

## **ENVIRONMENTAL SCOPING ASSESSMENT (ESA)**

**FOR**

**THE PROPOSED EXPLORATION ACTIVITIES OF DIMENSION STONES, BASE & RARE METALS, INDUSTRIAL MINERALS, AND PRECIOUS METALS ON THE EXCLUSIVE PROSPECTING LICENSE (EPL) 8015, LOCATED IN DAURES CONSTITUENCY, ERONGO REGION.**

**ECC Application Reference No.: APP-001584**

**Document Version: Final**

**AUGUST 2023**

<p><b>Author:</b> Mr. Titus Shuuya</p> <p><b>Reviewer:</b> Ms. Rose Mtuleni</p> <p><b>Company:</b> Excel Dynamic Solutions (Pty) Ltd</p> <p><b>Telephone:</b> +264 (0) 61 259 530</p> <p><b>Email:</b> <a href="mailto:public@edsnamibia.com">public@edsnamibia.com</a> / <a href="mailto:tshuuya@edsnamibia.com">tshuuya@edsnamibia.com</a></p>	<p><b>Proponent:</b> Ms. Ueriheka Roswitha DeAlmada</p> <p><b>Contact person:</b> Ms. Ueriheka Roswitha DeAlmada</p> <p><b>Telephone:</b> +264812267174</p> <p><b>Postal Address:</b> P O Box 98248, Pelican Square, Windhoek</p> <p><b>Email:</b> <a href="mailto:rdealmada@gmail.com">rdealmada@gmail.com</a></p>
--	---

## EXECUTIVE SUMMARY

Excel Dynamic Solutions (Pty) Ltd (the consultant) has been appointed by Ms. Ueriheka Roswitha DeAlmada (the Proponent) to act on their behalf, to undertake the Environmental Assessment (EA) process and apply for an Environmental Clearance Certificate (ECC) for the proposed mineral prospecting and exploration on Exclusive Prospecting License (EPL) 8015. The EPL 8015 is located about 40 km southeast of Uis Settlement, Daures constituency in the Erongo Region. It can be accessed via the B2 national road, onto the D1930 from the south, or through the C36 or C35 roads onto the D1930 from Uis or D1931 crosscutting both Omaruru and Karibib districts. It covers 13878.8058 hectares which contain at least portions of the following farms: Harmone, Elim, Vrede, Twyfel, Goeie Geluk and a small portion of Okombahe Reserve within !Gaingu conservancy boundaries. The targeted commodities for the proposed prospecting and exploration activities are **dimension stones, base & rare metals, industrial minerals, and precious metals.**

In terms of the Environmental Management Act No.7 of 2007 and the EIA Regulations of 2012, the proposed project activities are among the listed activities that cannot be undertaken without an ECC. As such, an environmental clearance application will be submitted to the competent authorities for decision-making before the commencement of the anticipated project activities. The Environmental Scoping Assessment (ESA) Report and Environmental Management Plan (EMP) were compiled for submission to the competent authorities as part of the environmental clearance application.

### Brief Project Description

The Proponent intends to adopt a systematic prospecting and exploration approach of non-invasive and invasive techniques as summarised below:

#### 1. Non-invasive Techniques:

**Desktop review of existing data to identify potential prospecting targets.** This is a non-invasive technique approach that mainly entails a desktop review of geological maps and ground observations e.g., historical reports, satellite and imagery data investigation.

**Lithology geochemical surveys** which include soil and rock sampling shall be collected for trace element analysis to determine the presence of dimension stones, base & rare metals, industrial minerals, and precious metals. If required, minor pitting and trenching may be conducted to obtain lithological, structural and assay information. These will consist of about  $\pm 20$  cm X 20 cm X 30 cm pits to collect at least 1 kg samples which can be sieved to obtain 50 g material for analysis. Alternatively, a battery-powered drill-puncher can be used that allows to take samples from calcreta from a depth of 0.5 m. Ideally, the survey shall be conducted over a network of 1000 m X 100 m to develop a geochemical prospecting method for the local condition.

**Electromagnetic and geophysical surveys** shall be conducted should there be a need, following the designed exploration program. This will shall include baseline data collection of the substrata by airborne or ground, through sensors such as radiometric, magnetic and electromagnetic to detect the targeted mineralization from a detailed magnetometry map.

## **2. Invasive Technique:**

**Detailed exploration drilling**, which is an invasive technique shall be conducted if the findings from the desktop study, lithology geochemical, electromagnetic and geophysical surveys are positive and feasible. These will entail drilling holes and sample collection for further analysis to determine the depth and spatial extent of the potential mineralization. The Proponent intends to use both Reverse Circulation (RC) and diamond drilling to about a 200 m depth. If required, some vegetation may be cleared or thinned to create dirt roads to allow access to the targeted locations or drilling sites, however, existing tracks will be used as far as reasonably practical.

## **Public Consultation Process**

Public participation is the cornerstone of the ESA process as detailed in the EIA Regulation 21. The process ensures that sufficient information is gathered and/or shared transparently with all Interested and Affected Parties (I&APs) as well as other stakeholders, including the findings of the reports, during the specified comment and review periods. The communication with I&APs about the proposed exploration activities was conducted, but not limited to the following:

- A Background Information Document (BID) containing brief non-technical information about the proposed project was compiled, and distributed to identified and registered I&APs.

- Project Environmental Assessment notices were published in The Namibian (22<sup>nd</sup> June 2023 & 30<sup>th</sup> June 2023) and New Era (23<sup>rd</sup> June 2023 & 30<sup>th</sup> June 2023) newspapers briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns, including site notices.
- A consultation meeting was scheduled and held with the I&APs on the 13 of July 2023 at Spitzkoppe Community Development Centre, Spitzkoppe Settlement in the Daures constituency. The issues and concerns raised during the public consultation meeting and information from the site visit were noted and incorporated within the ESA and EMP reports.

### **Potential impacts identified**

The following potential positive and negative impacts are anticipated:

- **Positive impacts:** Socio-economic development through employment creation and skills transfer or capacity building; Opens up other investment opportunities and infrastructure-related development benefits; Produces a trained workforce and small-to-medium businesses that can serve communities and may initiate related businesses; Boosts the local, regional and national economic growth and development and; improve support for local businesses through the procurement of consumable and service provision; improve or assist local small-miners industry as part of the social cooperate responsibility etc.
- **Negative impacts:** Potential disturbance of wildlife and livestock; impacts on the local small-miners industry; impact on local biodiversity; destruction of habitats and ecological processes; potential illegal wildlife hunting and livestock theft; potential impact on water resources and soils particularly due to pollution; air quality issue: potential dust generated from the project; potential occupational health and safety risks, vehicular traffic safety and impact on services infrastructures such as local roads, vibrations, and noise associated with drilling activities may be a nuisance to the community, wildlife and livestock; environmental pollution (solid waste and wastewater), archaeological and heritage impact and potential social nuisance and conflicts (theft, damage to properties, etc.).

The potential negative impacts were assessed, and mitigation measures were provided accordingly.

## RECOMMENDATIONS

The Environmental Consultant is confident that the potential negative impacts associated with the proposed project activities can be avoided, managed, and mitigated by the effective implementation of the recommended management and mitigation measures and with more effort and commitment put into compliance audit monitoring the commitments.

It is, therefore, recommended that the proposed prospecting and exploration activities be granted an Environmental Clearance Certificate, 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 access agreements to explore and ensure compliance with these specific legal requirements.
- The Proponent and all 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 for undertaking 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, and where it is possible, progressive rehabilitation should be implemented.
- Environmental Compliance monitoring reports should be compiled and submitted to the MEFT/DEAF.

### Disclaimer

*EDS warrants that the findings and conclusion contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work and Environmental Management Act (EMA) of 2007. These methodologies are described as representing good customary practice for conducting an Environmental Impact Assessment of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment, or which were not reasonably identifiable from the available information. The Consultant believes that the information obtained from the record review and during the public consultation processes concerning the proposed*

*exploration work is reliable. However, the Consultant cannot and does not warrant or guarantee that the information provided by the other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. No other warranties are implied or expressed.*

*Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records and the personal recollections of those persons contacted.*

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b> .....	i
<b>TABLE OF CONTENTS</b> .....	vi
<b>LIST OF FIGURES</b> .....	viii
<b>LIST OF TABLES</b> .....	viii
<b>LIST OF APPENDICES</b> .....	ix
<b>LIST OF ABBREVIATIONS</b> .....	ix
<b>1 INTRODUCTION</b> .....	<b>1</b>
1.1 Project Background .....	1
1.2 Terms of Reference, Scope of Works and Appointed Environmental Assessment Practitioner 4	
1.3 The Need for the Proposed Project .....	4
<b>2 PROJECT DESCRIPTION: PROPOSED PROSPECTING AND EXPLORATION ACTIVITIES</b> .....	<b>5</b>
2.1 Prospecting Phase .....	5
2.2 Exploration (Drilling, Sampling and Analysis) Phase .....	6
2.2.1 Detailed Exploration Drilling .....	7
2.2.2 Accessibility to Site .....	7
2.2.3 Material and Equipment .....	7
2.2.4 Services and Infrastructure .....	8
2.2.5 Waste Management .....	8
2.2.6 Health and Safety .....	9
2.2.7 Safety and Security .....	9
2.2.8 Accommodation .....	9
2.3 Decommissioning and Rehabilitation Phase .....	10
<b>3 PROJECT ALTERNATIVES</b> .....	<b>10</b>
3.1 Types of Alternatives Considered .....	11
3.1.1 The "No-go" Alternative .....	11
3.1.2 Exploration Location .....	11
3.1.3 Exploration Methods .....	12
<b>4 LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES</b> .....	<b>18</b>
4.1 The Environmental Management Act No. 7 of 2007 .....	18
4.2 International Policies, Principles, Standards, Treaties and Conventions .....	28
<b>5 ENVIRONMENTAL BASELINE</b> .....	<b>34</b>

5.1	Biophysical Environment.....	34
5.1.1	Climate Conditions.....	34
5.1.2	Topography and Elevation .....	35
5.1.3	Geology and Lithology.....	36
5.1.4	Soil.....	36
5.1.5	Hydrology, Groundwater, Vulnerability to pollution and Water Resources .....	37
5.2	Biodiversity.....	38
5.2.1	Flora .....	38
5.2.2	Fauna.....	40
5.2.3	Avifauna .....	41
5.3	Archaeology and Heritage.....	41
5.3.1	Regional Level .....	41
5.4	Surrounding Land Uses .....	42
5.5	Socio-Economic conditions .....	44
6	PUBLIC CONSULTATION PROCESS.....	45
6.1	Pre-identified and Registered Interested and Affected Parties (I&APs).....	45
6.2	Communication with I&APs .....	46
6.3	Feedback from Interested and Affected Parties .....	47
7	IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES.....	49
7.1	Impact Identification.....	49
7.2	Impact Assessment Methodology.....	50
7.2.1	Extent (spatial scale) .....	51
7.2.2	Duration .....	51
7.2.3	Intensity, Magnitude / severity.....	51
7.2.4	Probability of occurrence.....	52
7.2.5	Significance .....	52
7.3	Assessment of Potential Negative (Adverse) Impacts .....	54
7.3.1	Destruction of habitats and ecological processes.....	54
7.3.2	Land Degradation and Loss of Biodiversity.....	55
7.3.3	Generation of Dust (Air Quality) .....	57
7.3.4	Water Resources Use .....	58
7.3.5	Soil and Water Resources Pollution.....	59
7.3.6	Waste Generation.....	61



7.3.7	Occupational Health and Safety Risks.....	62
7.3.8	Vehicular Traffic Use and Safety .....	63
7.3.9	Noise and vibrations .....	65
7.3.10	Disturbance to Archaeological and Heritage Resources.....	66
7.3.11	Impact on Local Roads .....	67
7.3.12	Social Nuisance: Local Property Intrusion and Vandalism .....	68
7.4	Cumulative Impacts Associated with Proposed Exploration .....	69
7.5	Mitigations and Recommendations for Rehabilitation.....	70
8	RECOMMENDATIONS AND CONCLUSIONS.....	70
8.1	Recommendations .....	70
8.2	Conclusion.....	71
9	REFERENCES .....	72

## LIST OF FIGURES

Figure 1	– Location of EPL 8015 .....	2
Figure 2	– Farms around EPL 8015.....	3
Figure 3	– Location of EPL 8015 on the MME National Mining Cadastre.....	12
Figure 4	– Climate condition around the project area (source: climate-data, 2022) .....	35
Figure 5	– Topography map for the project area.....	35
Figure 6	– The geology of the EPL 8015.....	36
Figure 7	– The soils of the EPL 8015.....	37
Figure 8	– Hydrology of the EPL 8015.....	38
Figure 9	– Vegetation types around the EPL.....	39
Figure 10	– Quiver tree observed on farm Twyfel.....	40
Figure 11	– Distribution of the archaeological sites in Namibia with a focus on the Erongo Region (light blue polygon). Source: (Kinahan, J. 2012).....	42
Figure 12	– Land use around the vicinity of EPL 8015.....	43
Figure 13	– Public meeting consultation at Spitzkoppe Community Development Centre .....	46

## LIST OF TABLES

Table 1	– Hazardous substances that are expected on site.....	9
Table 2	– Alternatives (Exploration Methods) .....	13
Table 3	– Applicable local, national and international standards, policies and guidelines .....	19
Table 4	– International Policies, Principles, Standards, Treaties and Convention applicable to the project .....	28
Table 5	– Summary of Interested and Affected Parties (I&APs).....	45

Table 6 – Summary of key comments, concerns or issues received and responses during the consultation. ....	47
Table 7 – Extent or spatial impact rating .....	51
Table 8 – Duration impact rating .....	51
Table 9 – Intensity, magnitude or severity impact rating .....	52
Table 10 – Probability of occurrence impact rating.....	52
Table 11 – Significance rating scale .....	53
Table 12 – Assessment of the impacts of exploration on habitats and ecological processes .....	55
Table 13 – Assessment of the impacts of exploration on land degradation and biodiversity.....	56
Table 14 – Assessment of the impacts of exploration on air quality.....	57
Table 15 – Assessment of the project impact on water resource use and availability .....	59
Table 16 – Assessment of the project impact on soil and water resources pollution.....	60
Table 17 – Assessment of waste generation impact .....	61
Table 18 – Assessment of the impacts of exploration on health and safety.....	62
Table 19 – Assessment of the impacts of exploration on-road use (vehicular traffic).....	64
Table 20 – Assessment of the impacts of noise and vibrations from exploration.....	65
Table 21 – Assessment of the impacts of exploration on archaeological & heritage resources.....	66
Table 22 – Assessment of exploration on local services (roads and water) .....	68
Table 23 – Assessment of the social impact of community property damage or disturbance .....	68

## LIST OF APPENDICES

**Appendix A:** Notice to grant the Exclusive Prospecting License (EPL)/Project Registration Form 1

**Appendix B:** Draft Environmental Management Plan (EMP)

**Appendix C:** Curricula Vitae for the Environmental Assessment Practitioner (EAP)

**Appendix D:** Evidence of public consultation

## LIST OF ABBREVIATIONS

Abbreviation	Meaning
BID	Background Information Document
DEAF	Department of Environmental Affairs and Forestry
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EDS	Excel Dynamic Solutions

<b>Abbreviation</b>	<b>Meaning</b>
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licence
ESA	Environmental Scoping Assessment
GG & GN	Government Gazette & Government Notice
I&APs	Interested and Affected Parties
IECO	Independent Environmental Control Officer
IFC	International Finance Corporation
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
PPE	Personal Protective Equipment
Reg / S	Regulation / Section
TOR	Terms of Reference

## KEY TERMS

Terms	Definition
<b>Alternative</b>	A possible course of action, in place of another that would meet the same purpose and need of the proposal.
<b>Baseline</b>	Work done to collect and interpret information on the condition/trends of the existing environment.
<b>Biophysical</b>	That part of the environment that does not originate with human activities (e.g., biological, physical and chemical processes).
<b>Cumulative Impacts/Effects Assessment</b>	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.
<b>Decision-maker</b>	The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal.
<b>Ecological Processes</b>	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).
<b>Environment</b>	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.
<b>Environmental Management Plan</b>	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.

