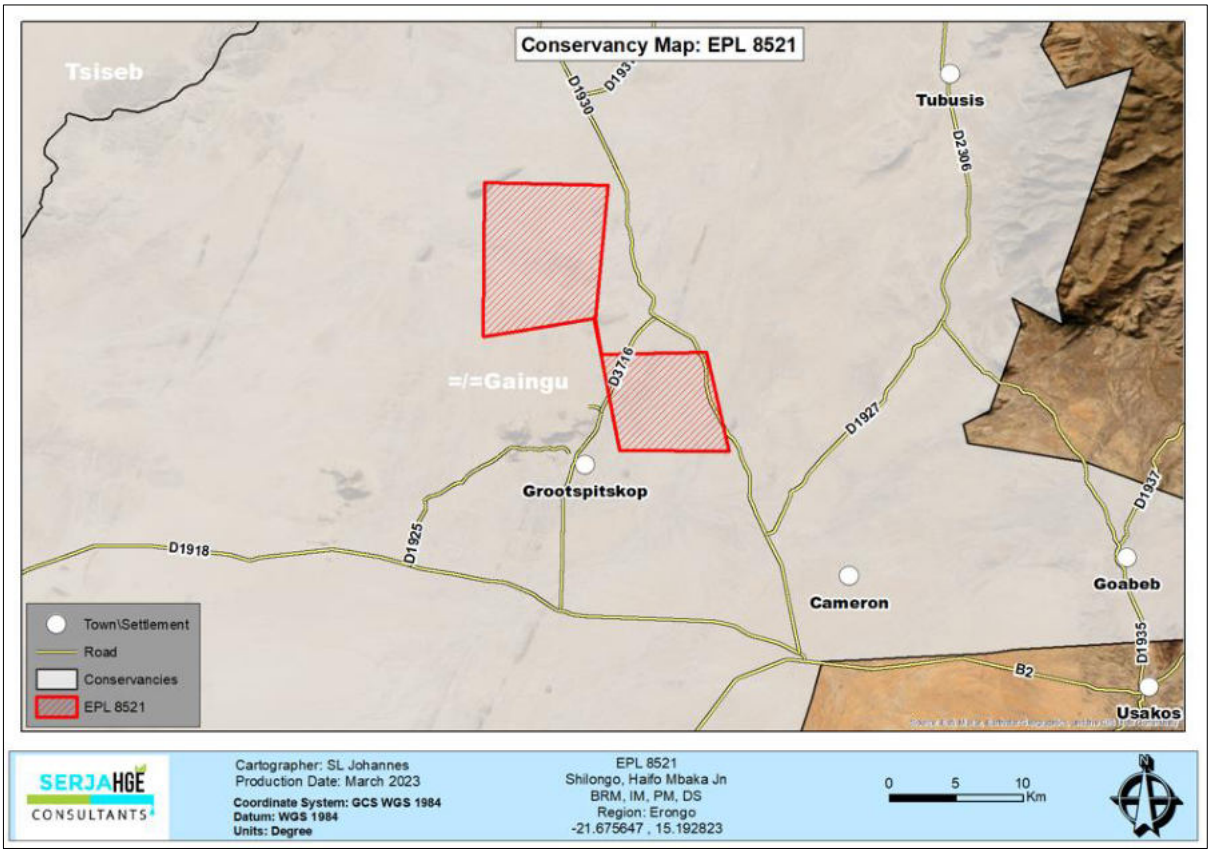

Figure 5-8: The land uses on and around EPL-8521

<u>The following features describe the Gaingu Conservancy (according to NACSO, 2023)</u>

- Approximate population: 3,003 and Geographical features: Arid with less than 200 mm average annual rainfall. Rolling, flat landscape in which the Spitzkoppe Mountain stands out.
- Particular features: Spitzkoppe National Monument Area, Rössing Mountain. The conservancy is close to and en route to the two coastal towns and tourist destinations (Walvis Bay /Swakopmund).

- Major wildlife resources: Kudu, gemsbok, springbok, leopard.
- Enterprises: Spitzkoppe Community Camp (community rest camp); trophy hunting; semi-precious stone market.

5.4 Archaeology and Heritage Aspect

5.4.1 Regional Context

According to Nekare (2023), the heritage context in the area is based on the preliminary data set derived from previous studies in the larger cultural landscape of Erongo Region. Furthermore the search indicators show that a matching number of heritage sites for the greater study area have been recorded. The famous indigenous rare stones deposits may be associated with this area but have attracted limited research interest. Rock art and wealth of artefacts such as stone tools have been found within rock shelters in the cultural landscape. They are therefore, of considerable heritage interest and the heritage if this region has been reviewed extensively. No heritage resources of significance were noted within the EPL boundaries. The map showing the archaeological sites in the area are shown in Figure 5-9.

