



**ENVIRONMENTAL SCOPING ASSESSMENT (ESA) FOR THE PROPOSED MINERAL EXPLORATION ACTIVITIES ON EXCLUSIVE PROSPECTING LICENCE (EPL) No. 3732 LOCATED NORTHWEST OF ARANDIS, ERONGO REGION.**

**ENVIRONMENTAL ASSESSMENT REPORT: Final**

**ECC APPLICATION REFERENCE NO: APP- 002060**

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## **EXECUTIVE SUMMARY**

Mattie Investments Eight-Nine CC (The Proponent) applied to the Ministry of Mines and Energy (MME) and was granted an Exclusive Prospecting License (EPL) No. 3732 on the 27th of March 2021. However, the proposed activities require an Environmental Clearance Certificate (ECC) before commencement. Exploration on EPL 3732 is prospective to the Dimension Stone commodity group. The 18389.1945-hectare (ha) EPL is located about 12 km northwest of Arandis and lies within the Dorob National Park, in the Erongo Region. Thus, the regulations as stipulated in the National Policy on Prospecting and Mining in Protected Areas (2018) in relation to the intended exploration area (EPL 3732) are relevant for the project.

Prospecting, and exploration related activities are among listed activities that may not be undertaken without an ECC under the Environmental Impact Assessment (EIA) Regulations. Subsequently, to ensure that the proposed activity is compliant with the national environmental legislation, the project Proponent, appointed an independent environmental consultant, Excel Dynamic Solutions (Pty) Ltd to undertake the required Environmental Assessment (EA) process and apply for the ECC on their behalf.

The application for the ECC was compiled and submitted to the competent authority (Ministry of Environment, Forestry and Tourism (MEFT)) as the environmental custodian for project registration purposes. Upon submission of an Environmental Scoping Assessment (ESA) Report and Draft Environmental Management Plan (EMP), an ECC for the proposed project will be considered by the Environmental Commissioner at the MEFT's Department of Environmental Affairs and Forestry (DEAF).

### **Brief Project Description**

Planned Activities: Proposed Exploration Methods

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

#### **1. Non-invasive Technique:**

- **Desktop Study: Geological mapping:** This mainly entails a desktop review of geological maps and ground observations. This includes the review of geological maps of the area and on-site ground traverses and observations and an update where relevant, of the information obtained during previous geological studies of the area and aero-geophysics survey.
- **Lithology geochemical surveys:** Rock and soil samples shall be collected and taken for trace element analysis to be conducted by analytical chemistry laboratories to determine if enough target commodities are present. Also, trenches or pits may be dug depending on the commodity (in a controlled environment e.g., fencing off and labelling activity sites) adopting a manual or excavator to further investigate the mineral potential. Soil sampling consists of small pits being dug where 1kg samples can be extracted and sieved to collect 50g of material. As necessary, and to ensure adequate risk mitigations, all major excavations will both be opened and closed immediately after obtaining the needed samples or the sites will be secured until the trenches or pits are closed. At all times, the affected parties and other relevant stakeholders will be engaged to obtain authorization where necessary.
- **Geophysical surveys:** This will entail data collection of the substrata (in most cases service of an aero-geophysical contractor will be sourced), by air or ground, through sensors such as radar, magnetic and electromagnetic to detect any mineralization in the area to ascertain the mineralization. Ground geophysical surveys shall be conducted, where necessary using vehicle-mounted sensors or handheld by staff members, while in the case of air surveys the sensors will be mounted to an aircraft, which then flies over the target area.

## 2. Invasive Technique:

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

## **Public Consultation**

### **Public Consultation Activities**

Regulation 21 of the EIA Regulations details steps to be taken during a public consultation process and these have been used in guiding this process. The public consultation process assisted the Environmental Consultant in identifying all potential impacts and aided in the process of identifying possible mitigation measures and alternatives to certain project activities. The communication with I&APs about the proposed prospecting and exploration activities was done through the following means and in this order to ensure that the public is notified and afforded an opportunity to comment on the proposed project:

- A Background Information Document (BID) containing brief information about the proposed facility was compiled and emailed to all new registered Interested and Affected parties (I&APs).
- Project Environmental Assessment notices were published in the Namibian and New Era Newspapers (30 September 2023 and 06 October 2023), briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns.
- A consultation meeting was scheduled and held with the interested and affected parties on the 18 September 2023 at MEFT Office (Swakopmund, NWR Building) at 09h40

- The issues and concerns raised received together with the site visit assessment observation formed the basis for the ESA Report and EMP.

### **Potential Impacts identified**

The following potential negative impacts are anticipated:

- **Positive impacts:** Socio-economic development through employment creation (primary, secondary, and tertiary employment) and skills transfer; Opens up other investment opportunities and infrastructure-related development benefits; Produces a trained workforce and small businesses that can service communities and may initiate related businesses; Boosts the local economic growth and regional economic development and; Increased support for local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- **Negative impacts:** Physical land/soil disturbance; Impact on local biodiversity (fauna and flora); 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 infrastructure such as local roads, Vibrations and noise associated with drilling activities may be a nuisance to locals; 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 provided accordingly.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Conclusions**

The potential impacts that are anticipated from the proposed project activities were identified, described, and assessed. For the significant adverse (negative) impacts with medium rating, appropriate management and mitigation measures were recommended for implementation by the Proponent, their contractors and project related employees.