Terms	Definition
<b>Exclusive Prospecting Licence</b>	Is a license that confers exclusive mineral prospecting rights over land of up to 1000 km <sup>2</sup> in size for an initial period of three years, renewable twice for a maximum of two years at a time
<b>Interested and Affected Party (I&amp;AP)</b>	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.
<b>Fauna and Flora</b>	All the animals and plants found in an area.
<b>Mitigation</b>	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment.
<b>Monitoring</b>	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).
<b>Proponent</b>	Organization (private or public sector) or individual intending to implement a development proposal.
<b>Public Consultation/Involvement</b>	A range of techniques that can be used to inform, consult or interact with stakeholders affected by the proposed activities.
<b>Protected Area</b>	Refers to a protected area that is proclaimed in the Government Gazette according to the Nature Conservation Ordinance number 4 of 1975, as amended.
<b>Scoping</b>	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

<b>Terms</b>	<b>Definition</b>
	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.
<b>Terms of Reference (ToR)</b>	Written requirements governing full EIA input and implementation, consultations to be held, data to be produced and form/contents of the EIA report. Often produced as an output from scoping.

# 1 INTRODUCTION

## 1.1 Project Background

Ms. Ueriheka Roswitha DeAlmada (the Proponent) has applied to the Ministry of Mines and Energy (MME) to be granted the Exclusive Prospecting Licence (EPL) 8015. In terms of Section 48 (4) of the Minerals (Prospecting and Mining) Act, No. 33 of 1992, a notice was given by MME to grant the EPL application was granted on the 19<sup>th</sup> March 2021 and will expire on the 24<sup>th</sup> March 2024 (**Appendix A**). As such an Environmental Scoping Assessment (ESA) and Environmental Management Plan (EMP) reports are required as a prerequisite for the approval and granting of the Environmental Clearance Certificate (ECC) for the EPL to the Proponent. The license tenure may be extended for further two (2) years by the renewal of the rights if MME is satisfied with the previous demonstrable progress. The proposed project area is made up of one EPL license which may be converted to Mining License (s) if an economically viable deposit is discovered and the licensing requirements of the latter are met and complied with.

The EPL covers 13878.8058 hectares and it is located about 40 km southeast of Uis Settlement, Daures constituency in the Erongo Region (**Figure 1**). It can be accessed via the B2 national road, onto the D1930 from the south, or through the C36 or C35 roads onto the D1930 from Uis or D1931 crosscutting both Omaruru and Karibib districts. The EPL contain portions of the following farms: Harmone, Elim, Vrede, Twyfel, Goeie Geluk and a small portion of Okombahe Reserve within !Gaingu conservancy boundaries (**Figure 2**).

The targeted commodities for the proposed prospecting and exploration activities are **dimension stones, base & rare metals, industrial minerals, and precious metals**.

In terms of the Environmental Management Act No. 7 of 2007 and its Environmental Impact Assessment (EIA) Regulations (2012), Section 27 (1) provides a list of activities that may not be carried out without an EIA undertaken and an ECC obtained. Mining and quarrying (including prospecting and exploration) activities are listed among the activities that may not be undertaken without an ECC, thus, an EIA has to be undertaken as part of the environmental authorisation.

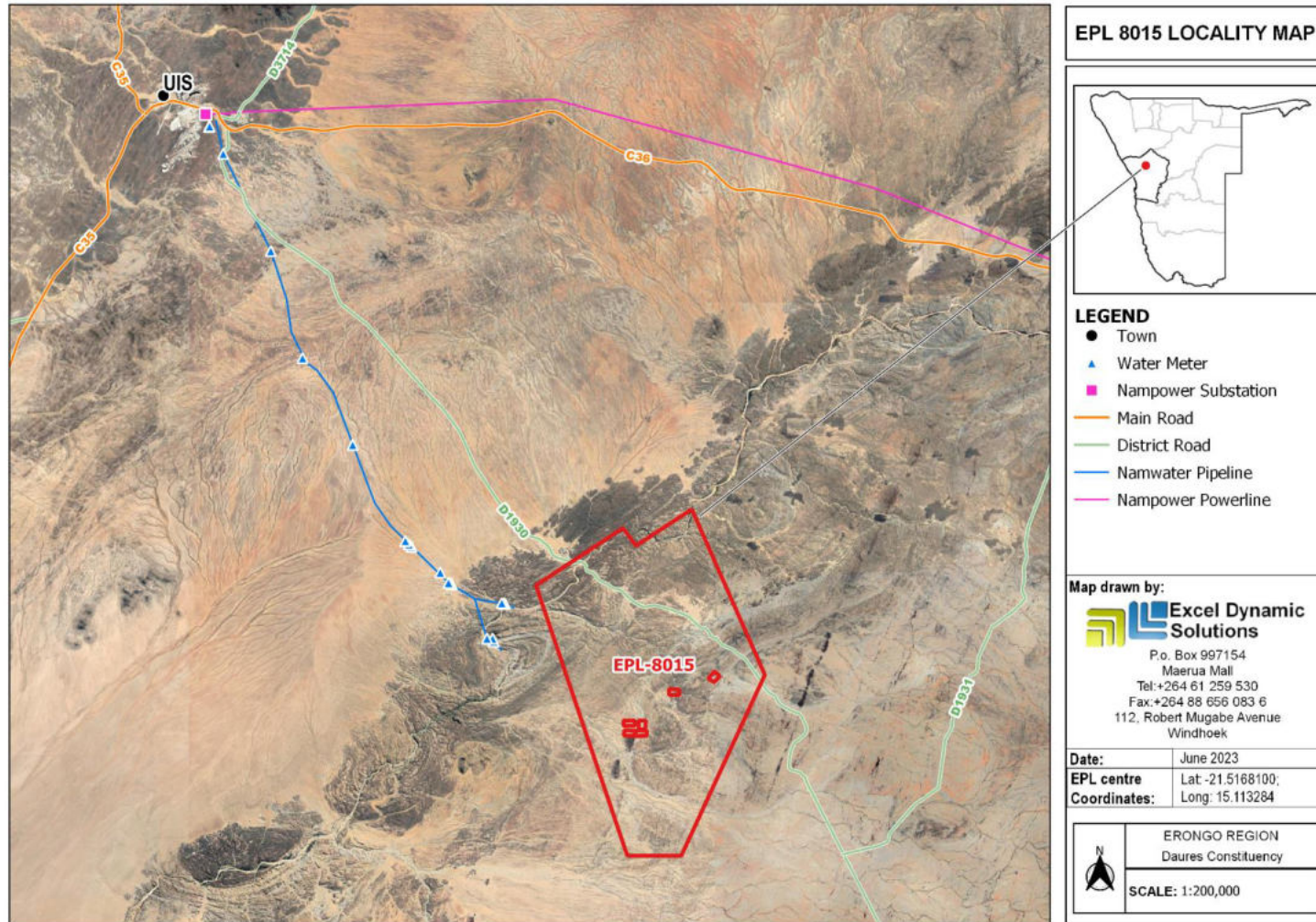


Figure 1 – Location of EPL 8015



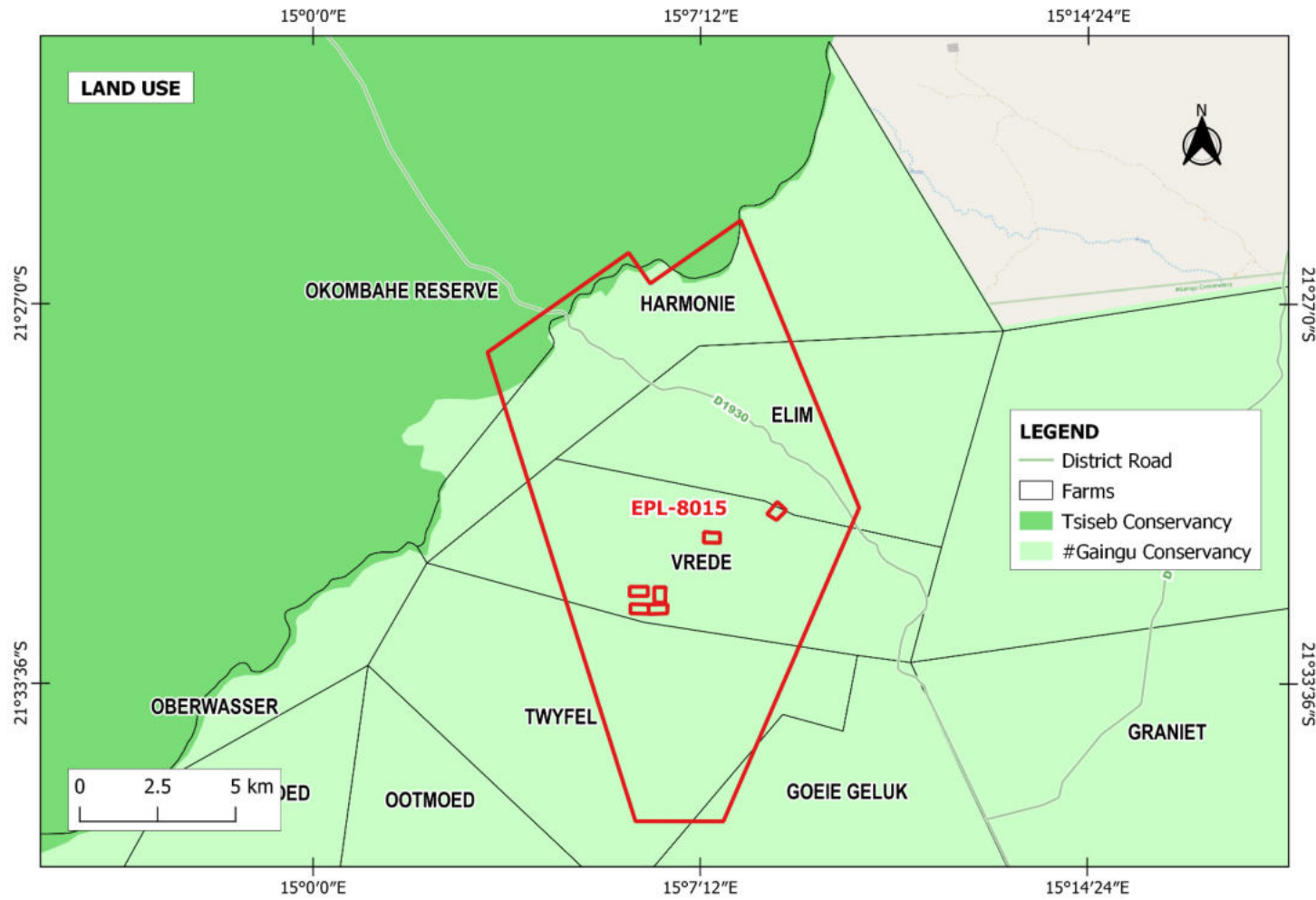


Figure 2 – Farms around EPL 8015

## 1.2 Terms of Reference, Scope of Works and Appointed Environmental Assessment Practitioner

Excel Dynamic Solutions (Pty) (EDS) has been appointed by the Proponent to undertake an Environmental Assessment (EA), and thereafter, apply for an ECC for prospecting and exploration works on the EPL 8015. During this reporting period, there were no formal Terms of Reference (ToR) provided to EDS by the Proponent. EDS, instead, relied on the requirements of the Environmental Management Act No. 7 of 2007 and its EIA Regulations (GN. No. 30 of 2012) to conduct the study.

The application for the ECC is compiled and submitted to the Ministry of Environment, Forestry and Tourism (MEFT) for project registration (**Appendix A**) as well as environmental authorization purposes, upon submission of this ESA Report and Environmental Management Plan (EMP) (**Appendix B**).

The EIA project is headed by Mr. Titus Shuuya, a qualified and experienced Environmental Impact Practitioner in arid environments – and supported by Mr. Nerson Tjelos, a qualified and experienced Geoscientist Environmental Assessment Practitioner, and further reviewed by Ms. Rose Mtuleni and their Curricula Vitae are attached as **Appendix C**.

## 1.3 The Need for the Proposed Project

Mining and quarrying activities contribute significantly to Namibia's economic sector and have triggered an increase in recent prospecting and exploration activities across the country. The mining industry is one of the largest contributors to the Namibian economic development which can significantly improve the living standards of the nation. Thus, the Proponent intends to conduct prospecting and exploration activities to delineate mineral deposits of the targeted commodities, as part of the resource development for mining purposes.

Prospecting and exploration activities in Namibia have attracted significant international investors with great potential to enhance and contribute to economic growth. It provides permanent and temporary employment opportunities, and government revenue that assist funding for socio-economic infrastructural development among other initiatives. As a result, the minerals industry yields foreign exchange which accounts for a significant contribution to a portion of the Gross Domestic Product (GDP). In addition, the industry is enabled to escalate the capacity-building workforce for small-to-medium enterprises for community benefits. These could entail

fostering several associated activities such as manufacturing of exploration results to semi or finished products and/or mining equipment, and provision of engineering and environmental services, which are currently being under-utilised. Furthermore, it is arguable that exploration of minerals can create opportunities for value addition and beneficiation, and that through corporate social responsibility mining companies can make a direct contribution to development and poverty reduction.

The mining sector forms a vital part of some of Namibia's development plans, such as Vision 2030, National Development Plans (e.g., NDP5), Harambee Prosperity Plans (HPPs) etc. Thus, mining is essential to the development goals of Namibia in contributing to meeting the ever-increasing global demand for minerals – especially raw materials for national prosperity. Therefore, successful prospecting and exploration of the EPL would enable the mining of targeted commodities, which could contribute towards achieving the goals of the sustainable natural resource development plans.

## **2 PROJECT DESCRIPTION: PROPOSED PROSPECTING AND EXPLORATION ACTIVITIES**

Prospecting and exploration of minerals are the first components of a potential mining project. They entail acquiring the necessary data set for further decision-making and investment options, and the duration is anticipated to last for about three years and beyond, depending on the availability of the exploration resources. The exploration process includes three phases, prospecting, exploration and the decommissioning.

### **2.1 Prospecting Phase**

This is the initial prospecting and exploration phase which involves reviewing existing reports and composite stratigraphic, lithological-geochemical maps of the targeted commodity and areas to identify prospective lithostratigraphic packages. In addition to the literature review, ground truthing (lithological, soil/rock, mapping and calcrete sampling) shall be conducted for verification. During this stage, there shall be no physical environmental disturbance required and/or minimal. This is an advanced exploration stage whereby the Proponent will be required to assess the proposed area for detailed geological mapping, and geophysical and geochemical surveys, supported where necessary by geophysical surveys, to define targets for test pitting, trenching, and drilling.

### **2.1.1 Desktop study: Geological mapping**

This activity will involve a detailed desktop review of geological area maps, ground observations and other relevant literature of the information obtained during previous geological studies of the area.

### **2.1.2 Geophysical surveys**

Geophysical surveys will include data collection of the substrate by air or ground, through sensors such as radar, magnetic and/or electromagnetic sensors, to detect and ascertain the targeted mineralization in the area. Ground geophysical surveys shall be conducted, where necessary, using vehicle-mounted sensors or handheld by the project team, while in the case of air surveys, the sensors are mounted to an aircraft, which navigates over the target area might be used.

### **2.1.3 Lithology geochemical surveys**

Rock, soil and calcrete samples shall be collected and taken for trace element analysis to be conducted by analytical chemistry laboratories, to determine if enough target commodities are present. Additionally, trenches or pits may be dug depending on the commodity adopting a manual or excavator to further investigate the mineral potential. These will consist of about  $\pm 20$  cm X 20 cm X 30 cm pits to collect at least 1 kg samples which can be sieved to obtain 50 g material for analysis. Alternatively, a battery-powered drill-puncher can be used that allows taking samples from calcreta from a depth of 0.5 m and/or other methods like ant hill sampling can be explored. Ideally, the survey shall be conducted over a network of 1000 m X 100 m to develop a geochemical prospecting method for the local condition. These will also enable the identification of large-scale and small-scale structures that influenced fluid flow and subsequent metal localization.