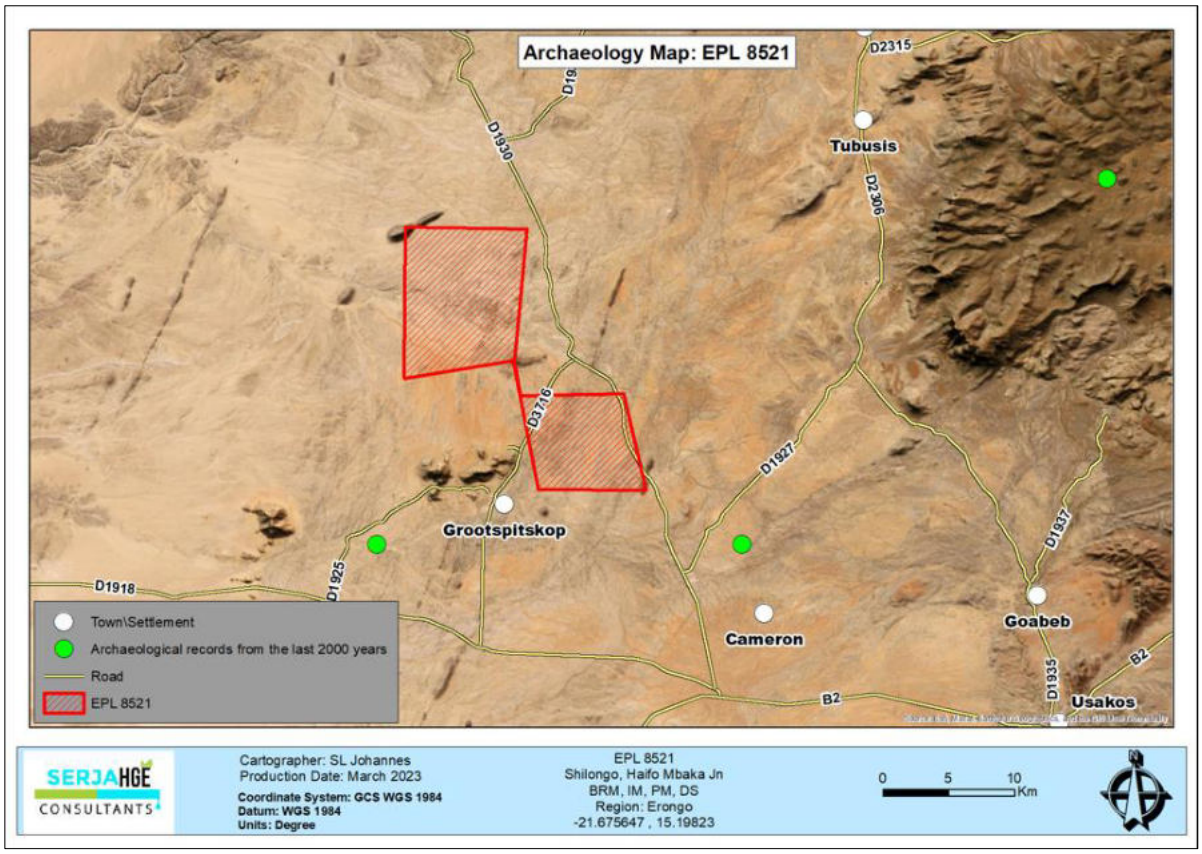

Figure 5-9: The recorded Archaeological and heritage sites in the area

The public consultation and engagement process and means employed for the EPL ESA Study is presented under Chapter 6.

6 PUBLIC CONSULTATION AND PARTICIPATION PROCESS

Public consultation and participation form an important component of an EIA process. It provides potential Interested and Affected Parties (I&APs) and stakeholders with an opportunity to comment on and raise any issues relevant to the project for consideration as part of the assessment process. This greatly assist the EAP (Environmental Consultant) to thoroughly identify and record potential impacts and to what extent further investigations are necessary. Public consultation can also aid in the process of identifying possible mitigation measures. The consultation for this project has been done under the EMA and its EIA Regulations and as per the following subsections.

6.1 Pre-identified and Registered Interested and Affected Parties (I&APs)

Relevant and applicable national, regional, and local authorities, and other interested members of the public were identified. Pre-identified I&APs were contacted directly, while other parties who contacted the Consultant after project advertisement notices in the newspapers, were registered as I&APs upon their request.