The public was consulted as required by the EMA and its 2012 EIA Regulations (Section 21 to 24). This was done via the two newspapers (The Namibian and New Era) used for this environmental assessment. A consultation through face-to-face meeting with I&APs at Tamariskia

Hall was conducted, whereby they raised comments and concerns on the proposed project activities.

The issues and concerns raised by the registered I&APs formed the basis for this report and the Draft EMP. The issues raised were addressed and incorporated into this Report whereby mitigation measures 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. With the effective implementation the recommended management and mitigation measures, this will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from medium rating 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) is highly recommended. The monitoring of this implementation will not only be done to maintain the reduce impacts' rating or maintain low rating but to also ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away too.

It is crucial for the Proponent and their contractors to effectively implement the recommended management and mitigation measures to protect both the biophysical and social environment throughout the project duration. All these would be done with the 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.

## **Recommendations**

The Environmental Consultant 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 on monitoring the implementation of these measures.

It is therefore, recommended that the proposed prospecting and exploration activities be granted an ECC, 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 ensuring 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.
- Environmental Compliance monitoring reports should be compiled and submitted to the DEAF Portal as per provision made on the MEFT/DEAF's portal.

### **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>List of Figures</b> .....	ix
<b>List of Tables</b> .....	ix
<b>LIST OF ABBREVIATIONS</b> .....	xi
<b>1. INTRODUCTION</b> .....	15
1.1 Project Background .....	15
1.2 Terms of Reference, Scope of Works and Appointed EA Practitioner .....	17
1.3 Motivation for the Proposed Project .....	17
1.4 Motivation for Exploration activities for EPL 3732 in a Protected Area: Dorob National Park .....	18
1.5 Namibia's Approach towards exploration and Mining in a National Park .....	20
1.6 Namib Ecology Integrity .....	20
<b>2 PROJECT DESCRIPTION: PROPOSED EXPLORATION ACTIVITY</b> .....	21
2.1 Prospecting Phase (Non- Invasive Techniques) .....	21
2.1.1 Desktop Study: Geological mapping .....	21
2.1.2 Geophysical surveys .....	22
2.1.3 Lithology geochemical surveys .....	22
2.2 Exploration (Drilling, Sampling and Analysis) Phase .....	22
2.2.1 Detailed Exploration Drilling .....	22
2.2.2 Accessibility to Site .....	23
2.2.3 Material and Equipment .....	23
2.2.4 Services and Infrastructure .....	23
2.2.5 Waste Management .....	24
2.2.6 Safety and Security .....	24
2.2.7 Accommodation .....	25
<b>3 PROJECT ALTERNATIVES</b> .....	25
3.1 Types of Alternatives Considered .....	26
3.1.1 The "No-go" Alternative .....	26
3.1.2 Exploration Location .....	26
3.1.3 Exploration Methods .....	27



4	LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES .....	28
4.1	The Environmental Management Act (No. 7 of 2007).....	28
4.2	The National Policy on Prospecting and Mining in Protected Areas .....	28
4.3	Integrated Coastal Management Act (draft) .....	29
4.5	International Policies, Principles, Standards, Treaties and Conventions.....	37
5	ENVIRONMENTAL BASELINE.....	41
5.1	Biophysical Environment.....	41
5.1.1	Climate .....	41
5.1.2	Topography .....	42
5.1.3	Geology and Soil .....	43
5.1.4	Hydrology and Water Resources.....	45
5.1.5	Flora and Fauna .....	46
5.2	Heritage and Archaeology .....	48
5.2.1	Local Level and Archaeological Findings .....	48
5.2.2	Surrounding Land Uses.....	48
5.3	Socio-Economic conditions.....	49
6	PUBLIC CONSULTATION PROCESS .....	50
6.1	Pre-identified and Registered Interested and Affected Parties (I&APs).....	51
6.2	Communication with I&APs.....	52
6.3	Feedback from Interested and Affected Parties .....	53
7	IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES .....	53
7.1	Impact Identification .....	53
7.2	Impact Assessment Methodology .....	54
7.2.1	Extent (spatial scale) .....	55
7.2.2	Duration .....	55
7.2.3	Intensity, Magnitude / severity.....	56
7.2.4	Probability of occurrence.....	56
7.2.5	Significance .....	57
7.3	Assessment of Potential Negative Impacts .....	59
7.3.1	Land Degradation and Loss of Biodiversity.....	59
7.3.2	Generation of Dust (Air Quality).....	60
7.3.3	Water Resources Use.....	60
7.3.4	Soil and Water Resources Pollution.....	61
7.3.5	Waste Generation .....	62

7.3.6 Occupational Health and Safety Risks.....	62
7.3.7 Vehicular Traffic Use and Safety .....	63
7.3.8 Noise and vibrations .....	64
7.3.9 Disturbance to Archaeological and Heritage resources .....	64
7.3.10 Impact on Local Roads/Routes .....	65
7.3.11 Social Nuisance: Local Property intrusion and Disturbance or Damage.....	66
7.4 Cumulative Impacts Associated with Proposed Exploration .....	66
8 CONCLUSIONS AND RECOMMENDATIONS .....	67
8.1 Conclusion .....	67
8.2 Recommendations .....	67
9 REFERENCES .....	69