As necessary, and to ensure adequate risk mitigation, excavations will be rehabilitated immediately after obtaining the samples, or the sites will be secured until the trenches or pits are closed. The landowner and other relevant stakeholders will be engaged regularly to obtain authorization where necessary.

## **2.2 Exploration (Drilling, Sampling and Analysis) Phase**

The selection of the potential mineralization model and exploration targets will be based on the local geology, trenching, drilling, and assay results of the samples collected. The planned

exploration activities are aimed at delineating the mineral deposits and determining whether the deposits are economically feasible mining resources. It is noteworthy that no explosives will be used during the exploration phase.

### **2.2.1 Detailed Exploration Drilling**

Detailed exploration drilling technique shall be conducted if the findings from the desktop study, lithology geochemical, electromagnetic and geophysical surveys are positive and feasible. These will entail drilling holes and sample collection for further analysis to determine the depth and spatial extent of the potential mineralization. The Proponent intends to use both Reverse Circulation (RC) and diamond drilling to about 200 m depth. If required, some vegetation may be cleared or thinned to create dirt roads to allow access to the targeted locations or drilling sites, however, existing tracks will be used as far as reasonably practical.

RC drilling technique 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, during advanced stages of exploration if large amounts of sample material may be required for analysis and to perform processing trials. A typical drilling site will consist of a drill rig, drill core and geological samples store and a drill equipment parking and maintenance yard, including a fuel and lubricants storage facility with secondary containment.

### **2.2.2 Accessibility to Site**

The project area is accessible via the B2 national road, onto the D1930 from the south, or through the C36 or C35 roads onto the D1930 from Uis or D1931 crosscutting both Omaruru and Karibib districts in the Erongo Region (**Figure 1 & Figure 2**).

### **2.2.3 Material and Equipment**

The input resources required for the prospecting and exploration program in terms of vehicles and equipment include but are not limited to 4WD vehicles, a truck, water tanks, drill rigs and drilling machines, sampling equipment, ablution facilities, and a power generator. Equipment and vehicles will be stored at a designated area near the accommodation site, or a storage site established within the EPL.

#### 2.2.4 Services and Infrastructure

**Water:** Approximately 250 – 500 litres of water consumption per day will be required for the operational activities, including water for drinking, sanitation, cooking, dust control, drilling, as well as washing equipment. Water will be brought on-site from the nearest town, but if required or deemed necessary, or the Proponent finds good groundwater during the exploration activity, the borehole may be used as a water source, provided the permission of the landowner and the appropriate abstraction permits are obtained from the competent authority. The borehole shall be a property for the local community or landowner once the prospecting and exploration activities are completed and/or as per mutual agreement by both parties.

**Power supply:** Power required during the operation phase will be provided from the diesel generators, specifically for drilling activities. However, various machinery and equipment required for drilling will have their power supplies or generators attached. It is expected that about 200 litres of diesel per month will be required, especially during drilling activities.

**Fuel (diesel for generators and other equipment):** Diesel required for exploration equipment will be stored in a tank mounted on a mobile trailer under a secondary impermeable container, and drip trays will be readily available to ensure that accidental fuel spills are contained and cleaned up as soon as they have been detected/observed. Fuel may also be stored in jerry cans placed on plastic sheeting and/or in secondary containment to avoid unnecessary contamination of the ground.

#### 2.2.5 Waste Management

The site will be equipped with secured jackal-proof waste bins for each type of waste (i.e., domestic, hazardous, and recyclable). Depending on the amount generated, waste will be sorted and collected weekly or monthly and disposed of at the nearest certified landfill site. An agreement will need to be reached with different waste management facility operators/owners and authorization or permits will be obtained before utilizing these facilities, in the case of the production of any hazardous waste.

**Sanitation and human waste:** If required, a portable ablution facility will be used, and emptied regularly and the sewage will be disposed of according to the approved disposal or treatment methods of the waste products, especially during the detailed exploration programme.

**Hazardous waste:** Drip trays and spill control kits will be available on-site to ensure that oil/fuel spills and leaks from vehicles and equipment are captured immediately and contained correctly

before polluting the site. Any spillage, including minor spills, shall be cleaned up immediately. Soil contaminated with hydrocarbons shall be temporarily stored in an appropriate containment and further disposed to a permitted hazardous disposal facility and a disposal certificate shall be on record. The Proponent will ensure that all vehicles and equipment are well maintained and serviced regularly to prevent hydrocarbon leakage. Hazardous substances that are expected to be used on-site are listed in **Table 1**.

**Table 1 – Hazardous substances that are expected on site.**

<b>Substance</b>	<b>Purpose</b>	<b>Storage</b>
Diesel	Fuel for vehicles and generators	Sealed drums and containers, kept in PVC-lined storage facility or drip trays.
Petrol	Fuel for chainsaws, vehicles and generators	Sealed drums and containers, kept in PVC-lined storage facility or drip trays.
Oil, grease and lubricants	For vehicles, equipment and other machinery	Sealed containers are kept in lined PVC storage facilities or drip trays. Drip trays and absorbent material shall be installed as needed.

### **2.2.6 Health and Safety**

Adequate and appropriate Personal Protective Equipment (PPE) will be provided to all project personnel. A minimum of two (2) first aid kits, and at least one (1) First aider (with a valid First Aid certificate) shall be readily available on-site to attend to potential minor injuries, especially during the detailed exploration activity.

### **2.2.7 Safety and Security**

**Storage Site:** Temporary storage areas for exploration material, equipment, and machinery will be required at the campsite and/or exploration sites.

**Fire management:** A minimum of basic firefighting equipment, i.e., two fire extinguishers will be readily available in vehicles and at the designated working sites.

**Wildlife protection:** An appropriate communication with I&APs to establish common approaches which will protect and conserve wildlife within the conservancies e.g., reporting to the landowner before and after accessing the site.

### **2.2.8 Accommodation**

The prospecting and exploration team will be accommodated in the nearest settlements (Spitzkoppe or Okombahe) local campsites, lodges, or a campsite will be set up near the

exploration sites. If the accommodation camp is to be set up on a farm or village, necessary arrangements will be made with the landowner, and a written agreement shall be in place. Prospecting and exploration activities will be conducted during the day only (e.g., after and before sunset) and the exploration team will commute to the targeted site (s) from their place of accommodation.

### **2.3 Decommissioning and Rehabilitation Phase**

Once the exploration activities on the EPL come to an end, the Proponent shall ensure the site is fully rehabilitated as per the agreement with the landowners and other I&APs. However, the Proponent will ensure that the progressive rehabilitation principle is adopted when certain activities or sites are completed. Decommissioning and rehabilitation are primarily reinforced through a decommissioning and rehabilitation plan, which consists of safety, health, environmental, and contingency aspects. The economic situation, unconvincing exploration results or other unforeseen circumstances might force the Proponent to cease the exploration program before the predicted closure. However, shall the exploration program stop due to unforeseen circumstances, the Proponent shall inform all I&APs in advance.

## **3 PROJECT ALTERNATIVES**

Alternatives are defined as the “different means of meeting the general purpose and requirements of the activity” in the Environmental Management Act No.7 of 2007. This section will highlight the different ways in which the project can be undertaken and identify the alternative that will be the most practical, but least damaging to the environment is identified and considered economically feasible.

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?



### **3.1 Types of Alternatives Considered**

#### **3.1.1 The "No-go" Alternative**

This option means that no further activities are undertaken in the EPL area, and it will be reverted to the MME. Should this happen, the economic and social growth associated with the potential resource will not reach fruition, and the Namibian economy will fail to benefit from a potential mineral resource. However, this option would be that no exploration activities would take place and thus no negative impact on the environment and/or the residents would occur and the current land use for the proposed site will remain unchanged.

The key losses that may never be realized if the proposed project does not go ahead include:

- Loss of foreign direct investment and the proposed job opportunities for community members will not come to a realization;
- No realization of local businesses supports through the procurement of consumable (e.g., PPE, machinery spare parts) and non-consumable (e.g., boreholes/well drilling for human and wildlife use), social corporate responsibility to local tourism, supporting local small-to-medium miners, incentives, etc;
- Loss of potential income to the local and national government through land lease fees, license lease fees, various tax structures and state revenue;
- Improved geological understanding of the site area regarding the targeted commodities will not transpire;
- Socio-economic benefits such as skills acquisition or capacity building to local community members would be not realized;
- Considering the above losses, the "No-Go" alternative was not considered a viable option for this project.

#### **3.1.2 Exploration Location**

The proposed prospecting and exploration location is dependent on the local and regional geological formation, the geological economy, availability of essential services and infrastructures, and the exploration and mining history in the area. As such, finding an alternative location for the planned prospecting and exploration activities is not probable – because the target commodities are site-specific, and are primarily determined by the geology (e.g., host rocks) and the tectonic environment (e.g., ore-forming mechanism). In addition, the national mineral

resources' potential locations are mapped and categorized by MME in exclusive prospecting licenses, mining licenses and claims, mineral deposit retention licenses, reconnaissance licenses and exclusive reconnaissance licenses and available information on EPL 8015. The proponent is interested in dimension stones, base & rare metals, industrial minerals, and precious metals as indicated in Error! Reference source not found..

---

**Figure 3 – Location of EPL 8015 on the MME National Mining Cadastre.**

### **3.1.3 Exploration Methods**

Both invasive and non-invasive exploration activities as indicated in this report are expected to be conducted and in case of an economically viable discovery is made, the project will proceed to the mining phase upon approval of a mining EIA, license and other applicable legal requirements. ECC and issuance of a mining licence, if any other alternative viable exploration methods are found to achieve the purpose more effectively and/or efficiently without aggravating any environmental measures put in place, they can be implemented. Table 2 shows the exploration methods that will be employed during the exploration phase.

**Table 2 – Alternatives (Exploration Methods)**

<b>Invasive Exploration Method (Alternatives Considered)</b>	<b>Process</b>	<b>Advantages</b>
<p><b>Pitting and trenching</b></p>	<p>-Pits and trenches can be a quick, cheap way of obtaining lithological and structural information in areas of shallow cover.</p> <p>-Pitting is usually employed to test shallow, extensive, flat-lying bodies of mineralization such as a buried heavy mineral placer.</p> <p>-The main advantage of pitting over a pattern-drill programme on the same deposit is that pits can provide a very large volume sample. Large sample sizes are necessary to overcome problems of variable grade distribution, which are a characteristic feature of such deposits.</p> <p>-Trenches are usually employed to expose steep dipping bedrock buried below shallow overburden and are normally dug across the strike of the rocks or mineral zone being tested (Marjoribanks, 1997).</p>	<p>- Quick, cheap way of obtaining lithological and structural information in areas of shallow cover.</p> <p>-Pits can provide a very large volume sample. Large sample sizes are necessary to overcome problems of variable grade distribution, which are a characteristic feature of such deposits.</p> <p>-Trenches are an excellent adjunct to RC drilling programmes, where the structural data from trench mapping are needed to complement the lithological information obtained from the drill cuttings (Marjoribanks, 1997).</p>

Invasive Exploration Method (Alternatives Considered)	Process	Advantages
<p><b>Reverse Circulation (RC) Drilling</b></p>	<p>-Crushed rock is collected in the form of drill chips and powdered samples, brought to surface through the drilling rods by compressed air. This is in contrast to conventional drilling (Rotary Air Blow Drilling) that puts the air inside the rods and the cuttings outside. Here the air passes downwards through the annular space between the inner shaft and the outer tube.</p> <p>-Water is often used down the hole to cool the drill bit and reduce dust as well as assisting with the transportation of sample bits to the surface.</p> <p>-RC drilling is designed for drilling through and crushing hard rock.</p> <p>-RC drilling is fundamentally different from diamond drilling, both in terms of equipment and sampling. One major difference is that RC drilling creates small rock chips instead of solid core.</p> <p>The RC method:</p>	<p>-Compared to diamond drilling, RC requires less water. Therefore, RC drilling will put less pressure on water supply and use.</p> <p>The major differences between RC and diamond drilling are in the rate of penetration and cost per meter. RC drilling is much faster than diamond core drilling, and much less expensive.</p> <p>-Unlike diamond drilling, this process creates rock chips that can be analysed, rather than a solid, cylindrical piece of rock.</p> <p>-Some types of information, such as structural details, are not possible to obtain in the absence of solid rock. Despite this disadvantage, much valuable information can still be obtained from the rock chips.</p>

Invasive Exploration Method (Alternatives Considered)	Process	Advantages
	<ul style="list-style-type: none"> <li>-Allows full recovery of samples continuously</li> <li>-Quick installation</li> <li>-There is no contact between the walls and cuttings taken at the bottom.</li> <li>-The penetration rate is fast (Technidrill, 2020)</li> </ul>	<p>For example, the chips are much easier to examine under a microscope. Testing of fluorescence and effervescence are easily accomplished (Earth Science Australia, 2020).</p> <p>It is for these reasons that RC will be the most preferred method and is mainly used. However, RC drilling would be combined with Diamond drilling where necessary for more reliable data collection and analysis. Diamond drilling would be more applicable where deeper holes are required than is possible using RC drilling. In-fill drilling would also be applied to support an update to a higher classification of the Mineral Resources estimate.</p>
<p><b>Infill drilling</b></p>	<p>The progress of an exploration project mostly depends on the result of the primary boreholes. Therefore, primary exploration boreholes must intersect high-grade mineralization zones with considerable thickness. On the other hand, the infill boreholes are designed based on obtained results from the primary boreholes (Fatehi, <i>et al.</i>, 2017). Therefore, infill drilling is intended to support an update to a higher classification of the Mineral Resource estimate. The metallurgical test-work results will improve understanding of blending designs in the exploration schedules for the product offtake specifications (Canyon Resources, 2021).</p>	

Invasive Exploration Method (Alternatives Considered)	Process	Advantages
<p><b>Diamond drilling (Core)</b></p>	<p>-Diamond drilling uses a diamond bit, which rotates at the end of a drill rod (or pipe). The opening at the end of the diamond bit allows a solid column of rock to move up into the drill pipe and be recovered at the surface.</p> <p>-The diamond bit is rotated slowly with gentle pressure while being lubricated with water (“mud circulation”) to prevent overheating. As a result, this drilling method is known to use a huge amount of water compared to RC, thus may put pressure on water supply sources.</p> <p>- Drill cuttings obtained with RC drilling can be analysed directly to provide a limited amount of information, and their locations are less precise. Core samples, on the other hand, will identify actual veins of materials and give you their precise location (BG Drilling, 2016). Therefore, for accuracy’s sake, diamond drilling would provide better result. In other words, RC results are reliable but may not be accurate.</p> <p>- As diamond is one of the strongest materials in the world, it has no trouble drilling through most surfaces. Therefore, it</p>	

Invasive Exploration Method (Alternatives Considered)	Process	Advantages
	<p>works well across a wider range of ground types and conditions.</p> <p>-Time-consuming and more effort is required to obtain the drill core. -Low initial investment, but generally more expensive to meters drilled because of the limitation of the speed.</p>	

The final drilling technique would be determined by the mineralization type. However, based on the information presented in the Table above regarding the detailed exploration methods, it was found and pre-determined that Reverse Circulation (RC) drilling would be preferable as much as possible given its efficiency in terms of costs, operating speed and environmental friendliness (water demand), compared to Diamond drilling.

Although RC drilling is known to have its shortcomings, particularly the lack of solid drill recovery and inaccuracy, it is usually combined with Diamond drilling for the exploration of some minerals, if the borehole(s) needs to be deeper than what RC can achieve.

## 4 LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES

Prospecting and exploration activities have legal implications associated with certain applicable national legal standards and international best practices. A summary of applicable and relevant international policies and Namibian legislation, policies and guidelines for the proposed development is given in this section (**Table 3 & Table 4**). This summary serves to inform the Proponent, I&APs, MEFT and MME of the compliance requirements and expectations, as laid out in terms of these legal instruments, to be fulfilled to establish the proposed prospecting and exploration activities.

### 4.1 The Environmental Management Act No. 7 of 2007

This EIA was conducted following the Environmental Management Act No. 7 of 2007 and its EIA Regulations (GG No. 4878 GN No. 30).