6.2 Communication with I&APs, and Means of Consultation Employed

Regulation 21 of the EIA Regulations details the steps to be taken during a public consultation process and these have been used in guiding this process. Communication with I&APs with regards to the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing brief information about the proposed project was compiled and hand delivered to the Ministry of Environment, Forestry and Tourism (MEFT) accompanying the ECC application, and uploaded on the MEFT (ECC) Portal for project registration and shared with registered Interested and Affected parties (I&APs).
- A Stakeholders' (I&AP) List was developed and updated as new I&APs register for the ESA.
- Project Environmental Assessment notices were published in The Namibia Media Holdings' *Market Watch newspapers* (*Allgemeine Zeitung*, *Die Republikein, and Namibian Sun*) dated 28 November 2022 and 05 December 2022 – Appendix D.
- Due to the fact that the EPL is located within the Gaingu Conservancy, a consultation meeting was held with the Gaingu Conservancy management on the 23rd of March 2023 in Tubusis - Figure 6-1. Another consultation meeting was held in Windhoek with the respective Head of the Traditional Authority for the area (Chief Gaseb) on the 01st of August 2023. The consultation meeting minutes for the two meetings were taken and are attached hereto as Appendix E.

Figure 6-1: Consultation meeting with the members of the Gaingu Conservancy management in Tubusis on 23 March 2023

- Two A3 size posters were pasted in Usakos and Great/Big Spitzkoppe Settlement (local supermarket) – Figure 6-2.

Figure 6-2: A3 ESA Study Posters in Usako (A – Woermann Brock public notice board in Usakos and B – Local supermarket entrance in Big Spitzkoppe)

6.3 Feedback and Issues raised by the Stakeholders (I&APs)

Issues were raised by I&APs (from the consultation meetings) and these issues have been recorded and incorporated in the ESA Report and EMP. The summary these few key issues are presented in Table 6-1 below.

Table 6-1: Summary of main issues and comments received throughout the consultation period

Aspect	Summary
Corporate Social Responsibility (CSR)	The Proponent to implement CSR
Promotion of transparency in communication and continued engagement	Promote and maintain transparency before and during exploration by continuously engaging the Traditional Authority and Conservancy.
Employment of locals and surrounding communities	Employment of locals should be prioritized for jobs that can be done by them. These include general and casual jobs, where applicable.
Utilization of available local goods and services	Consider the use of local procurement of services and goods for the project activities to empower local businesses, where possible and applicable.
Ecological of the EPL area	The EPL is within a conservancy and thus wildlife needs to be protected while carrying out the activities.
Existence of mining claims	The need for EPL holders to co-exist with mining claim owners

The consultation period ran from the 28th of November 2022 to the 30th of December 2022 and then extended to end of March 2023 (pending consultation meetings. However, no comments were submitted to the Consultant. Given the remoteness of the EPL area, consultation meetings were held with the key stakeholders in Tubusis, whereby comments were made (as provided in the Table above).

The next chapter is the presentation of potential impacts identified, the assessment methodology, impact description and their assessment.

7 IMPACTS IDENTIFICATION, ASSESSMENT AND MEASURES

7.1 Identification of Potential Impacts

The proposed project and its associated activities are usually associated with different potential positive and negative impacts. For an environmental assessment, the focus is placed mainly on the negative impacts that are likely to affect the host environmental and social features. The assessment is done to ensure that these impacts are sufficiently addressed, and adequate mitigation measures are recommended thereto for implementation so that an impact's significance is brought under control, while maximizing the positive impacts. The potential positive and negative impacts that have been identified from the prospecting activities are listed as follow:

Positive impacts:

- Local socio-economic development through temporary employment creation.
- Payment of land use fees to the Conservancy and Traditional Authority to assist in uplifting the communities.
- Procurement of local goods and services for exploration by small and medium businesses to promote local entrepreneurship empowerment and local economic development.

Negative:

- Physical land / soil disturbance,
- Impact on local biodiversity (fauna and flora) and habitat disturbance,
- Potential impact on water resources and soils (over-abstraction and pollution),
- Air quality (compromise the surrounding air quality),
- Visual impacts due to land scars owing to Dimension Stone prospecting activities,
- Potential occupational health and safety risks,
- Vibrations and noise associated with dimension stone exploration test quarrying and drilling,
- Vehicular traffic safety & impact on services infrastructure (e.g., local roads),
- Environmental pollution,
- Archaeological and cultural heritage impact; and
- Potential conflicts between the Proponent and small-scale miners who applied for or have Mining Claims (MCs) within the EPL boundaries. The two MCs are MC-70840 and MC-71773.

7.2 Impact Assessment Methodology

The Environmental Assessment process primarily ensures that potential impacts that may occur from project activity are identified and addressed with environmentally cautious approaches and legal compliance. The impact assessment method used for this project is in accordance with Namibia's Environmental Management Act (No. 7 of 2007) and its Regulations of 2012, as well as the International Finance Corporation (IFC) Performance Standards.

The identified impacts were assessed in terms of scale/extent (spatial scale), duration (temporal scale), magnitude (severity) and probability (likelihood of occurring), as presented in Table 7-1.