## List of Figures

Figure 1: Locality map of EPL-3732 in Dorob National Park.....	16
Figure 2: EPL 3732 and Mining Licenses within the Dorob National Park (Source: <a href="https://maps.landfolio.com/Namibia/">https://maps.landfolio.com/Namibia/</a> ).....	19
Figure 3: The location of the EPL-3732 on the National Mining Cadastre.....	27
Figure 4: Climate in the area of Arandis (source: Climate Data Org. <a href="https://weatherandclimate.com/namibia/erongo/arandis">https://weatherandclimate.com/namibia/erongo/arandis</a> .....	42
Figure 5: landscape map of EPL 3732.....	43
Figure 6: Geology map of EPL 3732.....	44
Figure 7: Soil type map for EPL 3732 .....	45
Figure 8: Hydrological map of EPL-3732.....	46
Figure 9: Vegetation map for EPL 3732 .....	47
Figure 10: Shows the Lichens observed during the site visit .....	47
Figure 11: Map showing land use within and surrounding the EPL .....	49
Figure 12: Consultation meeting at MEFT office, Swakopmund.....	52
Figure 13: Site notice placed at the Arandis Town Hall and Arandis Town Council.....	53

## List of Tables

Table 1: Characteristics of Protected Areas .....	19
Table 2: Statistics of the Project area .....	49
Table 3: Summary of Interested and Affected Parties (I&APs).....	51
Table 4: Summary of main issues and comments received during the public meeting .....	53
Table 5: Extent or spatial impact rating .....	55
Table 6: Duration impact rating .....	55

Table 7: Intensity, magnitude or severity impact rating.....	56
Table 8: Probability of occurrence impact rating .....	56
Table 9: Significance rating scale .....	57
Table 10: Assessment of the impacts of exploration on biodiversity .....	59
Table 11: Assessment of the impacts of exploration on air quality .....	60
Table 12: Assessment of the project impact on water resource use and availability .....	61
Table 13: Assessment of the project impact on soils and water resources (pollution).....	61
Table 14: Assessment of waste generation impact .....	62
Table 15: Assessment of the impacts of exploration on health and safety .....	63
Table 16: Assessment of the impacts of exploration on road use (vehicular traffic) .....	63
Table 17: Assessment of the impacts of noise and vibrations from exploration .....	64
Table 18: Assessment of the impacts of exploration on archaeological & heritage resources....	64
Table 19: Assessment of exploration on local services (roads and water) .....	65
Table 20: Assessment of social impact of community property damage or disturbance .....	66

## LIST OF APPENDICES

**Appendix A:** Copy of the Environmental Clearance Certificate (ECC) Application Form 1

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

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

**Appendix D:** List of Interested and Affected Parties (I&APs) - **uploaded separately on the Portal as required (under the “Proof of Public Consultation” file)**

**Appendix E:** Background Information Document (BID) - **uploaded on the Portal as required (under the “Proof of Public Consultation” file)**

**Appendix F:** EIA Notification in the newspapers (*New Era* and the *Namibian*) - **uploaded separately on the Portal as required (under the “Proof of Public Consultation” file)**

**Appendix G:** Consultation Meeting Minutes - **uploaded on the Portal as required (under the “Proof of Public Consultation” file)**

**Appendix H:** Consent Letter - **uploaded on the Portal as required (under the “Proof of Public Consultation” file)**

## LIST OF ABBREVIATIONS

Abbreviation	Meaning
AMSL	Above Mean Sea Level
BID	Background Information Document
CV	Curriculum Vitae
DEA	Department of Environmental Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EDS	Excel Dynamic Solutions
ESA	Environmental Scoping Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licence
GG	Government Gazette
GN	Government Notice
I&APs	Interested and Affected Parties
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
PPE	Personal Protective Equipment
Reg	Regulation
S	Section
TOR	Terms of Reference

## DEFINITION OF TERMS

<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.

<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</b>	All of the animals found in a given area.
<b>Flora</b>	All of the plants found in a given 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>Nomadic Pastoralism</b>	Nomadic pastoralists live in societies in which the husbandry of grazing animals is viewed as an ideal way of making a living and the regular movement of all or part of the society is considered a normal and natural part of life. Pastoral nomadism is commonly found where climatic conditions produce seasonal pastures but cannot support sustained agriculture.

<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 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

Mattie Investments Eight-Nine CC (The Proponent) applied to the Ministry of Mines and Energy (MME) and was granted an Exclusive Prospecting License (EPL) No. 3732 on the 27<sup>th</sup> of March 2021. However, the proposed activities require an Environmental Clearance Certificate (ECC) before commencement. Exploration on EPL 3732 is prospective to the Dimension Stone commodity group. The 18389.1945-hectare (ha) EPL is located about 12 km northwest of Arandis and lies within the Dorob National Park, in the Erongo Region. Thus, the regulations as stipulated in the National Policy on Prospecting and Mining in Protected Areas (2018) in relation to the intended exploration area (EPL 3732) are relevant for the project.

Exploration and all mining-related activities are among the listed activities that may not be undertaken without an ECC under the Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations.