The Act has stipulated requirements to complete the required documentation to obtain an ECC as authorization to undertake certain listed activities.

The listed activities that trigger the proposed project are as follows:

#### MINING AND QUARRYING ACTIVITIES

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

**3.2** *Other forms of mining or extraction of natural resources whether regulated by law or not.*

**3.3** *Resource extraction, manipulation, conservation, and related activities.*

#### FORESTRY ACTIVITIES

**4.** *The clearance of forest areas, deforestation, afforestation, timber harvesting or any other related activity that requires authorization in terms of the Forest Act No. 12 of 2001 or any other law.*

- If required to access target sites, minimal vegetation clearing or thinning shall be conducted, but this will only be for dirt roads.

The EIA Regulations GN 28-30 (GG 4878) detail requirements for public consultation within a given environmental assessment process (GN 30 S21). The EIA regulations also outline the required details of a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).

Other legal obligations that are relevant to the proposed activities of EPL and related activities are presented in **Table 3 & Table 4**.



**Table 3 – Applicable local, national and international standards, policies and guidelines**

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
<p>The Constitution of the Republic of Namibia, 1990 as amended</p>	<p>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:</p> <p>“...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...”</p> <p>Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the:</p> <p>“...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.”</p>	<p>By implementing the environmental management plan, the establishment will be conformant to the constitution in terms of environmental management and sustainability.</p> <p>Ecological sustainability and maintaining its integrity will be the main priority for the proposed development.</p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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, even though the proposed activity is not within these areas.
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.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
<p>Minerals (Prospecting and Mining) Act (No. 33 of 1992)</p>	<p>Section 52 requires mineral license holders to enter into a written agreement with affected landowners before exercising rights conferred upon the license holder.</p> <p>Section 52(1) mineral licence holder may not exercise his/her rights in any town or village, on or in a proclaimed road, land utilised for cultivation, within 100 m of any water resource (borehole, dam, spring, drinking trough etc.) and boreholes, or no operations in municipal areas, etc.), which should individually be checked to ensure compliance.</p> <p>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.</p> <p>Section 68 stipulates that an application for an exclusive prospecting license (EPL) 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.</p>	<p>The Proponent should enter into a written agreement with landowners before carrying out prospecting and exploration on their land.</p> <p>The Proponent may not carry out exploration activities within the areas limited by Section 52 (1) of this Act.</p> <p>The Proponent should assess the impact on the receiving environment.</p> <p>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 mineral exploration activities.</p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	Section 91 requires that rehabilitation measures should be included in an application for a mineral license.	
Mine Health & Safety Regulations, 10 <sup>th</sup> 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 concerning 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 if required.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
<p>The Regional Councils Act (No. 22 of 1992)</p>	<p>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.</p>	<p>The relevant Regional Councils are I&amp;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.</p>
<p>Water Act 54 of 1956</p>	<p>The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force:</p> <p>Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duty of care to prevent pollution (S3 (k)).</p> <p>Provides for control and protection of groundwater (S66 (1), (d (ii)).</p> <p>Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).</p>	<p>The protection (both quality and quantity/abstraction) of water resources should be a priority.</p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Water Resources Management Act (No 11 of 2013)	<p>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:</p> <p>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).</p>	
National Heritage Act No. 27 of 2004	<p>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.</p>	<p>The Proponent should ensure compliance with these Act's requirements. The necessary management measures and related permitting requirements must be taken. This was done by consulting with the National Heritage Council of Namibia.</p>
The National Monuments Act (No. 28 of 1969)	<p>The Act enables the proclamation of national monuments and protects archaeological sites.</p>	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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)	<p>The Act provides for the management and use of forests and forest products.</p> <p>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.”</p>	The Proponent will apply for the relevant permit under this Act if it becomes necessary.
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.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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 provided in EMP should be implemented on-site.
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 this project
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. Should the Proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits will be required.	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.

## 4.2 International Policies, Principles, Standards, Treaties and Conventions

The international policies, principles, standards, treaties, and conventions applicable to the project are listed in **Table 4**.

**Table 4 – International Policies, Principles, Standards, Treaties and Convention applicable to the project**

Statute	Provisions	Project Implications
Equator Principles	<p>A financial industry benchmark for determining, assessing, and managing environmental and social risk in projects (August 2013). The Equator Principles have been developed in conjunction with the International Finance Corporation (IFC), to establish an International Standard with which companies must comply with to apply for approved funding by Equator Principles Financial Institutions (EPFIs). The Principles apply to all new project financings globally across all sectors.</p> <p><b>Principle 1:</b> Review and Categorization</p> <p><b>Principle 2:</b> Environmental and Social Assessment</p>	<p>These principles are an attempt to: ‘...encourage the development of socially responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based upliftment and empowering interactions.’</p>

Statute	Provisions	Project Implications
	<p><b>Principle 3:</b> Applicable Environmental and Social Standards</p> <p><b>Principle 4:</b> Environmental and Social Management System and Equator Principles Action Plan</p> <p><b>Principle 5:</b> Stakeholder Engagement</p> <p><b>Principle 6:</b> Grievance Mechanism</p> <p><b>Principle 7:</b> Independent Review</p> <p><b>Principle 8:</b> Covenants</p> <p><b>Principle 9:</b> Independent Monitoring and Reporting</p> <p><b>Principle 10:</b> Reporting and Transparency</p>	
<p>The International Finance Corporation (IFC) Performance Standards</p>	<p>The International Finance Corporation’s (IFC) Sustainability Framework articulates the Corporation’s strategic commitment to sustainable development and is an integral part of IFC’s approach to risk management. The Sustainability Framework comprises IFC’s Policy and Performance Standards on Environmental and Social Sustainability, and</p>	<p>The Performance Standards are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the Client</p>

Statute	Provisions	Project Implications
	<p>IFC's Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability.</p> <p>As of 28 October 2018, there are ten (10) Performance Standards (Performance Standards on Environmental and Social Sustainability) that the IFC requires a project Proponents to meet throughout the life of an investment. These standard requirements are briefly described below.</p> <p><b>Performance Standard 1:</b> Assessment and Management of Environmental and Social Risks and Impacts</p> <p><b>Performance Standard 2:</b> Labour and Working Conditions</p> <p><b>Performance Standard 3:</b> Resource Efficient and Pollution Prevention and Management</p> <p><b>Performance Standard 4:</b> Community Health and Safety</p>	<p>(Borrower) in relation to project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives.</p>

Statute	Provisions	Project Implications
	<p><b>Performance Standard 5:</b> Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement</p> <p><b>Performance Standard 6:</b> Biodiversity Conservation and Sustainable Management of Living Natural Resources</p> <p><b>Performance Standard 7:</b> Indigenous Peoples/Sub-Saharan African Historically Undeserved Traditional Local Communities</p> <p><b>Performance Standard 8:</b> Cultural Heritage</p> <p><b>Performance Standard 9:</b> Financial Intermediaries (FIs)</p> <p><b>Performance Standard 10:</b> Stakeholder Engagement and Information</p> <p>A full description of the IFC Standards can be obtained from</p> <p><a href="http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1">http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1</a></p>	

Statute	Provisions	Project Implications
<p>The United Nations Convention to Combat Desertification (UNCCD) 1992</p>	<p>Addresses land degradation in arid regions with the purpose to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change.</p> <p>The convention objective is to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and environmental sustainability United Nation Convention</p>	<p>The project activities should not be such that they contribute to desertification.</p>
<p>Convention on Biological Diversity 1992</p>	<p>Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use.</p> <p>Promote the protection of ecosystems, natural habitats, and the maintenance of viable populations of species in natural surroundings</p>	<p>Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised or mitigated.</p>

Statute	Provisions	Project Implications
Stockholm Declaration on the Human Environment, Stockholm (1972)	It recognizes the need for: “a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.	Protection of natural resources and prevention of any form of pollution.

### Relevant international Treaties and Protocols ratified by the Namibian Government

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

## 5 ENVIRONMENTAL BASELINE

The baseline information for the receiving environment is critical in predicting and evaluating the potential environmental impacts of the proposed activity. Understanding the pre-project conditions of the environment will aid in laying down background information on the status quo and future projections of environmental conditions after proposed works on the EPL. In addition, it helps to identify the sensitive environmental features that may need to be protected through the recommendations and effective implementation of mitigation measures. The conditions of the natural, cultural, social and economic systems and their interrelations within the receiving environment are detailed in this chapter. These include but are not limited to climatic conditions, geology and soils, topography, geohydrology and water resources, fauna, flora, avifauna, socio-economic, community-based natural resources management and local tourism industry, archaeology and heritage sites within the vicinity of EPL 8015.

### 5.1 Biophysical Environment

#### 5.1.1 Climate Conditions

Climatic conditions within the project area are relatively variable and unpredictable for most of the years. Within the vicinity of the proposed project, there is variation in the precipitation (97 mm) between the driest and wettest months. Whereas, the variation in temperatures throughout the year is 5.6 °C.

The month with the highest relative humidity is March (53 %) when compared to the lowest relative humidity in September (22 %). Rainfall mainly occurs from October to April with the wettest month of March (9 days), while the driest months are May to September without rainfall as indicated in the climate condition around the project area (**Figure 4**). The dominant wind in the area is the South-west and Eastern winds which have contributed to weathering of deformed rocks in the area.



	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	24.1 °C (75.4) °F	24.5 °C (76) °F	24.8 °C (76.6) °F	24.5 °C (76.1) °F	22.8 °C (73) °F	19.6 °C (67.3) °F	19.4 °C (67) °F	20.9 °C (69.7) °F	23.4 °C (74.1) °F	25 °C (76.9) °F	25 °C (77.1) °F	24.6 °C (76.3) °F
Min. Temperature °C (°F)	17.5 °C (63.5) °F	18.3 °C (64.9) °F	19.3 °C (66.7) °F	18.5 °C (65.2) °F	15.8 °C (60.5) °F	12.6 °C (54.7) °F	12.4 °C (54.3) °F	12.8 °C (55) °F	14.6 °C (58.3) °F	16.6 °C (61.8) °F	17.2 °C (63) °F	17.3 °C (63.1) °F
Max. Temperature °C (°F)	32.3 °C (90.1) °F	31.9 °C (89.5) °F	31.2 °C (88.2) °F	31.1 °C (87.9) °F	29.9 °C (85.8) °F	27.2 °C (81) °F	27.1 °C (80.8) °F	28.6 °C (85.2) °F	32.8 °C (91.1) °F	34.4 °C (93.9) °F	33.9 °C (93.1) °F	33.2 °C (91.8) °F
Precipitation / Rainfall mm (in)	70 (2)	97 (3)	93 (3)	31 (1)	1 (0)	0 (0)	0 (0)	0 (0)	2 (0)	11 (0)	25 (0)	43 (1)
Humidity(%)	46%	50%	53%	43%	29%	28%	26%	23%	22%	25%	30%	37%
Rainy days (d)	7	8	9	4	0	0	0	0	0	2	3	5
avg. Sun hours (hours)	11.0	10.3	10.0	10.2	10.0	9.8	9.9	10.3	10.8	11.3	11.6	11.7

Figure 4 – Climate condition around the project area (source: climate-data, 2022)

### 5.1.2 Topography and Elevation

The EPL lies within the Central Western Plains of the central Namibia Desert, in a fragile desert with slopes to the Central Plateau. There is a significant variation in the elevation from the EPL towards the northern, thus the topography as well. The elevation of the EPL lies between 700 m to 950 m as indicated in **Figure 5**.

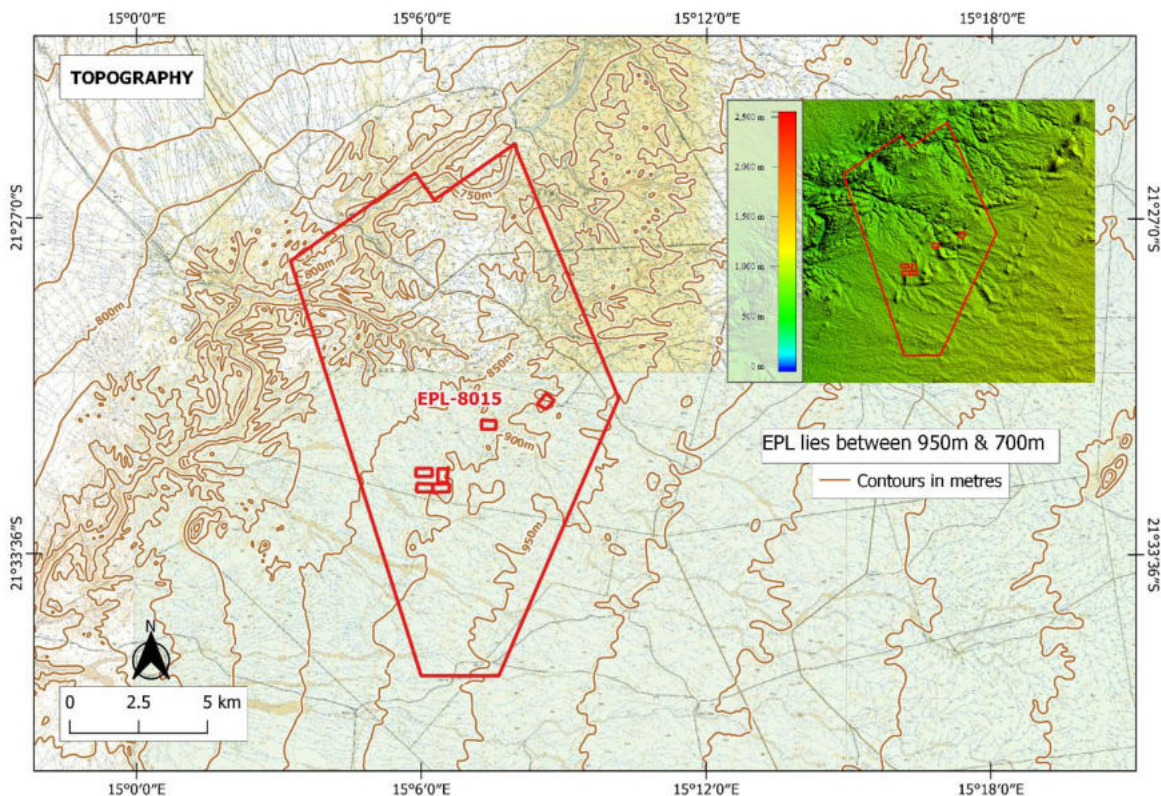


Figure 5 – Topography map for the project area.

### 5.1.3 Geology and Lithology

The EPL is located within the Western Central Zone of the Pan-African Damara Belt in central Namibia which is part of the Neoproterozoic Pan- African Damara Orogen, which formed due to the collision of the Congo and Kalahari cratons. Due to the differences in lithology, structure, and metamorphism, the belt has been subdivided into several distinct tectonostratigraphic zones, including the Northern, Central, Southern, and Southern Marginal Zones. The Central Zone where the EPL occurs contains biotite granites, dolerite, mica schist, marble (calcitic and impure), leucogranite (foliated and non-foliated), sand, gravel, scree and calcrete as indicated in **Figure 6**. In addition, the Central Zone is also known to host base metal deposits and occurrences, industrial mineral deposits and abundant dimension stones (marble and granite) resources.