To enable a scientific approach to the determination of the environmental significance, a numerical value is linked to each rating scale. This methodology ensures uniformity and that potential impacts can be addressed in a standard manner so that a wide range of impacts are comparable. It is assumed that an assessment of the significance of a potential impact is a good indicator of the risk associated with such an impact. The following process will be applied to each potential impact:

- Provision of a brief explanation of the impact,
- Assessment of the pre-mitigation significance of the impact; and
- Description of recommended mitigation measures.

The recommended mitigation measures prescribed for each of the potential impacts contribute towards the attainment of environmentally sustainable operational conditions of the project for various features of the biophysical and social environment. The following criteria (in Table 7-1) were applied in this impact assessment:

Table 7-1: Criteria used for impact assessment (extent, duration, intensity and probability)

The Criteria used to assess the potential negative impacts				
Extent or (spatial scale) - extent is an indication of the physical and spatial scale of the impact.				
Low (1)	**Low/Medium (2)**	**Medium (3)**	**Medium/High (4)**	**High (5)**
Impact is localised within the site boundary: Site only	Impact is beyond the site boundary: Local	Impacts felt within adjacent biophysical and social environments: Regional	Impact widespread far beyond site boundary: Regional	Impact extend National or over international boundaries
Duration- Duration refers to the timeframe over which the impact is expected to occur, measured in relation to the lifetime of the project				
Low (1)	**Low/Medium (2)**	**Medium (3)**	**Medium/High (4)**	**High (5)**

The Criteria used to assess the potential negative impacts				
Immediate mitigating measures, immediate progress	Impact is quickly reversible, short-term impacts (0-5 years)	Reversible over time; medium term (5-15 years)	Impact is long-term	Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources
Intensity, Magnitude / severity - Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. This a qualitative type of criteria				
H-(10)	**M/H-(8)**	**M-(6)**	**M/L-(4)**	**L-(2)**
Very high deterioration, high quantity of deaths, injury of illness / total loss of habitat, total alteration of ecological processes, extinction of rare species	Substantial deterioration, death, illness or injury, loss of habitat / diversity or resource, severe alteration, or disturbance of important processes	Moderate deterioration, discomfort, partial loss of habitat / biodiversity or resource, moderate alteration	Low deterioration, slight noticeable alteration in habitat and biodiversity. Little loss in species numbers	Minor deterioration, nuisance or irritation, minor change in species / habitat / diversity or resource, no or very little quality deterioration.
Probability of occurrence - Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment				
Low (1)	**Medium/Low (2)**	**Medium (3)**	**Medium/High (4)**	**High (5)**
Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards.	Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards	Possible, distinct possibility, frequent. Low to medium risk or vulnerability to natural or induced hazards.	Probable if mitigating measures are not implemented. Medium risk of vulnerability to natural or induced hazards.	Definite (regardless of preventative measures), highly likely, continuous. High risk or vulnerability to natural or induced hazards.

7.3 Impact Significance

Impact significance is determined through a synthesis of the above impact characteristics. The significance of the impact “without mitigation” is the main determinant of the nature and degree of mitigation required. As stated in the introduction to this chapter, for this assessment, the significance of the impact without prescribed mitigation actions was measured.

Once the above factors (Table 7-1) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

SP = (magnitude + duration + scale) x probability

The maximum value per potential impact is 100 significance points (SP). Potential impacts were rated as high, moderate, or low significance, based on the following significance rating scale (Table 7-2).

Table 7-2: Impact significance rating scale

Significance	Environmental Significance Points	Colour Code
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	<30	L
Neutral	0	N
Low (negative)	>-30	L
Medium (negative)	-30 to -60	M
High (negative)	>-60	H

For an impact with a significance rating of high, mitigation measures are recommended to reduce the impact to a low or medium significance rating, provided that the impact with a medium significance rating can be sufficiently controlled with the recommended mitigation measures. To maintain a low or medium significance rating, monitoring is recommended for a period to enable the confirmation of the significance of the impact as low or medium and under control.

The assessment of the project phases is done for both pre-mitigation (before implementing any mitigation) and post-mitigation (after mitigations are implemented). The objective with the mitigation measures is to firstly avoid the risk and if the risk cannot be avoided, mitigation measures to minimize the impact are recommended. Once the mitigation measures have been applied, the identified risk will be of low significance.

7.4 Description and Assessment of Potential Impacts

The potential impacts from the proposed project activities are described, and assessed in Table 7-3. The management and mitigation measures are in a form of management action plans are provided in the Draft EMP.