The Proponent is, therefore, required to obtain an ECC before the commencement of exploration works on the EPL. To fulfil the legal requirements, the Proponent has appointed Excel Dynamic Solutions (Pty) Ltd (EDS / Environmental Consultants), to conduct the required Environmental Assessment (EA) process and submit the ECC application to the Department of Environmental Affairs and Forestry (DEAF) at the Ministry of Environment, Forestry & Tourism (MEFT).



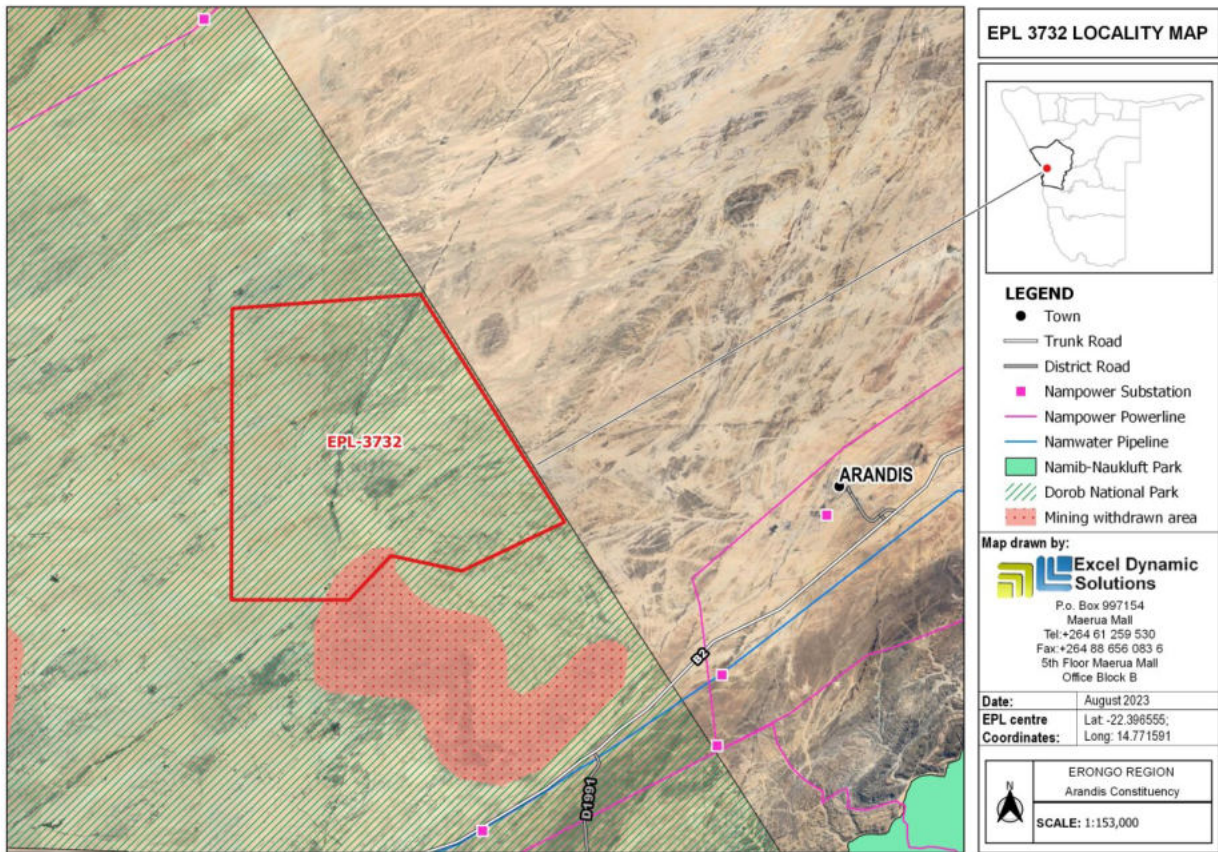


Figure 1: Locality map of EPL-3732 in Dorob National Park

## **1.2 Terms of Reference, Scope of Works and Appointed EA Practitioner**

To satisfy the requirements of the EMA and its 2012 EIA Regulations, the Proponent appointed EDS, to conduct the required EA process on their (Proponent's) behalf, and thereafter, apply for an ECC for exploration works on the EPL. There were no formal Terms of Reference (ToR) provided to EDS by the Proponent. The consultant, instead, relied on the requirements of the Environmental Management Act (No. 7 of 2007) (EMA) and its EIA Regulations (GN. No. 30 of 2012) to conduct the study.

The application for the ECC (**Appendix A**) was compiled and submitted to the Ministry of Environment, Forestry and Tourism (MEFT) as the environmental custodian for project registration purposes. Upon submission of an Environmental Scoping Assessment (ESA) Report and Draft Environmental Management Plan (EMP) (**Appendix B**), an ECC for the proposed project may be considered by the Environmental Commissioner at the MEFT's Department of Environmental Affairs and Forestry (DEAF).

The EIA project is headed by Mr. Nerson Tjelos, a qualified and experienced Geoscientist and experienced EAP. The consultation process, assessment and reporting were done by Ms. Iyaloo Nakale and reviewed by Ms. Rose Mutaleni. The CV of the EAP is presented in **Appendix C**.