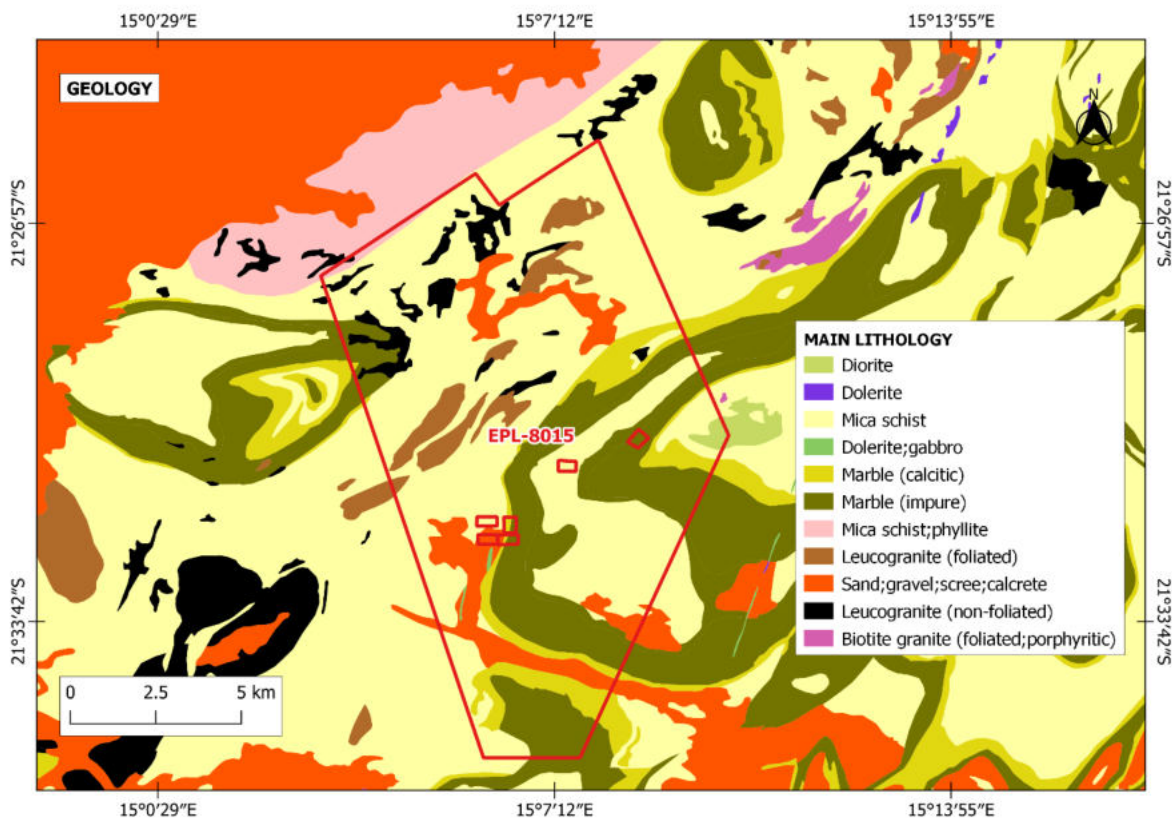


Figure 6 – The geology of the EPL 8015.

### 5.1.4 Soil

The EPL is dominated by the Petric calcinosis which is a very shallow, yellowish-red gravelly clay Ap-horizon, directly overlying more or less indurated, very heterogeneous, strongly calcareous clay (**Figure 7**). However, protruding scattered rocky outcrops have been observed on the

northern part of the EPL. If required, during the prospecting phase of the project, minimal soil sampling will be conducted to a depth between 10 cm – 20 cm, and this shall be rehabilitated immediately. Therefore, the Soil Conservation Act No. 76 of 1969 shall be taken into account to ensure that soils have been conserved in an environmentally sustainable manner that does not promote soil erosions which may result in gullies.

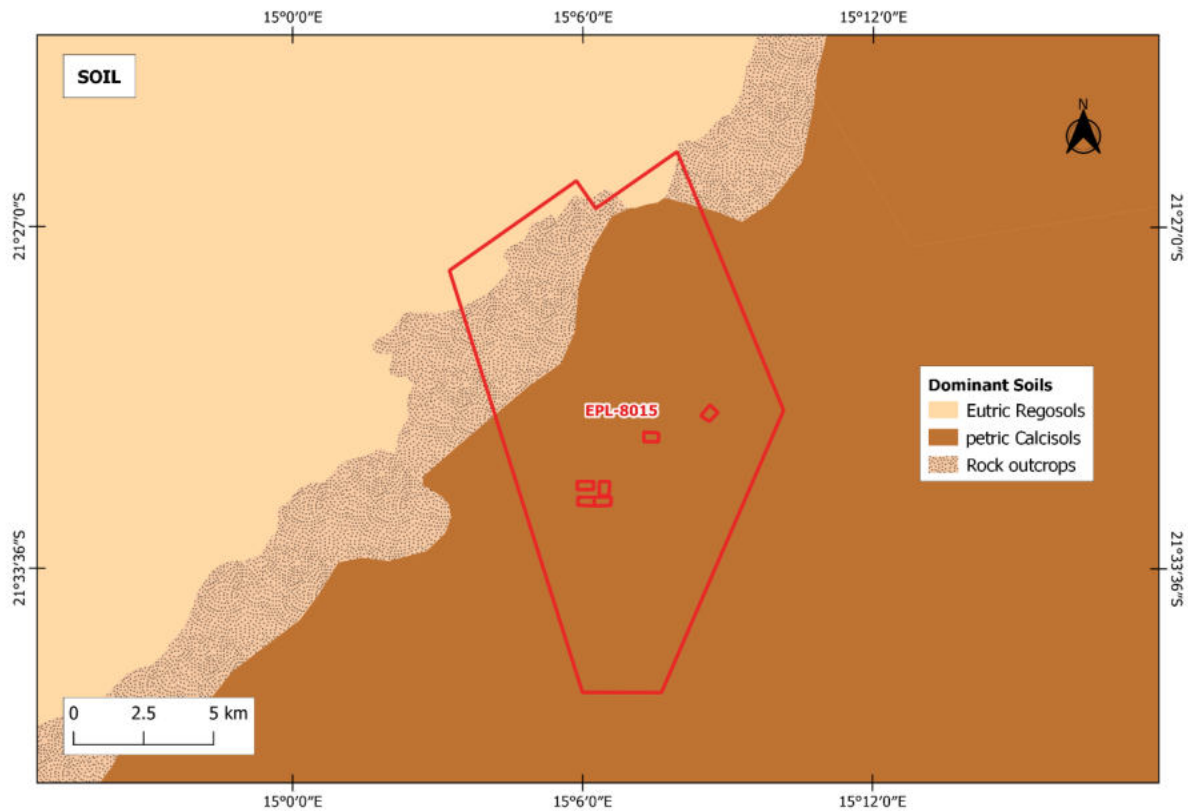


Figure 7 – The soils of the EPL 8015.

### 5.1.5 Hydrology, Groundwater, Vulnerability to pollution and Water Resources

The entire EPL is located in an area covered by rock bodies with little groundwater potential as indicated in **Figure 8**. However, a porous aquifer is located on the northern part of the EPL towards the Omaruru River, which is highly vulnerable in terms of groundwater pollution. Therefore, the regulations stipulated in the Water Act 54 of 1956 concerning water abstraction should be adhered to, whereby over-abstraction will not be recommended during the exploration phase. The Proponent shall ensure compliance with the Water Resources Management Act 11 of 2013 and the associated legal framework at all times.

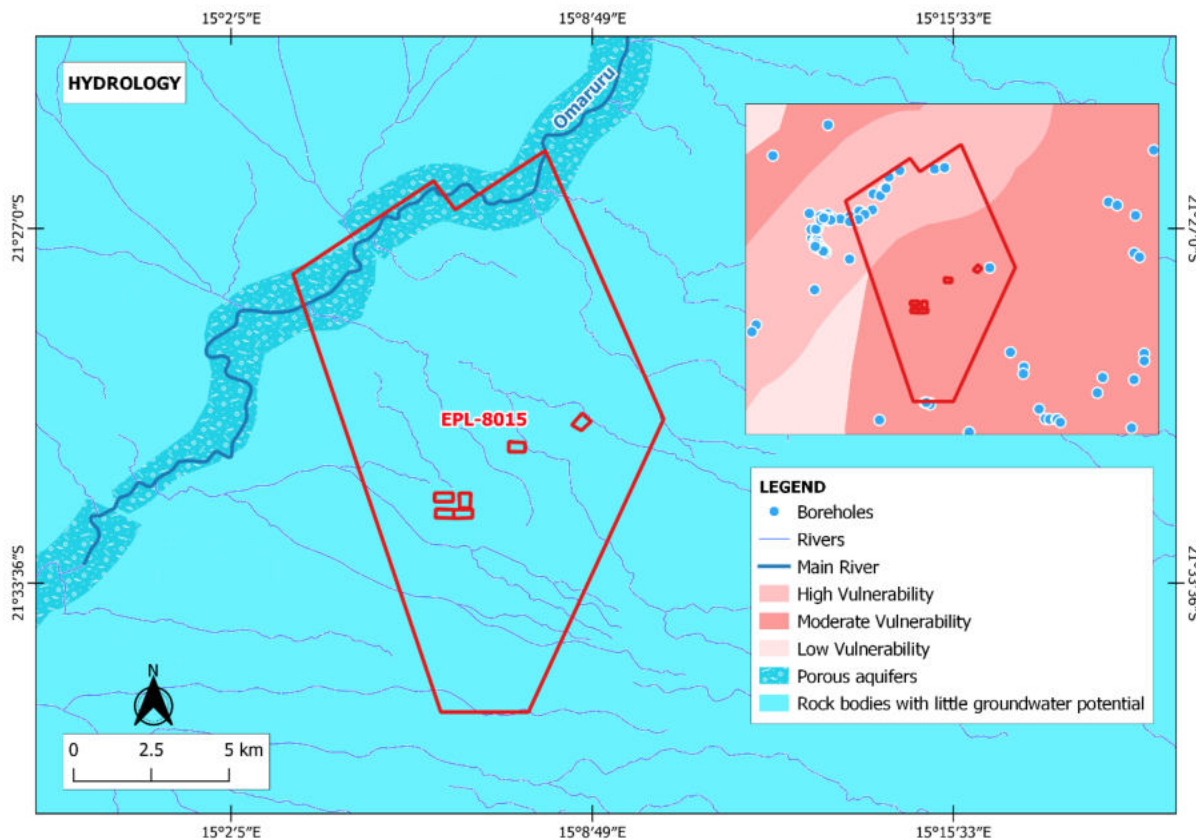


Figure 8 – Hydrology of the EPL 8015.

## 5.2 Biodiversity

### 5.2.1 Flora

The vegetation around the EPL is characterized by the Central-Western Escarpment and Inselbergs mixed with some Dwarf and Acacia Shrubland (**Figure 9**), within the ecoregion with low-to-medium vegetation cover. The vegetation varies from thornbush shrubland, and dwarf shrub savannah to grassland ecosystems towards the west of the EPL.

Tree and shrub species such as *Acacia mellifera*, *Acacia erioloba*, *Acacia reficiens*, *Grewia flavescens*, *Grewia flava* and *Euphorbia damarana*, are common in the area (**Figure 10**). On the granite hills or koppie or certain isolated areas unique vegetation species including quiver trees were observed, which are probably associated with changing climate or shifts in climatic

conditions, poor nutrient levels and unpredictable rainfall. As such, as per sections 22-24, 27 and 33 of regulations 8 and 12 of the Forestry Act, 2001, a forestry permit is required for the removal of any important plant species that may be found on the EPL.

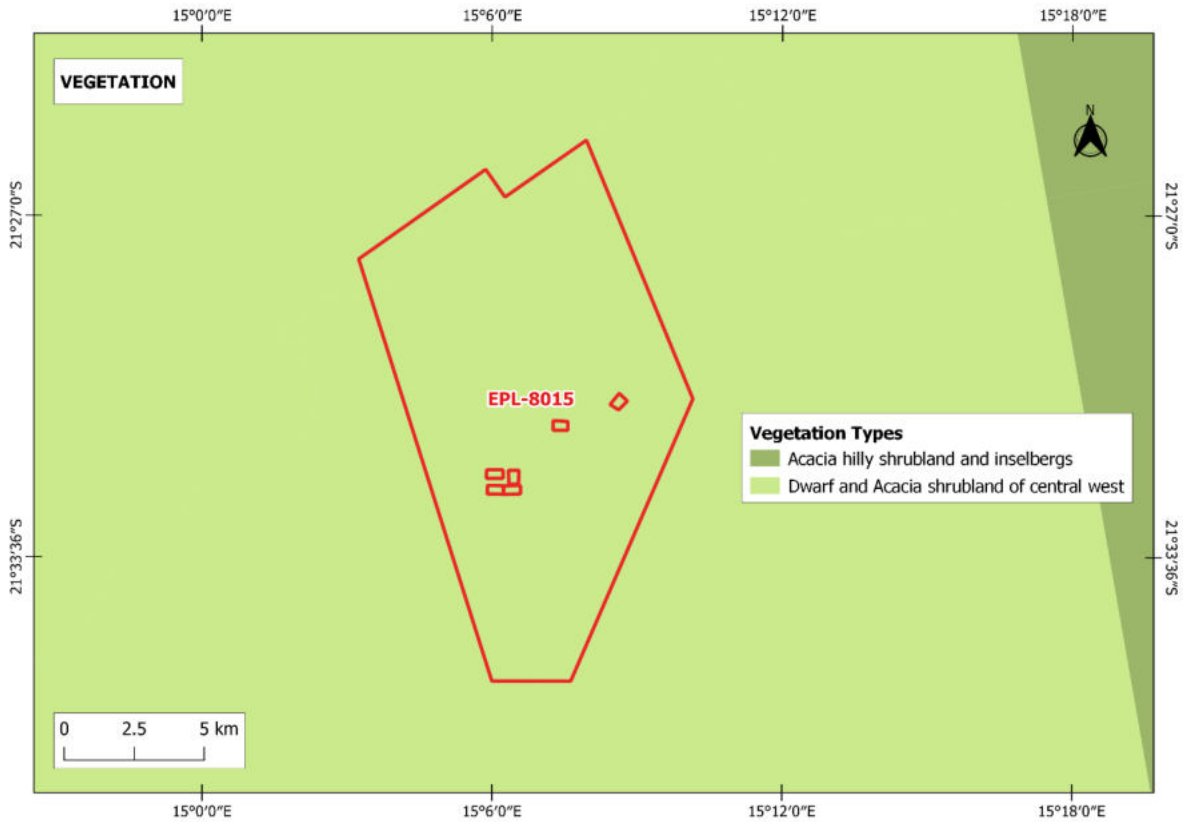


Figure 9 – Vegetation types around the EPL.



**Figure 10 – Quiver tree observed on farm Twyfel.**

### **5.2.2 Fauna**

The EPL is located in an area with mainly subsistence livestock farming, however, there are also a few wildlife roaming freely within the vicinity. With regards to livestock, cattle, donkeys, goats and sheep are common in most farms in the area. The EPL falls within the farmland and #Gaingu

conservancy. Some of the wildlife species believed to occur around the EPL include kudu, oryx, impalas, springboks, ostrich, leopards, cheetahs and small mammals. Therefore, the Proponent, including the subcontractors, shall adhere to the mitigation measures provided in the EMP, landowners' contractual agreement and other legal frameworks for the protection of wildlife.

### **5.2.3 Avifauna**

A total of 676 bird species has been recorded across Namibia due to the variety of habitats such as desert, savanna, grassland, riverine forests, wetlands, coastal shores and ocean. Avifauna diversity within the region of the EPL can be regarded as medium-to-low with species between 111 – 140, but it varies based on suitable habitats such as inselbergs and grassland. Common birds that are expected to occur within the EPL are the Kori bustard, Guinea fowls, Namaqua sandgrouse, Laughing dove, African red-eyed bulbul, and Red-billed hornbill.