Table 7-3: The Description and Assessment of the impacts of exploration activities on the biophysical and social environment

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
Positive Impacts											
Employment creation	Although temporary, the project activities will create employment to some locals from sampling throughout to drilling. This will include casual labourers, technical assistants, cooks, etc.	L / M- 2	L / M - 2	L / M - 4	L - 1	L - 8	M / H - 4	H - 5	M - 6	H - 5	H - 75
Land use fees for socio-economic development	Payment of land use fees to the Conservancy and Traditional Authority will assist in uplifting the communities in the area.	L / M- 2	L / M - 2	L / M - 4	L - 1	L - 8	M / H - 4	H - 5	M - 6	H - 5	H - 75
Empowerment of local businesses	Procurement of local goods and services for exploration by small and medium businesses will promote local entrepreneurship empowerment and local economic development (income generation).	L / M- 2	L / M - 2	L / M - 4	L / M - 2	L - 16	M - 3	M / H - 4	L / M - 4	M / H - 4	M - 44
Combating / fighting anti-poaching	The presence of EPL crew, particularly the Exploration Manager and Environmental Control Officer will aid in	L / M- 2	L / M - 2	L / M - 4	L - 1	L - 8	M - 3	M / H - 4	L / M - 4	M / H - 4	M - 44

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	deterring crime against wildlife by keeping an eye on the area and notifying the Conservancy and Police of any suspicious movements in the area. The Proponent will also assist the Conservancy while operating in the area. These will be included in the Memorandum of Understanding between the Proponent and Conservancy.										
Negative (Adverse) Impacts											
Physical disturbance to the site soils	The excavations and land clearing to enable siting of project structures and equipment will potentially result in soil disturbance through target site establishment, access road creations and unnecessary offload driving. These would leave the site soils exposed to erosion (areas with no to little vegetation cover to the soils in place). This is a concern because desert soils are sensitive to disturbance, and the prints may take hundred years to fade. The movement of heavy vehicles and equipment may lead to compaction of the soils	M - 3	M / H - 4	L / M - 4	M / H - 4	M – 44	L / M - 2	L / M - 2	L / M - 4	L / M - 2	L - 16

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	during exploration. This will, however, be a short-term and localized impact.										
Conflict between the Proponent and Mining Claims owners (small-scale miners) over commodities exploration and mining (for MCs) in the area	There are existing application for mining claims rights by some locals/small-scale miners within the Proponent's EPL. This may lead to conflicts between the small-scale miners and Proponent. Potential conflicts between the Proponent and small-scale miners who applied for or have Mining Claims (MCs) within the EPL boundaries, at times whereby the two applicants applied for the same commodity/ies. Since, the EPL activities are focused on prospecting and exploration only, the Proponent will focus on that and within their boundaries right, but excluding the Mining Claims. The MCs owners, if approved by MME would have the rights to mine within their MC boundaries only and not outside. Therefore, this is a matter of educating the small-scale miners (with legally	M/H - 4	M - 3	M/H - 8	M / H - 4	H – 60	L / M: -2	L / M: -2	L / M: -4	L / M: 2	L: -16

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	registered mining claims) about their rights to mine in an area, even if it is inside an EPL. Some (new) EPL owners may not be aware of this but they equally need to be educated about this and respect the rights of MC owners (small-scale miners). Without any measure in place to mitigate this impact, the significance will be medium to high. However, upon implementing the measures, the significance will be reduced to low.										
Impact on the sensitive Biodiversity: Wild Fauna and Flora	Fauna: The EPL falls within an ecologically sensitive area. Therefore, if activities such as trenching and drilling activities are not carefully conducted, this would result in land degradation. The degradation would lead to habitat loss for a diversity of flora and fauna onsite. However, exploration activities will be limited specific target areas only within the EPL. The presence and movement of the exploration workforce and	M: -3	M: -3	M: -6	M / H: 4	M: -48	L / M: -2	L / M: -2	L / M: -4	L / M: 2	L: -16

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	operation of project equipment and heavy vehicles would disturb wildlife at the explored sites of the EPL. There is also a potential illegal hunting (poaching) of local wildlife by project related workers. This could lead to loss or number reduction of specific faunal species which also impacts tourism in the community. Flora: The already scarce flora (vegetation) in the area would be impacted through land clearing to create exploration access roads, setting up project equipment and infrastructures, and detailed exploration activities. The clearing of vegetation, where deem necessary will be limited to the specific route and minimal, therefore, the impact will be localized, site-specific, therefore manageable.										
Air Quality: Dust Generation	There is a potential impact of dust emanating from site access roads when transporting exploration equipment and	M: -3	M: -3	M / L: -4	M / H: 4	M: -40	L / M - 2	L / M - 2	L - 2	L / M - 2	L - 12

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	supply to and from site. This may compromise the air quality in the area. Additionally, activities carried out as part of the exploration works such as drilling would contribute to the dust levels in the air.										
Visual impact: Scenic view of the area for Tourism	Exploration activities, particularly for Dimension Stone usually leave scars on the local landscape. This is bound to happen when exploration sites are located close to or along roads, and these scars in many cases contrasts the surrounding landscape and thus may potentially become a visual nuisance, especially in tourist-prone areas such as the EPL area. The sight of the explored and unrehabilitated areas of the EPL may be an eyesore to tourists and travelers alike on local road. The tourists and motorists/travelers on the D1930 and local road would be impacted, if Dimension Stone activities are undertaken on the	M - 3	M - 3	M - 6	M / H - 4	M – 48	L / M: -2	L / M: -2	L / M: -4	L / M: 2	L: -16