## **1.3 Motivation for the Proposed Project**

The mining industry is one of the largest contributors to the Namibian economy, and it contributes to the improvement of livelihoods. In Namibia, exploration for minerals is done mainly by the private sector, and exploration activities have a great potential to enhance and contribute to the development of other sectors. Exploration activities also provide temporary employment, and taxes that fund social infrastructural development. The minerals sector yields foreign exchange and account for a significant portion of gross domestic product (GDP). Additionally, the industry produces a trained workforce and small businesses that can serve communities and may initiate related businesses. Exploration activity fosters several associated activities such as manufacturing of exploration and mining equipment, and provision of engineering and environmental services. The mining sector forms a vital part of some of Namibia's development plans, namely: Vision 2030, National Development Plan 5 (NDP5) and Harambee Prosperity Plans (HPPs) I and II. Thus, mining is essential to the development goals of Namibia in contributing to meeting the ever-increasing global demand for minerals, and for national prosperity. Successful exploration on EPL 3732 would lead to the mining of targeted commodities

which could contribute towards achieving the goals of the national development plans; hence the need to undertake the proposed exploration activities on the EPL.

#### **1.4 Motivation for Exploration activities for EPL 3732 in a Protected Area: Dorob National Park**

The EPL 3732 lies within the Dorob National Park, which is one of the largest national parks in Africa. Taking into account that the EPL lies within this protected area, the National Policy stipulated on Prospecting and exploration in Protected Areas is highly recommended. Rehabilitation will be highly recommended as required under the exploration and Prospecting in Protected Areas and National Monuments (1999).

EPL 3732 lies within the vicinity of active Mining Licenses, such as, (ML) No. 185 (Namib Lead and Zinc Mining (Pty) Ltd) 100% and ML No.152 which is owned by Savanna Marble CC 100% (**Figure 2**). These active MLs also fall within the Dorob National Park. The already occurring mineral exploration/mining activity in the area have proven that sustainable mineral exploration activity in the area may be possible, under conditions that the provided management measures and action plans are effectively implemented on site and monitored.

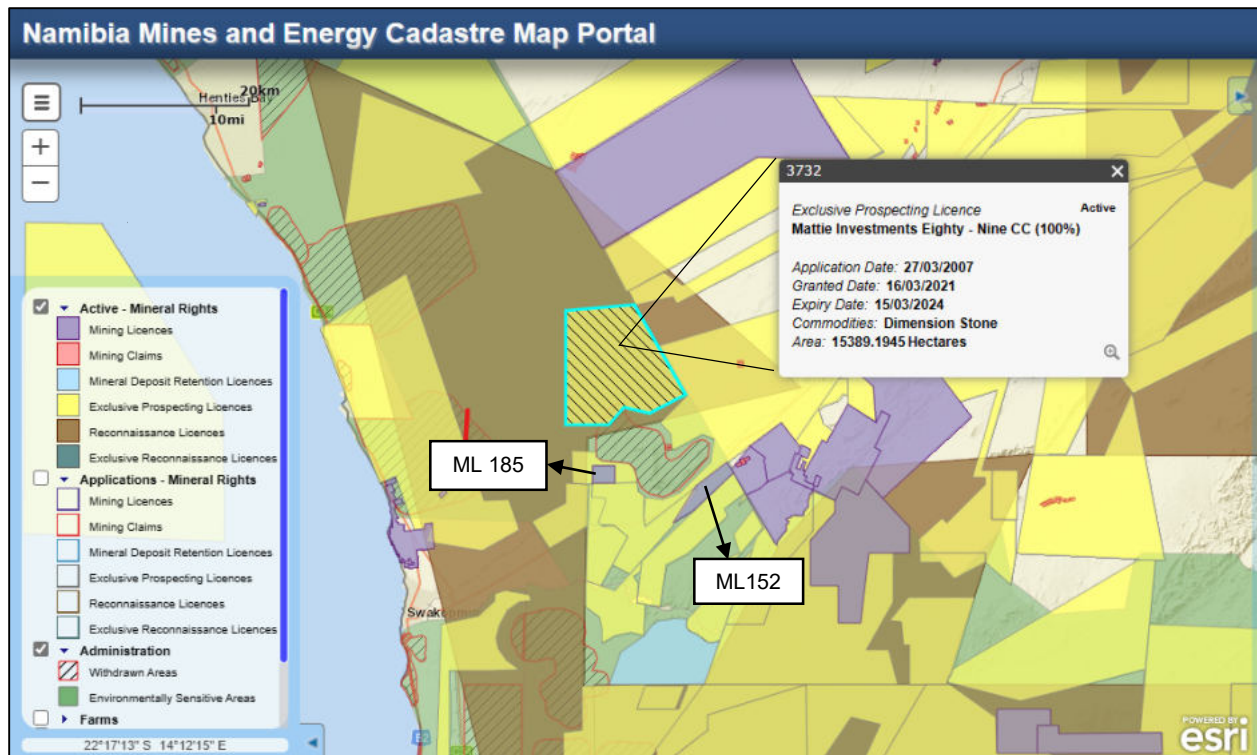


Figure 2: EPL 3732 and Mining Licenses within the Dorob National Park (Source:

<https://maps.landfolio.com/Namibia/> )

The table below presents different characteristics of Protected Areas as stipulated in the National Policy on Prospecting and mining in Protected Areas (2018) in relation to the area (EPL 3732). The Consultant understands that the policy is also aimed at establishing “no go areas” where exploration will not be permitted due to high conservation and/or aesthetic and tourism value, based upon the best available information.