## **5.3 Archaeology and Heritage**

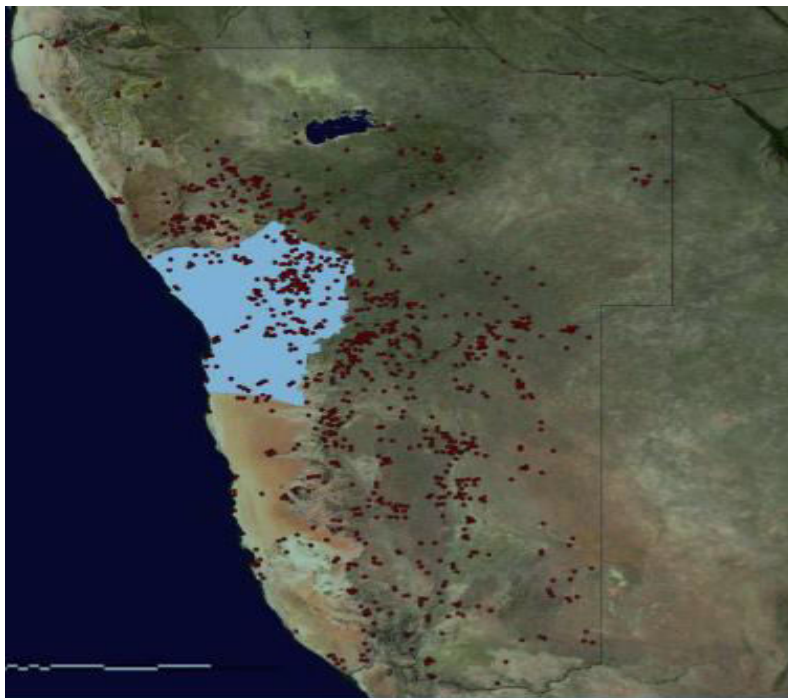
### **5.3.1 Regional Level**

The Erongo Region hosts many declared heritage sites and other archaeological records, it is based on this background that the EPL area is likely to have important archaeological sites. There is evidence of human occupation within the vicinity of the EPL during the last million years, and almost continuously during the last 10,000 years. Evidence from the mid-Pleistocene includes crude stone implements while bifacial stone hand-axes and more complex tools were used during the Later Pleistocene. After the introduction of livestock, ceramics, metallurgy and domestic crops some 2,000 years ago indigenous people made a seminomadic existence in the northwest of Namibia, but environmental conditions deteriorated over time and the region became increasingly marginal. Significant site concentrations are found mainly in the near vicinity of drainage lines, reliable springs and seepages – although some water sources that were important under periodic moist conditions during the Pleistocene are now completely dry, while other sources that have evidence only of more recent occupation may not have existed during the Pleistocene.

There are family and community graves observed at some of the farms, and some archaeological artifacts might be discovered during prospecting and exploration activities. Therefore, it is recommended that the National Heritage Act, No. 27 of 2004 should be strictly enforced, and concurrently the recommendation given in the statutory documents for this project should be

strictly adhered to (**Appendix B**). If a heritage site or items of heritage significance are found in the course of the prospecting and exploration activities, then a chance finds procedure should be followed as per the National Heritage Act, No. 27 of 2004.

Some of the closest declared heritage site, within the region includes, but are not limited to the Cultural Landscape (e.g., Brandberg Area - 012/1951). Furthermore, there about 150 sites are recorded in the Erongo Region alone, and the Region is also endowed with Iron Age artefacts and contemporary heritage resources. According to the National Heritage Council of Namibia (Declared Sites/Lists of National Heritage), Erongo Region has about 37 heritage sites that are listed as national monuments<sup>1</sup>. The distribution of archaeological sites in Namibia is indicated in **Figure 11**, and those that occur in Erongo are highlighted with the light blue polygon.



**Figure 11 – Distribution of the archaeological sites in Namibia with a focus on the Erongo Region (light blue polygon). Source: (Kinahan, J. 2012).**

## 5.4 Surrounding Land Uses

The EPL 8015 is crosscutting within some communal and resettlement farmland with a small within #Gaingu conservancy (**Figure 12**). The Proponent is required to secure a signed written agreement from the affected landowners to gain access to the areas of interest for prospecting

<sup>1</sup> [https://second.wiki/wiki/liste\\_des\\_nationales\\_erbes\\_namibias#Erongo](https://second.wiki/wiki/liste_des_nationales_erbes_namibias#Erongo)



and exploration investigations as per Section 52 of the Minerals (Prospecting and Mining) Act No. 33 of 1992 and Section 2.2.3 of the Minerals Policy of Namibia as stated below.

*Section 52 (1) The holder of mineral licence shall not exercise any rights conferred upon such holder by this Act or under any terms and conditions of such mineral licence –*

*(a) In, on or under any and until such time as such holder has entered into an agreement in writing with the owner of such land containing terms and conditions relating to the payment of compensation, or the owner of such land has in writing waked any right to such compensation and has submitted a copy of such agreement or waiver to the Commissioner.*

*Section 2.2.3 of the Draft Minerals Policy of Namibia states that the Licence Holder and/or mineral explorers currently must negotiate a contract with landowners to gain access for or mining purposes.*

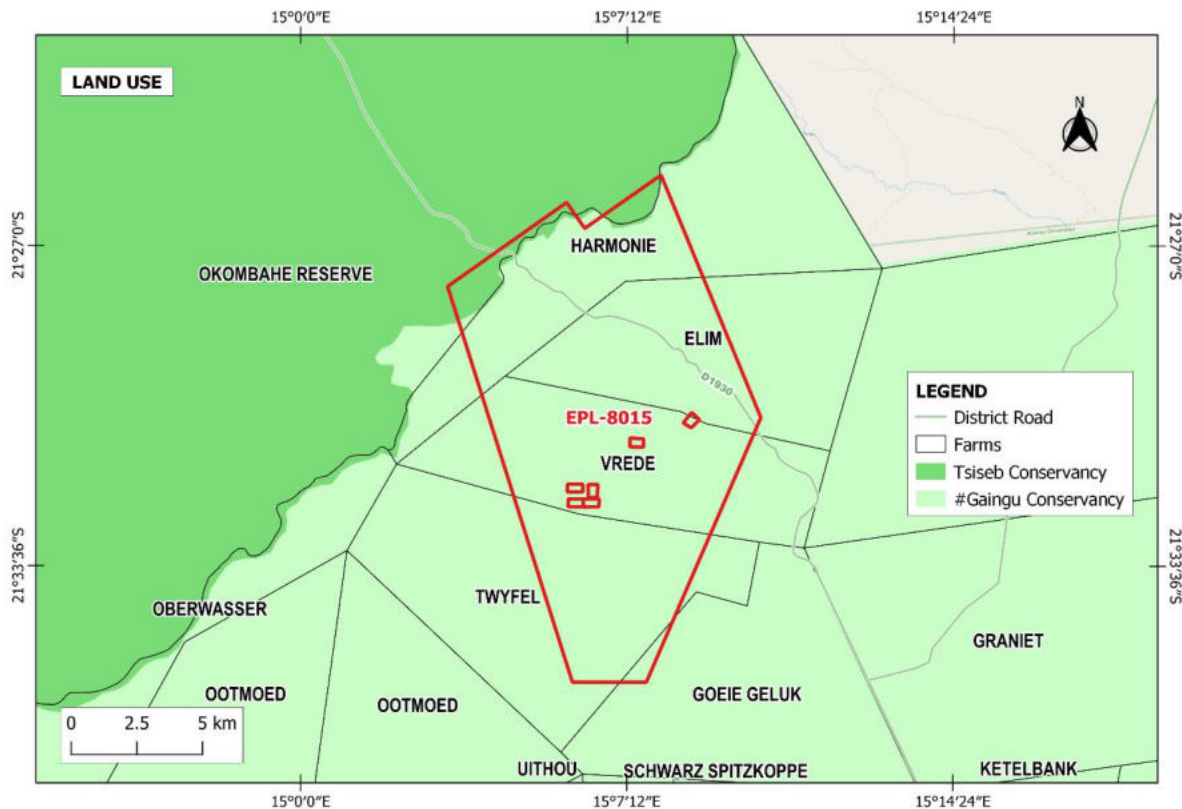


Figure 12 – Land use around the vicinity of EPL 8015.

## 5.5 Socio-Economic conditions

The Erongo Region covers an area of 63,586 km<sup>2</sup>, which comprises 7.7 per cent of Namibia's total area of about 823,680 km<sup>2</sup>. In 2011 the population of the Erongo Region was 150 809 (approximately 70 986 females and 79 823 males), representing a population of 2.4 persons per square kilometre. The region has a great deal of variation that characterises the economy that supports the livelihoods of Namibia. These can be reviled through economic measures and resources such as the gross domestic product (GDP), Gini coefficient, imports and exports. The main aspects that contribute to the economic measures in the region are mineral resources, tourism, commercial farming, employment, and marine fisheries.

The EPL is located in the Karibib constituency which has a population of 13,320 in 2011, an increase from 12,084 in 2001, however, there is an alarming increase in the unemployment rate, especially among the youth. It is known to be riddled with poverty and alcohol abuse and the unemployment rate, as of 2012, was around 60%. Unlike other Namibian towns, it has not seen substantial development since independence in 1990, as such the proposed project could contribute to a better living standard for the local community if it materialised.

Mining can be considered the backbone of income generation, employment creation, contributing to government revenue and a source of foreign direct investments for most developing countries like Namibia. The sector plays a vital role in the economic development of the country, for example, it has both social and economic benefits. It should, however, not be considered from one perspective of being a source of employment and income generation as it also can present social environmental and economic challenges such as water contamination loss of habitats for plants and animals, exposure of humans and wildlife to toxic materials, noise pollution etc. These impacts may take the form of environmental degradation as a result of mining activity, may manifest in conflict over land use and the rights of indigenous groups, or may play out in the longer term in relation to life after mine closure and its economic, social and environmental legacies.

Namibia is viewed as an attractive mining and exploration investment destination in Africa ranking 6<sup>th</sup> position out of 15 in the year 2016 (Nambinga & Mubita, 2021), and this can be proven by the recent increase in prospecting and exploration activities.

## 6 PUBLIC CONSULTATION PROCESS

Public consultation forms an important component of an Environmental Assessment (EA) process. It provides potential Interested and Affected Parties (I&APs) with an opportunity to comment on and raise any issues relevant to the project for consideration as part of the assessment process, thus assisting the Environmental Assessment Practitioner (EAP) in identifying all potential impacts and what extent further investigations are necessary. Public consultation can also aid in the process of identifying possible mitigation measures. Public consultation for this project has been done under the EMA and its EIA Regulations.

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

Relevant and applicable national, regional, and local authorities, local leaders, 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. Newspaper advertisements of the proposed exploration activities were placed in two widely read national newspapers in the region (The Namibian Newspaper and New Era Newspaper). The project advertisement/announcement contended for two consecutive weeks inviting members of the public to register as I&APs and submit their comments. The summary of pre-identified and registered I&APs is listed in **Table 5**.

**Table 5 – Summary of Interested and Affected Parties (I&APs)**

<b>National (Ministries and State-Owned Enterprises)</b>
Ministry of Environment, Forestry and Tourism
Ministry of Mines and Energy
<b>Regional, Local and Traditional Authorities</b>
Erongo Regional Council
Karibib Constituency Office
Karibib Town Council
Daures Traditional Authority
<b>General Public</b>
Conservancy, Non-Governmental Organization, Landowners /I&APs members of the public

## 6.2 Communication with I&APs

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 about the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing brief information about the proposed facility was compiled and distributed to all identified and registered Interested and Affected Parties (I&APs). Furthermore, the draft ESA and EMP will be circulated to the registered I&APs to provide their further inputs and comments before submission to the authorities.
- Project Environmental Assessment notices were published in The Namibian (22nd June 2023 & 29th June 2023) and New Era (23rd June 2023 & 30th June 2023) newspapers, briefly explaining the activity and its locality and inviting members of the public to register as I&APs (**Appendix D**).
- A consultation meeting was scheduled and held with the I&APs, including the I&APs on the 13 of July 2023 at Spitzkoppe Community Development Centre, Spitzkoppe in the Daures district at 10h00 (**Figure 13**). Further evidence of the I&APs consultation meeting is attached in **Appendix D**.



Figure 13 – Public meeting consultation at Spitzkoppe Community Development Centre

### 6.3 Feedback from Interested and Affected Parties

A couple of comments, concerns and issues were raised by I&APs from the consultation meeting, and these were recorded and incorporated in the ESA and draft EMP report. The summary of these key comments, concerns or issues and their responses are presented in **Table 6**.

**Table 6 – Summary of key comments, concerns or issues received and responses during the consultation.**

Comments/Concerns/Issues	Responses
<p><b>I&amp;AP01:</b> There are small miners in the area, how will the Proponent affect the small miners?</p> <p><b>I&amp;AP02:</b> Further clarify that the small miners are not registered due to a lack of resources.</p> <p><b>I&amp;AP03:</b> We are struggling with registering our Claims including the financial resources since 2020.</p>	<p><b>EAP:</b> Explained that it is illegal to extract mineral resources without a valid license or approval from the competent authority, however, it is also understandable and noted that the local community do not have enough resources to register their Mining Claims or EPLs. Perhaps, the local community should approach organizations or institutions that could assist them to be registered as small miners and ensure full compliance – for example, these could also be dealt with through the traditional authority to channel support from the government, non-government organizations, development partners and financial institutions to assist small miners with pegging their Claims. Ideally, the Proponent and landowners shall have a mutual agreement, including issues on how to deal with small miners and/or settling land disputes etc.</p>
<p><b>I&amp;AP02:</b> Was the Proponent here for a site visit? Did they mark the boundary, because there might be graves?</p>	<p><b>EAP:</b> Explained that apart from the public consultation meeting, there will be a site visit which is part of the HIA and EIA ground truthing. Further requested for any area known with significant heritage materials to be recorded and inspected during the site visit, such areas shall be</p>

Comments/Concerns/Issues	Responses
<p>Further expressed that, it appears that farmers do not have rights for their farms. What happens to the farmers if the Proponent find gold, uranium etc.? What about the grazing land, if exploration happens?</p>	<p>marked as no-go areas for exploration activities. In addition, the EMP shall contain mitigation measures as per the National Heritage Act, for example, the Chance Find Procedures.</p> <p>Briefly explained that the Namibian Government have a legal framework that deals with the protection or management of both landowners and natural resources, including minerals, for example, the Mineral Resources Act that states the requirement of the written land agreement between the Proponent and landowner. Possible disturbance of the grazing land has been identified as one of the impacts of the proposed project, and mitigation measures are provided in the EMP. Further explained the exploration and prospecting phase 1 and 2, which are required to identify the location of the targeted commodities for further detailed explorations.</p>
<p><b>I&amp;AP03:</b> Requested that the Proponent should make an appointment to meet with the local community before officially starting with the exploration activities. Further stressed that there are issues with youth unemployment in the area, and they should be considered first if there is any opportunity.</p>	<p><b>EAP:</b> Noted, appropriate communication channels shall be established between the directly affected farmers, traditional authority and the Proponent. Employment opportunity has been addressed in the EMP, and priority to be considered for the local community, especially for unskilled workers.</p>
<p><b>I&amp;AP01:</b> Expressed concerns about the impact of exploration activities, for example, leaving large holes that can pose potential risks to the livestock.</p> <p><b>I&amp;AP02:</b> Stated that they prefer the traditional consent letter issued by their local headman, they want their local headman to be recognized.</p>	<p><b>EAP:</b> Noted. Mitigation measures for rehabilitation shall be stated in the EMP, including progressive rehabilitation – and any non-compliance shall be recorded during the audit. Further, explained that the EMP is a legal document and the Proponent shall be compliant with all the conditions as set out in the EMP and other applicable legal documents.</p>

## **7 IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES**

### **7.1 Impact Identification**

Proposed developments/activities are usually associated with different potential positive and/or negative impacts. For an environmental assessment, the focus is placed mainly on the negative impacts. This is conducted to ensure that these impacts are addressed by providing adequate mitigation measures such that an impact's significance is brought under control while maximizing the positive impacts of the project activities. The potential positive and negative impacts that have been identified from the prospecting activities are listed as follows:

#### **Positive Impacts:**

- Socio-economic development through employment creation and skills transfer/capacity building;
- Open other investment opportunities and infrastructure-related development benefits;
- Produce a trained workforce and small businesses that can service communities and may initiate related businesses;
- Improved skills and knowledge on the subsurface, thus contributing to geoscience research;
- Boosting the local economic growth and regional economic development;
- Increased support for local businesses through the procurement of consumable (e.g., PPE, machinery spare parts) and non-consumable (e.g., boreholes/well drilling for human and wildlife use);
- Support and improve local economy through social corporate responsibility including local small-to-medium miners;
- Local income generation through a land lease agreement, hiring of local machines and equipment (e.g., bulldozer, grader, excavator etc) or other services provided.