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	EPL side overseeing the D1930. The eyesore associated with Dimension Stone is mainly associated with white marble exploration and or mining, given its distinctive color from the host environment compared to dark or black granites and dolerites. The presence of exploration vehicles and machinery may impact the scenic view of the area for tourism and travelers on the roads. This impact is considered minimal as only small blocks of the stone will be extracted for analysis as part of exploration and duration will be short.										
Water Resources Demand and Use	The abstraction of more water than it can be replenished from low groundwater potential areas would negatively affect wildlife watering in the area that depend on the same low potential groundwater resource (aquifer). The impact of the project activities on the resources would be dependent on the water volumes required by each	M - 3	M - 3	M - 6	M / H - 4	M – 48	L / M - 2	L / M - 2	L - 2	L / M - 2	L - 12

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	project activity. Commonly exploration activities use a lot of water, mainly diamond drilling (for Base & Rare Metals, Dimension Stone, Industrial Minerals, Nuclear Fuel Minerals and Precious Metals) that is more water-consuming compared to other techniques like reverse circulation. The amount of water required for diamond drilling would be 10,000 to 25,000 litres (10 to 25 m^3) per day per hole. Given the fact that the EPL area is underlain by rock units with low groundwater potential, the Proponent will be carting water for drilling from outside the area and store it in industry standard water reservoirs/tanks on site and refilled as required. The required water would also be dependent on the duration of the exploration works and number of exploration holes required to make reliable interpretation on the commodity presence explored for during exploration. Therefore, the impact will only last for the										

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	duration of the exploration activities and ceases upon their completion.										
Soil and Water Resources Pollution	The proposed exploration activities are associated with a variety of potential pollution sources (i.e., lubricants, fuel, and wastewater) that may contaminate/pollute soils and eventually groundwater and surface water. The anticipated potential source of pollution to water resources from the project activities would be hydrocarbons (oil) from project vehicles, machinery, and equipment as well as potential wastewater/effluent from exploration related activities. The spills (depending on volumes spilled on the soils) from these machinery, vehicles and equipment could be washed in surface water bodies such as rivers and streams. The pollution may eventually infiltrate into the ground and pollute the fractured or faulted aquifers. This impact would occur during heavy rainy season when surface runoff	M: -3	M: -3	M: -6	M / H: 4	M: -48	L / M: -2	L / M: -2	L / M: -4	L / M: 2	L: -16

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	would be inevitable. However, it should be noted that the scale and extent/footprint of the activities where potential sources of pollution will be handled is relatively small. Therefore, the impact will be moderately low.										
Waste Generation (Environmental pollution)	Waste types such as solid, wastewater and possibly hazardous will be produced onsite during exploration. If the generated waste is not disposed of in a responsible way, land pollution may occur on the EPL or around the site. If solid waste such as papers and plastics are not properly stored or just thrown into the environment (littering), these may be consumed by wild animals which could be detrimental to their health. Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. Therefore, the	M: -3	M: -3	M / L: -4	M / H: 4	M: -40	L - 1	L - 1	L - 2	L / M - 2	L - 8

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	exploration programme needs to have appropriate waste management for the site. To prevent these issues, biodegradable and non-biodegradable wastes will be stored in separate containers and collected regularly for disposal at a nearest recognized waste management facilities										
Occupational Health and Safety Risks	Project personnel (workers) involved in the exploration activities may be exposed to health and safety risks. The heavy vehicle, equipment and fuel storage area will be properly secured to prevent any harm or injury to the Proponent's personnel, locals and animals. Another potential risks to both people , domestic animals and wildlife within the EPL are unfenced exploration trenches or trenches that are not backfilled after completing the sampling. Unsecured exploration trenches and even uncapped holes could pose a risk of people or wildlife	M - 3	M - 3	M - 6	M / H - 4	M – 48	L / M - 2	L / M - 2	L - 2	L / M - 2	L - 12

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	falling into the open trenches leading to injuries. The use of heavy equipment, especially during drilling and the presence of hydrocarbons on sites may result in accidental fire outbreaks. This could pose a safety risk to the project personnel and locals too										
Vehicular Traffic Safety	The local roads such as C35, C36, D2303 and D2342 is the main transportation routes for all vehicular movement in the EPL area. There would be a potential increase in traffic flow especially during exploration stage of the project activities, due to the delivery of supplies, goods and services to site. Depending on the project needs, trucks, medium and small vehicles will be frequenting the area to and from exploration sites on the EPL. This would potentially increase slow moving heavy vehicular traffic along these roads. Exploration works will be undertaken in stages, on certain	M - 3	M / H - 4	L / M - 4	M / H - 4	M - 44	L / M - 2	L / M - 2	L - 2	L / M - 2	L - 12