Table 1: Characteristics of Protected Areas

Characteristic	Case with EPL 3732 (YES/NO/UNKNOWN)	Consultant comment
Biodiversity Priority Areas	YES	In the Dorob National Park
Archaeological rock tools	YES	In the Dorob National Park
High Value Tourism Areas	UNKNOWN	
Known Breeding Areas of Certain Species, Including Marine Species	NO	Inland exploration project
Important Wetland Areas	NO	Dryland

Areas with Existing Economic Activities That Would Be Compromised by Prospecting and/or Mining	UNKNOWN	Active mining activities known in the vicinity of the exploration EPL 3732
Areas with The Potential to Be Developed into Economically Viable Tourist or Other Compatible Operations	NO	

## 1.5 Namibia’s Approach towards exploration and Mining in a National Park

Any exploration development in a National Park must be balanced against the risk that it could jeopardize the potential for long-term sustainable development. Prospecting and exploration of minerals stated in the Minerals (Prospecting and Mining) Act of 1992 are permitted as such developments are in the national interest. The targeted commodity group are listed in the Minerals Act. The National Policy on Prospecting and mining in Protected Areas developed in 2018 states that granting of an Exclusive Prospecting and Mining Licenses is permitted in Protected Areas and National Monuments upon presenting a plan of activities that will be carried out using best practice, taking into account long-term national benefits and conservation efforts.

The Policy of the Conservation of Biotic Diversity and habitat Protection was drafted by the Ministry of Environment and Tourism in 1994 to ensure adequate protection of all species and subspecies, of ecosystems, and of natural life-support processes.

## 1.6 Namib Ecology Integrity

The ecological integrity and diversity of fauna and flora of the Western Namib is well addressed in the Strategic Environmental Management Plan (SEMP) developed in 2009 as a result of the Strategic Environmental and Socio-Economic Assessment of the Uranium industry “rush”. The annual SEM report (2014) indicated that the integrity and diversity of the Western Namib biodiversity is not compromised by the exploration activities. The report went further to explain that ecological integrity means that ecological processes are maintained, key habitats are protected, rare and endangered and endemic species are not threatened. The SEM limits are defined through Environmental Quality Objectives and aim to;

- Improve Namibia’s and the Erongo Region’s sustainable socio-economic development and outlook without undermining the growth potential of other sectors;
- Promote local employment and integration of society;

- Ensure that key infrastructure is adequate and well maintained, thus enabling economic development, public convenience and safety;
- Ensure that the integrity of all aquifers remains consistent with the existing natural and operational conditions (baseline). This requires that both the quantity and quality of groundwater are not adversely affected by prospecting and exploration activities;
- Ensure workers and the public do not suffer significant increased health risks from the exploration and exploration activities;
- Safeguard the natural beauty of the desert and ensure its sense of place are not compromised unduly by the exploration activities;
- Identify ways of avoiding conflicts between the tourism industry and prospecting/exploration, so that both industries can coexist in the Western Namib;
- **Protect the ecological integrity and diversity of fauna and flora of the Central Namib. All efforts are taken to avoid impacts to the Namib and where this is not possible, disturbed areas are rehabilitated and restored to function after exploration/development;**
- Maintain and enhance Namibia's international image because of environmentally, socially and financially responsible mining operations;
- Ensure that exploration and all related infrastructure developments will have the least possible negative impact on archaeological and paleontological heritage resources.

## **2 PROJECT DESCRIPTION: PROPOSED EXPLORATION ACTIVITY**

The prospecting and exploration of minerals are the first components of any potential mining project (development and eventual mining). This is done to acquire the necessary data required for further decision making and investment options. These activities are anticipated to last for about three years, with ground geophysical surveys done in stages on different parts of the EPL, lasting several weeks. The exploration process includes three phases, namely: prospecting, exploration, and the decommissioning of works.

### **2.1 Prospecting Phase (Non- Invasive Techniques)**

#### **2.1.1 Desktop Study: Geological mapping**

This mainly entails a desktop review of geological area maps and ground observations. This includes the review of geological maps of the area and on-site ground traverses and observations

and an update where relevant, of the information obtained during previous geological studies of the area.

### **2.1.2 Geophysical surveys**

Geophysical surveys entail data collection of the substrata by air or ground, through sensors such as radar, magnetic and/or electromagnetic sensors, to detect and ascertain any mineralization in the area. Ground geophysical surveys shall be conducted, where necessary, using vehicle-mounted sensors or handheld by staff members, while in the case of air surveys, the sensors are mounted to an aircraft, which navigates over the target area.

### **2.1.3 Lithology geochemical surveys**

Rock and soil samples shall be collected and taken for trace element analysis to be conducted by analytical chemistry laboratories to determine if enough target commodities are present. Additionally, trenches or pits may be dug depending on the commodity (in a controlled environment e.g., fencing off and labeling activity sites) adopting a manual or excavator to further investigate the mineral potential.