#### **Negative Impacts:**

- Disturbance to the grazing land;
- Destruction of habitats and ecological processes;
- Physical land/soil disturbance;

- Impact on local biodiversity (fauna and flora) and habitat disturbance and potential illegal wildlife hunting and livestock theft in the area;
- Potential impact on water resources, particularly due to over-abstraction and pollution,
- Air quality issue: potential dust generated from the project,
- Potential occupational health and safety risks,
- Vehicular traffic safety and impact on services infrastructure such as local roads,
- Vibrations and noise associated with drilling activities may be a nuisance to the surrounding community and wildlife,
- Environmental pollution (solid waste, hydrocarbon spills and wastewater),
- Archaeological and heritage resources impact,
- Potential social nuisance and conflicts (theft, damage to properties, etc).

## 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 following 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**, **Table 8**, **Table 9** and **Table 10**, respectively.

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 were applied in this impact assessment:

### 7.2.1 Extent (spatial scale)

Extent is an indication of the physical and spatial scale of the impact. **Table 7** shows rating of impact in terms of extent of spatial scale.

**Table 7 – Extent or spatial impact rating**

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
Impact is localized 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

### 7.2.2 Duration

Duration refers to the timeframe over which the impact is expected to occur, measured in relation to the lifetime of the project. **Table 8** shows the rating of impact in terms of duration.

**Table 8 – Duration impact rating**

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
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

### 7.2.3 Intensity, Magnitude / severity

Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. The magnitude of alteration can either be positive or negative. These ratings

were also taken into consideration during the assessment of severity. **Table 9** shows the rating of impact in terms of intensity, magnitude, or severity.

**Table 9 – Intensity, magnitude or severity impact rating**

Type of criteria	Negative				
	H- (10)	M/H- (8)	M- (6)	M/L- (4)	L- (2)
<b>Qualitative</b>	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.

**7.2.4 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. **Table 10** shows impact rating in terms of probability of occurrence.

**Table 10 – Probability of occurrence impact rating**

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.

**7.2.5 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 section, for this assessment, the significance of the impact without prescribed mitigation actions is measured.

Once the above factors (**Table 7, Table 8, Table 9** and **Table 10**) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

$$\text{SIGNIFICANCE POINTS (SP)} = (\text{MAGNITUDE} + \text{DURATION} + \text{SCALE}) \times \text{PROBABILITY}$$

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 11**).

**Table 11 – Significance rating scale**

<i>Significance</i>	<i>Environmental Significance Points</i>	<i>Colour Code</i>
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	1 to 30	L
Neutral	0	N
Low (negative)	-1 to -30	L
Medium (negative)	-30 to -60	M
High (negative)	<-60	H

**Positive (+)** – Beneficial impact

**Negative (-)** – Deleterious/ adverse Impact

**Neutral** – Impacts are neither beneficial nor adverse

For an impact with a significance rating of high (-ve), mitigation measures are recommended to reduce the impact to a medium (-ve) or low (-ve) 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 exploration phases is done for pre-mitigation and post-mitigation.

The risk/impact assessment is driven by three factors:

- Source: The cause or source of the contamination.
- Pathway: The route taken by the source to reach a given receptor
- Receptor: A person, animal, plant, eco-system, property, or a controlled water source. If contamination is to cause harm or impact, it must reach a receptor.

A pollutant linkage occurs when a source, pathway and receptor exist together. Mitigation measures aim firstly, avoid risk and if the risk cannot be avoided, mitigation measures to minimize the impact are recommended. Once mitigation measures have been applied, the identified risk would reduce to lower significance (Booth, 2011).

This assessment focuses on the three project phases namely, the prospecting, exploration, and decommissioning. The potential negative impacts stemming from the proposed activities of the EPL are described, assessed and mitigation measures provided thereof. Further mitigation measures in the form of management action plans are provided in the Draft Environmental Management Plan.

### **7.3 Assessment of Potential Negative (Adverse) Impacts**

The significant negative impacts potentially associated with the proposed prospecting and exploration of dimension stones, base & rare metals, industrial minerals, and precious metals are assessed, including comments and concerns raised during the public consultation process.

#### **7.3.1 Destruction of habitats and ecological processes**

The EPL is overlying resettlement farms that practice livestock farming with minor wildlife freely roaming. Invasive exploration activities such as site clearing, trenching, and drilling can potentially lead to the destruction of habitats and ecological processes. This will potentially interfere with the habitats and ecological processes for livestock and wildlife, and since the community greatly depend on these types of land use practices for subsistence and commercial purposes.

The effect of exploration work on the land, if practised over a wider spatial extent and longer period, if not mitigated, may hinder animal husbandry and wildlife movement in the area and its surrounding. The project area might experience loss of its pastoral system and wildlife might

migrate over time. Losing grazing pastures for livestock and wildlife minimizes the number of animals and overall activity in the area and leads to the loss of livelihoods. Under the status, the impact can be of a medium significance rating. However, once the implementation of appropriate mitigation measures, the rating will be reduced to a lower significance. The impact is assessed in **Table 12**.

**Table 12 – Assessment of the impacts of exploration on habitats and ecological processes**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -3	M: -3	M/L: -4	M/H: 4	M: -40
Post mitigation	L/M: -2	L/M: -2	L/M: -4	L/M: 2	L: -16

### **Mitigations and recommendations to lower the possibility of destruction of habitats and ecological processes**

- Any unnecessary destruction of habitats or interference with ecological processes, due to prospecting and exploration activities should be avoided.
- Vegetation found on the site, but not in the targeted exploration areas should not be removed but left to preserve biodiversity and grazing land.
- Workers should refrain from driving off-road and creating unnecessary tracks that may contribute to the disturbance of habitats and ecological processes.
- Environmental awareness of the importance of the preservation of unique habitats and ecological processes should be provided to the workers.
- Sensitive habitats (e.g., inselberg with rock paintings) and ecological processes should be identified and declared as a no-go area for prospecting and exploration activities.

### **7.3.2 Land Degradation and Loss of Biodiversity**

**Fauna:** The trenching, pitting and drilling activities conducted for detailed exploration would result in land degradation, leading to habitat loss for a diversity of flora and fauna ranging from microorganisms to large animals and vegetation. Endemic, vulnerable, threatened and rare species are most severely affected since even the slightest disruption in their habitat can result in extinction or put them at high risk of being wiped out.

The presence and movement of the exploration workforce and operation of project equipment and heavy vehicles would disturb both livestock and wildlife present within the vicinity. Not only the disturbance due to human and vehicle movements but also potentially illegal hunting and

livestock theft. This could lead to the loss or number reduction of specific faunal species which also impacts tourism and livestock farming.

Poor or inappropriate rehabilitation and or unfenced boreholes, trenches and pits used for exploration, if they are no longer in use could have an impact on livestock and wildlife, by falling in them causing injuries and potential mortalities.

**Flora:** Direct impacts on flora and vegetation communities will mainly occur through clearing or thinning for the exploration access roads and associated infrastructure. The dust emissions from drilling may interfere with the photosynthesis process once the depositional dust accumulates on the plant's leaves or further penetrate the leaves and limit the photosystem process. Some vegetation may undergo stress which could be deleterious, depending on the species. However, due to the abundance of the plants and site-specific areas of exploration on the EPL, the impact will be localized and manageable.

Under the status, the impact can be of a medium significance rating, and after the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating (**Table 13**).

**Table 13 – Assessment of the impacts of exploration on land degradation and biodiversity**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -3	M: -3	M: -6	M/H: 4	M: -48
Post mitigation	L/M: -2	L/M: -2	L/M: -4	L/M: 2	L: -16

#### **Mitigations and recommendations to minimize the loss of biodiversity.**

- The Proponent should avoid unnecessary removal of vegetation, to promote a balance between biodiversity and ecological processes.
- Vegetation found on the site, but not in the targeted exploration site areas should not be removed but left to preserve biodiversity on the site.
- Shrubs or trees found along trenching, drilling, or targeted areas should not be unnecessarily removed or damaged.
- Movement of vehicles and machinery should be restricted to existing roads and tracks to prevent unnecessary damage to the vegetation.
- No onsite vegetation should be cut or used for firewood related to the project's operations and fire is only permitted at the designated areas that shall be determined and agreed upon with the Project manager and landowner.

- Design access roads around the well-established plants as practically as possible.
- Vegetation clearing or thinning should be avoided or be kept to a minimum, and for clearing or thinning, appropriate permits should be obtained from the Directorate of Forestry.
- Formulate and implement suitable and appropriate operational management guidelines for the areas where vegetation was removed.
- Strictly, no employee should be permitted to disturb, remove, kill, relocate or steal livestock or wildlife, including small soil and rock outcrops species.
- Stakeholder engagement should be implemented throughout the exploration program, especially with the surrounding landowners and other relevant stakeholders.
- A written agreement to access the property for the landowner should be in place before work commences in their area.
- All complaints, including verbal ones, should be recorded in the complainant register and resolved within a reasonable time frame.
- All the project personnel should attend the site HSE induction before they start working, and they should have their identification card.
- Develop a policy that limits independent movements of all workers into the veld that could create suspicion of poaching or theft. Strictly prevent poaching, harvesting and making fire, including the collection of firewood, or possession of any such natural materials.

### 7.3.3 Generation of Dust (Air Quality)

Dust generation during exploration activities (e.g., vehicular movement from unpaved roads, drilling operation, drill rig preparation) may result in an unfavorable airborne emission. Dust emissions can pollute the ambient air quality in the surrounding and also affect the atmosphere through carbon emissions which contributes to climate change, especially if there is chemical emission. Negative effects of dust on personnel working at the drilling site are likely to occur if dust suppression techniques are not employed or PPEs are not issued or used as required. The medium significance of this impact can be reduced to a low significance rating by properly implementing mitigation measures (**Table 14**).

**Table 14 – Assessment of the impacts of exploration on air quality.**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
<b>Pre mitigation</b>	M: -3	M: -3	M/L: -4	M/H: 4	<b>M: -40</b>
<b>Post mitigation</b>	L - 1	L - 1	L - 2	L - 1	<b>L - 4</b>

### **Mitigations and recommendations to minimize dust.**

- If require, minimal dust suppression techniques should be employed at the source.
- Avoid activities that create excessive dust on extremely windy days.
- Personnel are required to wear PPE if excessive dust is created for prolonged working periods when operating in the dust zones.
- Employees should be made aware of the negative effects of dust inhalation through induction or on-site toolbox talks.
- Exploration vehicles should not drive at a speed of more than 40 km/h to avoid dust generation around the area.
- Exploration vehicles should avoid driving along the routes closer to the homestead, as practically as possible.
- A reasonable amount of water should be used on gravel roads, using regular water sprays on gravel routes and near exploration sites to suppress the dust that may be emanating from certain exploration areas on the EPL, in cases of excessive generation of dust.

#### **7.3.4 Water Resources Use**

Water resources are impacted by project developments/activities in two ways, through pollution or over-abstraction. The abstraction of more water than can be replenished from low groundwater potential areas would negatively affect the local community.

The impact of the project activities on the resources would be dependent on the water volumes required by each project activity. Exploration activities use a lot of water if not well managed, mainly drilling. However, this depends on the type of drilling methods employed (diamond drilling is more water-consuming compared to drilling methods such as reverse circulation for instance) and the type of mineral being explored.

About 250 – 500 litres of water per day shall be required for drilling purposes such as cooling and washing drilling equipment, drinking and other domestic purposes. Since their water availability is critical within the proposed project, the Proponent planned to source water from the nearest town by using a water cart, with an alternative to drilling a borehole once the permission of the landowner is granted. The exploration period is limited, therefore, the impact will only last for the duration of the exploration activities and ceases after completion.

Without the implementation of any mitigation measures, the impact can be rated as medium and even after mitigation measures and effective implementation of the recommended measures, the impact significance would be remained medium, but localized and of a short duration (**Table 15**)



**Table 15 – Assessment of the project impact on water resource use and availability**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M – 44
Post mitigation	L/M - 2	L/M - 3	L - 3	L/M - 4	M – 32

### Mitigations and recommendations to manage water use

- Water should be used efficiently, and recycling and re-using of water on certain site activities should be encouraged, where necessary and possible. For example, water used to cool off exploration equipment should be captured and used for the cleaning of project equipment or re-used, if possible.
- The Proponent should consider carting water for drilling from elsewhere if the existing boreholes are not sustainable. A written agreement of water supply should be made between the farmer/landowner and the Proponent and all required permits should be obtained and conditions as set out on the abstraction permit should be adhered to.
- Water storage tanks should be inspected daily to ensure that there is no leakage, resulting in wasted water on site.
- Water conservation awareness and saving measures training should be provided to all the project workers in both phases so that they understand the importance of conserving water and therefore be held accountable.

### 7.3.5 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 from project vehicles, machinery, and equipment as well as potential wastewater and effluent from exploration-related activities.

The pollutants can infiltrate into the ground and pollute the fractured or faulted aquifers and reach further groundwater systems. 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 and can be managed with ease.

Pre-mitigation measure implementation, the impact significance is medium to moderate and upon implementation, the significance will be reduced to low (**Table 16**).

**Table 16 – Assessment of the project impact on soil and water resources pollution**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	M - 6	M - 3	M - 39
Post mitigation	L - 1	L - 1	L - 2	L/M - 2	L - 8

**Mitigations and recommendations to manage soil and water pollution**

- Spill control preventive measures should be in place on-site to manage soil contamination, thus preventing and or minimizing the contamination from reaching water resources bodies. Some of the soil control preventive measures that can be implemented include:
  - Identification of oil storage and use locations on site and allocate drip trays and spill kit tools on the sites.
  - Maintain equipment and fuel storage tanks to ensure that they are in good condition thus preventing leaks and spills.
  - The oil storage and use locations should be visually inspected for container or tank condition and spills and they should be stored in secondary containment.
  - All spillage, including minor spills, should be cleaned up immediately and disposed of at a permitted hazardous facility.
- All project employees should be sensitized about the impacts of soil pollution and advised to follow appropriate fuel delivery and handling procedures.
- The Proponent should develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible.
- Project machines and equipment should be equipped with drip trays to contain possible oil spills and they should be inspected daily for any spills or leaks.
- Drip trays must be readily available on this trailer and monitored to ensure that accidental fuel spills along the tank trailer path/route around the exploration sites are cleaned on time (soon after the spill has happened).
- Cleaning and servicing of equipment contaminated hydrocarbons should take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources.
- Portable toilets should be treated using an environmentally friendly chemical and periodically emptied before reaching capacity and transported to a wastewater treatment facility.

### 7.3.6 Waste Generation

During the prospecting and exploration phase, domestic and general waste is produced on-site. If the generated waste is not disposed of responsibly, land pollution, including littering may occur on the EPL or around the site. The EPL is in an area of moderate sensitivity to pollution. 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. To prevent these issues, biodegradable and non-biodegradable wastes must be stored in separate containers and collected regularly for disposal at a recognized landfill/dump site. Any hazardous waste that may have an impact on the animals, vegetation, water resources and the general environment should be handled cautiously. Plastics should be avoided or be limited onsite because they can be easily blown away and animals are likely to eat them. Without any mitigation measures, the general impact of waste generation has a medium significance. The impact will reduce to low significance, upon implementing the mitigation measures. The assessment of this impact is given in **Table 17**.

**Table 17 – Assessment of waste generation impact**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M – 6	M - 3	M – 30
Post mitigation	L - 1	L - 1	L – 2	L/M - 2	L - 8

#### Mitigations and recommendations to waste management

- Workers should be sensitized to disposing of waste responsibly.
- No littering shall be permitted on site.
- Employ a system to avoid or ban plastic bags being taken to the site unless they will be used for sampling purposes.
- The Proponent should ensure that there is no waste left on the sites every day.
- All domestic and general operational waste produced daily should be contained onsite until such a time it will be transported to designated waste sites.
- No waste may be buried or burned on site or anywhere else.
- The exploration site should be equipped with separate waste bins for hazardous and general/domestic waste.
- Sewage waste should be stored in the portable chemical toilets supplied on-site and regularly disposed of at the nearest treatment facility.