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	days of the week, few vehicles and the work will be temporary. Therefore, the risk is anticipated to be short-term, not frequent										
Impact on local road use	The project activities will mean an increased movement of heavy trucks and equipment on the local gravel roads which would exert more pressure on these roads, and worsening their conditions. This will be a concern if maintenance and care is not done during the exploration phase. The impact would be short-term and therefore, manageable.	M: -3	M: -3	M / L: -4	M / H: 4	M: -40	L - 1	L - 1	M / L - 4	M / L -2	L - 12
Noise and vibration from drilling	There is a potential of noise from certain activities, especially drilling and trenching, which may be a nuisance to wildlife. Excessive noise and vibrations without any protective measures in place can be also a health risk to workers on site. The exploration equipment used for drilling on site is of medium size and the noise level is bound to be limited to the site only,	M - 3	M - 3	M - 6	M / H - 4	M – 48	L - 1	L / M - 2	L - 2	L / M -2	L - 10

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	therefore, the impact likelihood is minimal.										
Archaeological and Heritage resources	The proposed project activities are likely to involve the removal of topsoil during site preparation, course of the prospecting and excavation phase or preparation of access roads (if need be). The most impact is likely to be caused by earthworks in the form of clearing, drilling, excavating, removing, or micro-sitting of the project equipment. The area of interest is known to have sensitive archaeological and heritage sites such as stone artifacts, rock shelters, rock paintings and caves graves/cultural site). Therefore chance finds procedure, archaeological mitigation measures and heritage monitoring approaches are highly recommended to be adopted and implemented throughout the exploration activities to avoid any destruction and disturbances of the known	M - 3	M - 3	M - 6	M / H - 4	M – 48	L / M - 2	L / M - 2	L - 2	L / M - 2	L - 12

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	and unknown archaeological materials.										

7.5 Cumulative Impacts Associated with the Proposed Exploration

According to the International Finance Corporation (2013), cumulative impacts are defined as "those that result from the successive, incremental, and/or combined effects of an action, project, or activity (collectively referred to in this document as "developments") when added to other existing, planned, and/or reasonably anticipated future ones". Similarly, to many other exploration projects, some of the cumulative impact to which the proposed project and associated activities potentially contribute are the:

- Poaching (illegal hunting of wildlife): During the ESA consultation process, it was indicated that poaching has been ongoing in the area, and some of which could be linked to people from outside the area. Therefore, this impact is likely to continue with the introduced additional people (related to projects) in the area. Regardless, mitigations measures will need to be implemented to mitigate these impacts.
- Impact on road infrastructure: The proposed exploration activities will contribute cumulatively to various existing activities such as travelling associated with tourism, and existing mineral licenses and other projects in the area. The contribution of the proposed project to this cumulative impact is however not considered significant given the short duration, and local extent (site-specific) of the intended mineral exploration activities.
- Impact on Archaeological and Heritage resources: Some archaeological materials such as stone artefacts, rock paintings and sites are likely to be lost during the clearance of land or construction of other facilities necessary for exploration works. Similarly, the focus of mitigation measures is to recommend the layout of the project to avoid all known significant heritage or cultural sites and burial places and will thus make a negligible contribution to cumulative impacts. The cumulative impacts are deemed to be of low significance in this case. However, with the implementation of project-specific mitigation measures as listed in the Draft EMP, this would reduce the impact significance from lot to very low after mitigation, and eventually negligible

8 CONCLUSIONS

The ESA Study for the proposed exploration activities on EPL-8521 was undertaken in accordance with the EMA and its 2012 EIA Regulations. Some key potential positive and negative impacts were identified. The key negative impacts were described, assessed and appropriate management and mitigation measures made thereof for implementation by the Proponent, their contractors, and workers.

The public was notified as required by Section 21 to 24 of the EIA Regulations by placing adverts in three newspapers (*Allgemeine Zeitung, Die Republikein, and Namibian Sun*) dated 28 November 2022 and 05 December 2022. A consultation meeting was held in Tubusis with the Gaingu Conservancy Management on the 23rd of March 2023. The stakeholders made some comments to the proposed project activities.

The comments were addressed and incorporated into this Report and Draft EMP.

Impact Assessment: The key negative impacts were described, assessed. The potential negative impacts indicated a medium rating significance. To minimize the significance, appropriate management and mitigation measures made thereof for implementation by the Proponent, their contractors, and workers to avoid and/or minimize their significance on the environmental and social components. The effective implementation of the recommended management and mitigation measures accompanied by monitoring will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from medium rating to low).

The Scoping assessment (ESA) Study was deemed sufficient and concluded that no further detailed assessments are required to the ECC application for the prospecting and exploration activities.