Soil sampling consists of small pits being dug, where 1kg samples can be extracted and sieved to collect about 50g of material. As necessary, and to ensure adequate risk mitigation, all major excavations will be opened and closed immediately after obtaining the needed samples, or the sites will be secured until the trenches or pits are closed. At all times, the landowner and other relevant stakeholders will be engaged 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, and the 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. **No explosives will be used during the exploration phase.**

### **2.2.1 Detailed Exploration Drilling**

Should analyses by an analytical laboratory yield positive results, holes are drilled, and drill samples collected for further analysis. This will determine the depth of the potential mineralization. If necessary, new access tracks to the drill sites will be created and drill pads will be cleared in

which to set up the rig. Two widely used drilling options may be adopted, these are the Reverse Circulation (RC) drilling method and/or the Diamond (Core) drilling method. The RC drilling method uses a pneumatic hammer, which drives a rotating tungsten-steel bit. The technique produces an uncontaminated large volume sample, which comprises rock chips. It is relatively quicker and cheaper when compared to other techniques like Diamond Drilling. However, Diamond drilling may also be considered for this exploration programme, for better geological control and to perform processing trials.

A typical drilling site will consist of a drill-rig and support vehicles as well as a drill core and geological samples store. A drill equipment parking and maintenance yard may be set up (including a fuel and lubricants storage facility).

Other aspects of the proposed exploration operations include:

### **2.2.2 Accessibility to Site**

The EPL is located near the Town of Arandis and it is accessible via the via the B2 road from Arandis or Swakopmund. Project-related vehicles will use existing roads to access the EPL. It is also anticipated that, if necessary, new tracks to the different targeted exploration sites within the EPL may be created. However, it is high recommended that the Proponent uses the already existing tracks within the National park. The Proponent may need to do some upgrading on the site access roads to ensure that it is fit to accommodate project related vehicles, such as heavy trucks.

### **2.2.3 Material and Equipment**

The requirements of the exploration program in terms of vehicles and equipment include: (4X4) vehicles, a truck, water tanks, drill rigs and drilling machines, 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 area.

### **2.2.4 Services and Infrastructure**

- **Water:** Water for the exploration operations on the EPL will be obtained from the nearest towns, or the Proponent will drill boreholes on site, upon obtaining necessary permits and signed agreements with the landowners. Estimated monthly water consumptions are at 3000 liters, but will not exceed 80 000 liters, which includes water for drinking, sanitation, cooking, dust control (if necessary), drilling, as well as washing of equipment.



- **Power supply:** Power required during the operation phase will be provided from diesel-generators. About 2500 litres of diesel will be used per day, a bunded diesel bowser, which will be on site, will be filled 2 – 3 times a week.
- **Fuel (diesel for generators and other equipment):** The fuel (diesel) required for exploration equipment will be stored in a tank mounted on a mobile trailer, and drip trays will be readily available on this trailer and monitored to ensure that accidental fuel spills are cleaned up as soon as they have been detected/observed. Fuel may also be stored in jerry cans placed on plastic sheeting to avoid unnecessary contamination of the ground.

### 2.2.5 Waste Management

The site will be equipped with secured 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 taken to 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 prior to utilizing these facilities, in the case of production of any hazardous waste.

- **Sanitation and human waste:** Portable ablution facilities will be used and the sewage will be disposed of as according to the approved disposal or treatment methods of the waste products.
- **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 on time and contained correctly before polluting the site.

### 2.2.6 Safety and Security

- **Storage Site:** Temporary storage areas for exploration material, equipment, and machinery will be required at the campsite and/or exploration sites. Security will be supplied on a 24-hour basis at the delegated sites for storage. A temporary support fence surrounding the storage site will be constructed to ensure people and domestic animals are not put at risk.
- **Fire management:** A minimum of basic firefighting equipment, i.e., two fire extinguishers will be readily available in vehicles, at the working sites and camps. The exploration crew is required to have the contact details of the nearest fire station at hand in case of a larger scale of fires at site.

- **Health and Safety:** Adequate and appropriate Personal Protective Equipment (PPE) will be provided to every project personnel while on and working at site. A minimum of two first aid kits will be readily available on site to attend to potential minor injuries.

### **2.2.7 Accommodation**

The exploration crew will be accommodated in Arandis/Swakopmund, or a campsite will be set up for the exploration crew near the exploration sites. If the accommodation camp is to be set up on site, necessary arrangements will be made with the competent authority (MEFT). Exploration activities will take place during daytime only and staff will commute to exploration 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 will need to put site rehabilitation measures in place. Decommissioning and rehabilitation are primarily reinforced through a decommissioning and rehabilitation plan, which consists of safety, health, environmental, and contingency aspects. An unfavorable economic situation or unconvincing exploration results might force the Proponent to cease the exploration program before predicted closure. Therefore, it is of best practice for the Proponent to ensure the project activities cease in an environmentally friendly manner and site is rehabilitated.

## **3 PROJECT ALTERNATIVES**

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

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

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

The alternatives considered for the proposed development are discussed in the following subsections.

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

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

The “no action” alternative implies that the status quo remains, and nothing happens. Should the proposal of exploration activities on the EPL, be discontinued, none of the potential impacts (positive and negative) identified would occur. If the proposed project is to be discontinued, the current land use for the proposed site will remain unchanged.