- Oil spills should be taken care of by removing and treating soils affected by the spill.
- A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.
- Potential contaminants such as hydrocarbons and wastewater should be contained on-site and disposed of at a permitted disposal site.
- An emergency plan should be available for major/minor spills at the site during operation activities with consideration of air, groundwater, soil, and surface water and during the transportation of the product(s) to the sites.
- A good housekeeping practice should be implemented and maintained across the site.

### 7.3.7 Occupational Health and Safety Risks

All project personnel involved in the exploration activities may be exposed to health and safety risks. These are in terms of accidental injury, owing to either minor (e.g., superficial physical injury) or major (e.g., involving heavy machinery or vehicles) accidents. The site safety of all personnel will be the Proponent's responsibility and should be adhered to as per the requirements of the Labour Act No. 11 of 2007 and the Public Health Act No. 36 of 1919. The heavy vehicle, equipment and fuel storage area should be properly secured to prevent any harm or injury to the Proponent's personnel or local domestic animals.

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 equipment and vehicles too.

If machinery and equipment are not properly stored and packed, the safety risk may not only be a concern for project workers but also the local community.

The impact is probable and has a medium significance rating. However, with adequate mitigation measures, the impact rating will be reduced to a low (**Table 18**).

**Table 18 – Assessment of the impacts of exploration on health and safety**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 4	M – 48
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

### Mitigations and recommendations to minimize health and safety issues

- The Labour Act's Health and Safety Regulations should be complied with.

- The Proponent should commit to and make provision for annual full medical check-ups for all the workers at the site to monitor the impact of project-related activities on workers.
- As part of their induction, the project workers should be provided with awareness training on the risks of mishandling equipment and materials on-site as well as health and safety risk associated with their respective jobs.
- No employees should be allowed to operate any machine or vehicle without a valid competency certificate.
- When working on-site, employees should be properly equipped with adequate PPE such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc.
- Heavy vehicles, equipment and fuel storage sites should be properly secured, and appropriate warning signage placed where visible.
- Drilled boreholes that will no longer be in use or to be used later after being drilled should be properly marked for visibility and capped/closed off.
- Ensure that after completion of exploration holes and trenches, drill cuttings are rehabilitated as per the landowner agreement and the holes filled and levelled, and trenches backfilled respectively.
- An emergency preparedness plan should be compiled, and all personnel appropriately trained.
- Workers should not be allowed to consume any intoxicants before and during working hours nor allowed on site when under the influence of alcohol as this may lead to mishandling of equipment which results in injuries and other health and safety risks.
- The site areas that are considered temporary risks should be equipped with cautionary signs, including firefighting equipment.

### **7.3.8 Vehicular Traffic Use and Safety**

The EPL is accessible via the national and district roads, which are the main transportation routes for all vehicular movement and provide access to the EPL and connect the project area to other towns. Therefore, the traffic volume is likely to increase on these district roads during prospecting and exploration as the project would need delivery of supplies and services on site. These services and supplies will include but are not limited to water, waste removal, procurement of exploration machinery, equipment, and others.

Depending on the project needs, trucks, and medium and small vehicles will be frequent move in the area to and from exploration sites. This would potentially increase slow-moving heavy

vehicular traffic along these roads. The impact would not only be felt by the district road users but also by other national road users. This would add additional pressure on the roads.

However, only in weeks or months, the exploration-related heavy trucks will be transporting materials and equipment from and to the site during exploration. Therefore, the risk is anticipated to be short-term, not frequent, and therefore of medium significance. Pre-mitigation, the impact can be rated medium and with the implementation of mitigation measures, the significance will be low as assessed in **Table 19** below.

**Table 19 – Assessment of the impacts of exploration on-road use (vehicular traffic)**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M/H - 4	L/M - 4	M/H - 4	M - 44
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

#### **Mitigations and recommendations to minimize the impact on road safety and vehicular traffic issues.**

- The transportation of exploration materials, equipment and machinery should be limited or well-managed to reduce pressure on local roads.
- The heavy truck loads should comply with the maximum allowed speed limit for respective vehicles while transporting materials and equipment/machinery on the public and access roads (40km/h).
- The potential carting of water to the site (from other sources of water supply) should be done minimally, in containers that can supply and store water for relatively long periods, to reduce the number of water-carting trucks on the road daily.
- Drivers of all project phases' vehicles should have valid and appropriate driving licenses and adhere to the road safety rules.
- Drivers should drive slowly (40km/hour or less) and be on the lookout for livestock and wildlife as well as residents/travellers.
- The Proponent should ensure that the site access roads are well maintained and equipped with temporary road signs conditions to cater for vehicles travelling to and from the site throughout the project's life cycle.
- Project vehicles should be in a road-worthy condition and serviced regularly to avoid accidents owing to mechanical faults.

- Vehicle drivers should only make use of designated site access roads provided and as agreed.
- Vehicle drivers should not be allowed to operate vehicles while under the influence of alcohol.
- No heavy trucks or project-related vehicles should be parked outside the project site boundary or demarcated areas for such purposes.
- To control traffic movement on site, deliveries from and to the site should be carefully scheduled. This should optimally be during weekdays and between the hours of 8 am and 5 pm.
- The site access road(s) should be upgraded to an unacceptable standard to be able to accommodate project-related vehicles as well as farm vehicles.

### 7.3.9 Noise and vibrations

Prospecting and exploration work, especially drilling may be a nuisance to surrounding communities and animals due to the noise produced by the activity. Excessive noise and vibrations can be a health risk to workers on site and could cause animals to migrate elsewhere or interfere with their grazing patterns. 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, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium significance. If the mitigation measures are implemented significance reduces to a low rating (**Table 20**).

**Table 20 – Assessment of the impacts of noise and vibrations from exploration**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	L/M - 2	L/M - 2	M - 6	M/H - 3	M – 30
Post mitigation	L - 1	L/M - 2	L - 2	L/M -2	L - 10

#### Mitigations and recommendations to minimize noise.

- Noise from operations vehicles and equipment on the sites should be at acceptable levels.
- The exploration operational times should be set such that no exploration activity is carried out during the night or very early in the morning.
- Exploration hours should be restricted to between 08h00 and 17h00, or at the hours agreed upon by the Proponent and landowners, to avoid noise and vibrations generated by exploration equipment and the movement of vehicles before or after hours.

- When operating the drilling machinery onsite, workers should be equipped with PPE such as earplugs to reduce exposure to excessive noise.

### 7.3.10 Disturbance to Archaeological and Heritage Resources

The proposed prospecting and exploration area contain some archaeological significance. Therefore, some sections within the boundaries of the proposed project site area are highly sensitive and archaeologically significant in terms of heritage resources that characterize the need for a detailed investigation of any other existing archaeological cultural materials in the areas. These should be protected either by fencing them off or demarcation for preservation purposes or excluded from any development i.e., no exploration activities should be conducted near these recorded areas through the establishment of 500 m to 1.5 km buffer zones.

Therefore, this impact can be rated as medium significance if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be reduced to a lower rating. The impact is assessed in **Table 21**.

**Table 21 – Assessment of the impacts of exploration on archaeological & heritage resources**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 4	M – 48
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

### Mitigations and recommendations to minimize the impact on archaeological and heritage resources.

- A “No-Go-Area” should be put in place where there is evidence of archaeological sites, historical items or cultural objects. It can be a demarcation by fencing off or avoiding the site completely by not working closely or near the known site.
- On-site personnel (s) and contractor crews must be sensitized to exercise and recognize “chance finds heritage” in the course of their work.
- During the prospecting and exploration works, it is important to take note and recognize any significant material being unearthed and make the correct judgment on which actions should be taken, work should stop, and Chance Find Procedures should be followed.
- The footprint impact of the proposed prospecting and exploration activities should be kept to a minimum to limit the possibility. The Proponent should keep a buffer of 500 meters on all the archaeological/cultural sites observed within the project site and broader area throughout the project.



- A landscape approach to site management must consider cultural and heritage features in the overall planning of exploration infrastructures within and beyond the license boundaries.
- The Proponent and contractors should adhere to the provisions of Section 55 of the National Heritage Act in the event significant heritage and cultural features are discovered while conducting exploration works.
- The recommendations herein made and the implementation of the mitigation measures and adoption of the project Archaeological Management Plan (AMP)/EMP should be complied with.
- If, required an archaeologist or Heritage specialist should be onsite to monitor all significant earth-moving activities that may be implemented as part of the proposed project activities.
- When removing the topsoil and subsoil on the site for exploration purposes, the area should be monitored for subsurface archaeological materials by a qualified Archaeologist.
- Show overall commitment and compliance by adopting a “minimalistic or zero damage approach”.
- In addition to these recommendations above, there should be a controlled movement of the contractor, exploration crews, equipment, setting up of camps and everyone else involved in the prospecting and exploration activities to limit the proliferation of informal pathways, gully erosion and disturbance to surface and sub-surface artifacts such as stone tools and other buried materials etc.

### 7.3.11 Impact on Local Roads

These types of projects are usually associated with the movements of heavy trucks and equipment or machinery that use locals frequently. The heavy trucks travelling on the local roads exert more pressure on them. These local roads in remote areas are normally not in good condition already for light vehicles, and the additional vehicles such as heavy ones may make it worse and difficult to be used by vehicles that already struggled on the roads before they got worse. This will be a concern if maintenance and care are not taken during the exploration phase. The impact would be short-term and therefore, manageable.

Without any management and or mitigation measures, the impact can be rated as medium and to reduce this rating to low, the measures will need to be effectively implemented. The assessment of this impact is presented in **Table 22**.

**Table 22 – Assessment of exploration on local services (roads and water)**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M/H - 4	M - 3	M - 6	M - 3	M – 39
Post mitigation	L - 1	L - 1	M/L - 4	M/L -2	L - 12

**Mitigations and recommendations to minimize the impact on local services.**

- The heavy trucks transporting materials and services to the site should be scheduled to travel at least twice or thrice a week to avoid daily travelling to the site, unless in cases of emergencies.
- The Proponent should consider frequent maintenance of local roads on the farms to ensure that the roads are in good condition for other road users such as farmers, and travellers from and outside the area.

**7.3.12 Social Nuisance: Local Property Intrusion and Vandalism**

The presence of some non-resident workers may lead to social annoyance to the local community. This could particularly be a concern when they or some of those workers enter or damage the properties of the locals. The private properties of the farmers could be houses, fences, vegetation, livestock and wildlife or any properties of economic or cultural value to the farm/landowners or occupiers of the land. The damage or disturbance to properties may not only be private but local public properties. The unpermitted and unauthorized entry to private properties may cause grievances between the landowner and the Proponent.

Pre-implementation of mitigation measures, the impact is rated as of medium significance. However, upon post-mitigation, the significance will change from a medium to a low rating. The impact is assessed below (**Table 23**).

**Table 23 – Assessment of the social impact of community property damage or disturbance**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 4	M – 48
Post mitigation	L - 1	L - 1	M/L - 4	M/L -2	L - 12

### **Mitigations and recommendations to minimize social nuisance such as intrusion or vandalism of property**

- The Proponent should inform their workers of the importance of respecting the farmers' properties by not intruding or damaging their houses, or fences or snaring and killing their livestock and wildlife through induction or toolbox talks.
- Any workers or site employees found guilty of intruding on private property should face a disciplinary hearing and/or be dealt with as per their employer' (Proponent)'s code of employment conduct.
- The project workers should be advised to respect the community and local's private properties, values, and norms.
- No worker should be allowed to wander or loiter on private property without permission.
- Project workers are not allowed to kill or in any way disturb local livestock and wildlife on farms.
- The cutting down or damaging of vegetation belonging to the affected farmers or neighbouring farms without permission is strictly prohibited.

## **7.4 Cumulative Impacts Associated with 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”.

Similar to many other exploration projects, some cumulative impacts to which the proposed project and associated activities potentially contribute are:

- **The Impacts on road infrastructure:** The proposed exploration activity contributes cumulatively to various activities such as farming activities and travelling associated with local daily routines. 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.
- **The use of groundwater:** While the contribution of this project will not be significant, especially during the initial phase, mitigation measures to reduce water consumption during exploration are essential.

## 7.5 Mitigations and Recommendations for Rehabilitation

The rehabilitation of disturbed sites will include but not be limited to the following:

- Backfilling of trenches and or pits in such a way that subsoil is replaced first, and topsoil replaced last, to capitalize on the fertility of the topsoil for primary production purposes.
- Removal, closing off and capping of all exploration drilling boreholes, as practical as possible – especially if there will be no return to the targeted location. The boreholes should not only be filled with sand alone, as the wind may scour the sand and re-establish the holes.
- Removal of all waste generated from the last disposal to the last days on-site.
- Transporting all machinery and equipment as well as vehicles to designated offsite storage facilities.

## 8 RECOMMENDATIONS AND CONCLUSIONS

### 8.1 Recommendations

The potential positive and negative impacts resulting from the proposed exploration activities on EPL 8015 were identified and assessed and appropriate management and mitigation measures were made thereof for implementation by the Proponent, their contractors, and project-related employees.

Mitigation measures to the identified impacts have been provided, thereof, to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of medium-rating significance. However, with effective implementation of the recommended management and mitigation measures, a reduced rating in the significance of adverse impacts is expected from Medium to Low. To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or their Environmental Control Officer (ECO). The monitoring of this implementation will not only be done to maintain a low rating but also to ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away.

EDS is 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 into monitoring the implementation of these measures.

It is, therefore, recommended that the proposed prospecting and exploration activities may be granted an Environmental Clearance Certificate, 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 access agreements to explore and ensure compliance with these specific legal requirements.
- The Proponent and all 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.

## **8.2 Conclusion**

It is crucial for the Proponent and their contractors to effectively implement the recommended management and mitigation measures, to protect the biophysical and social environment throughout the project duration. This would contribute to the general aim of promoting environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities in the community and environment at large. It is also to ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed accordingly. Lastly, should the ECC be issued, the Proponent will be expected to be compliant with the ECC conditions as well as legal requirements governing mineral exploration and related activities at all times.

## 9 REFERENCES

Atlas of Namibia Team, 2022, Atlas of Namibia: its land, water and life, Namibia Nature Foundation, Windhoek.

Booth, P. (2011). Environmental Conceptual Site Model Exercise: Source – pathway – receptor. WSP Global: Semantic Scholar.

Bühn, Bernhard. (2008). The role of the volatile phase for REE and Y fractionation in low-silica carbonate magmas: Implications from natural carbonatites, Namibia. *Mineralogy and Petrology*. 92. 453-470. 10.1007/s00710-007-0214-4.

Kinahan, D. J. (2020). Archaeological assessment for the proposed bush thinning and charcoal burning project near Kombat, Otjozondjupa region. Windhoek: Unpublished

Mendelsohn. (2006). A digest of information on key aspect of Otjozondjupa and Omaheke geography. Namibia: Research and Information Services of Namibia.

Mendelsohn, J. (2003). Atlas of Namibia: A Portrait of the Land and its People. Windhoek: The Ministry of Environment and Tourism of Namibia.

Miller, R. McG. 1983a. The Pan-African Damara Orogen of South West Africa/Namibia, 431-515. In: Miller, R.McG. (Ed.) Evolution of the Damara Orogen of South West Africa/Namibia. Spec. Publ. geol. Soc. S. Afr., 11, 515 pp.

SASSCAL WeatherNet, 2020. [http://www.sasscalweathernet.org/weatherstat\\_monthly\\_we.php](http://www.sasscalweathernet.org/weatherstat_monthly_we.php)

Sonter L J, Ali S H, Watson J E M. 2018 Mining and biodiversity: key issues and research needs in conservation science. *Proc.R.Soc.B285:20181926*. <http://dx.doi.org/10.1098/rspb.2018.1926>

Shilongo. F (2022). Socio-economic condition for the Otjozondjupa Region, Hochelf: unpublished

Naminga, V., & Mubita, L. (2021). The Impact of Mining sector on the Namibia economy.

Namibia Statistics Agency (2011). 2011 Population and Housing Census Regional Profile, Erongo Region. URL:

<https://d3rp5jatom3eyn.cloudfront.net/cms/assets/documents/p19dptss1r1b6ufvsfb1mh41acvo.pdf>