Serja Consultants are confident that the potential negative impacts associated with the proposed project activities can be managed and mitigated by the effective implementation of the recommended management and mitigation measures and with more effort and commitment put on monitoring the implementation of these measures. It is therefore, recommended that the proposed prospecting and exploration activities be granted an Environmental Clearance Certificate, and provided that:

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses and approvals for the proposed activities should be obtained as required. These include permits and licenses for land use agreements, services provision agreements (water provision) to explore and ensuring compliance with these specific legal requirements.
- The Proponent, their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required

to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.

- Site areas where exploration activities have ceased are rehabilitated, as far as practicable, to their pre-exploration state. This includes the levelling of stockpiled topsoil, backfilling of exploration trenches and closing/capping of exploration holes.

To maintain the desirable rating and that the potential impacts are under control, the implementation of management and mitigation measures should be monitored by their Environmental Control Officer (ECO) and audited by an Independent Environmental Consultant on a bi-annual basis. The monitoring of this implementation will not only be done to maintain the reduce impacts' rating or maintain low rating but to also ensure that all potential impacts that might arise during implementation are properly identified in time and addressed immediately.

9 LIST OF REFERENCES

1. Chetty, P. (2021). Visual Impact Assessment for the Proposed Exploration and Mining Activities of Dimension Stone on Mining Claims 71609-71617 in the Erongo Region. Johannesburg: Unpublished.
2. Erongo Regional Council. (2015). Economy - Available from http://www.erc.com.na/economy/fishinig/.
3. Excel Dynamic Solutions. (2021). Environmental Scoping Assessment (ESA) Report: The Proposed Exploration of Base & Rare Metals, and Precious Metals on EPL-7246 near Kalkfeld in the Omatjete District of the Erongo Region, Namibia. Windhoek. Ministry of Environment, Forestry and Tourism.
4. Mendelsohn J., Jarvis A., Roberts C., and Robertson T. (2002). Atlas of Namibia: A Portrait of the Land and its People. Cape Town: David Philip Publishers.
5. NACSO. (2023). Conservancies: Gaingu Conservancy. Available from https://www.nacso.org.na/conservancies/gaingu
6. Namibia Statistics Agency. (2014). Namibia 2011: Population and Housing Census: Basic Analysis with Highlights – Erongo Regional Profile. Windhoek: Namibia Statistics Agency.
7. National Geographic. (2023). Education - Coastal plain https://education.nationalgeographic.org/resource/coastal-plain/.
8. Nekare, C. (2023). Heritage Impact Assessment for the proposed Prospecting and Exploration Activities on EPL-8521 located northwest of Usakos Town in the Erongo Region, Namibia. Windhoek. Unpublished.
9. Resilient Environmental Solutions. (2019). Scoping Report for the Environmental Assessment Report for EPL-7264 near Talismanis in the Omaheke Region. Windhoek. Ministry of Environment, Forestry and Tourism.
10. Resilient Environmental Solutions. (2022). Environmental Monitoring Report for EPL-7415 in the Omaheke Region: Bi-Annual Monitoring of March 2022-Novemeber 2022. Windhoek. Unpublished.

Appendix A: Copy of Environmental Clearance Certificate (ECC) Application submitted to the Ministry of Environment, Forestry & Tourism and uploaded on the ECC Portal

Revenue Stamps

NAMIBIA REVENUE N$200

NAMIBIA REVENUE N$200

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM
DIRECTORATE OF ENVIRONMENTAL AFFAIRS
07 DEC 2022
RECEIVED
Signature:

ANNEXURE 1

FORMS

Form 1

REPUBLIC OF NAMIBIA

ENVIRONMENTAL MANAGEMENT ACT (No. 7 of 2007)

(Section 32)

APPLICATION FOR ENVIRONMENTAL CLEARANCE CERTIFICATE (APP NO. 221203000569)

PART A: DETAILS OF APPLICATION

1.	Name:	Haifo Mbaka Jr. Shilongo
2.	Business Registration / ID No.:	89060100287
3.	Correspondence Address:	P. O. Box 91315 Klein Windhoek, Windhoek
4.	Name of Contact Person:	Mr. Ndiili Malima
5.	Position of Contact Person:	EPL Partner / Member
6.	Telephone No.:	+264 81 205 6559
7.	Fax No:	N/A
8.	E-mail Address:	info@serjaconsultants.com

PART B: SCOPE OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE

1. THE ENVIRONMENTAL CLEARANCE CERTIFICATE IS FOR:

The 'listed activities' that are relevant or related to the proposed activities are listed below:

MINING AND QUARRYING ACTIVITIES

-Listed Activity 3.1 The construction of facilities for any process or activities which requires a license, right of other forms of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting and Mining Act, 1992).

-Listed Activity 3.2 other forms of mining or extraction of any natural resources whether regulated by law or not.