This no-go option was considered and a comparative assessment of the environmental and socio-economic impacts of the “no action” alternative was undertaken to establish what benefits might be lost if the project is not implemented. The key losses that may never be realized if the proposed project does not go ahead include:

- Loss of foreign direct investment.
- About 5-10 temporary job opportunities for community members will not be realized.
- No realization of local businesses supports through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Loss of potential income to local and national government through land lease fees, license lease fees and various tax structures.
- Improved geological understanding of the site area regarding the targeted commodities.
- Socio-economic benefits such as skills acquisition to local community members would be not realized.

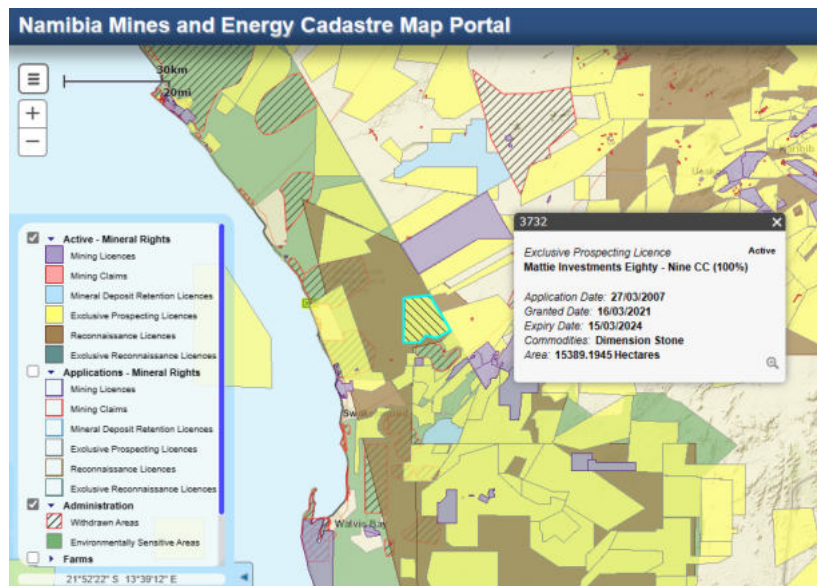
Considering the above losses, the “no-action/go” alternative was not considered a viable option for this project, although, in the case where parts of the project site are considered environmentally sensitive and/or protected, one or severally sections of the site may be identified as no-go zones.

#### **3.1.2 Exploration Location**

The prospecting/exploration location is dependent on the geological setting (regional and local), the economic geology, and the exploration and mining history of the EPL area. Therefore, finding an alternative location for the planned exploration activities is not possible. This means that the

mineralization of the target commodities is area-specific, and exploration targets are primarily determined by the geology (host rocks) and the tectonic environment of the site (an ore-forming mechanism). The tenement has sufficient surface area for future related facilities, should an economic mineral deposit be defined.

Furthermore, the national mineral resources' potential locations are also mapped and categorized by the Ministry of Mines and Energy, on exclusive prospecting licenses, mining licenses and claims, mineral deposit retention licenses, reconnaissance licenses and exclusive reconnaissance licenses. Available information on EPL 3732 (**Figure 3**) and other licenses are available on the Namibia Mining Cadastral Map here: <https://maps.landfolio.com/Namibia/>



**Figure 3: The location of the EPL-3732 on the National Mining Cadastre**

### 3.1.3 Exploration Methods

Both invasive and non-invasive exploration activities as indicated under the project description chapter are expected to take place. If an economically viable discovery is made, the project will proceed to the mining phase upon approval of a mining EIA and issuance of a mining license. 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, it can be implemented.

## **4 LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES**

Prospecting and exploration activities have legal implications associated to certain applicable legal standards. A summary of applicable and relevant international policies and Namibian legislation, policies and guidelines to the proposed development is given in this section. This summary serves to inform the project Proponent, Interested and Affected Parties and the decision makers at the DEAF, of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled to establish the proposed prospecting and exploration activities.

### **4.1 The Environmental Management Act (No. 7 of 2007)**

This EIA was carried out according to the Environmental Management Act (EMA) and its Environmental Impact Assessment (EIA) Regulations (GG No. 4878 GN No. 30).

The EMA has stipulated requirements to complete the required documentation to obtain an ECC for permission to undertake certain listed activities. These activities are listed under the following Regulations:

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

### **4.2 The National Policy on Prospecting and Mining in Protected Areas**

This Policy was developed in 2018 to complement various regulations and policies relevant to prospecting and mining, in order to ensure minimal negative impacts on the environment (referred to in **Table 2**).

### 4.3 Integrated Coastal Management Act (draft)

The core objective of this proposed Act is to establish a system of integrated coastal management in Namibia in order to promote the conservation of the coastal environment, maintaining the natural attributes of the coastal landscapes and seascapes, and ensuring the sustainable development and use of the natural resources within the coastal zone that is also socially, economically and ecologically justifiable. A permanent Coastal Management Authority (CMA) will be established to realise this and other objectives. Functions and powers of the CMA would include, among other, to explore possible regulations for coastal zone use and enforcement capacity for such regulations.

Other legal obligations that are relevant to the proposed activities of EPL No. 3732 and related activities are presented in **Table 2**.

**Table 2: Applicable local, national and international standards, policies and guidelines governing the proposed development**

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
The Constitution of the Republic of Namibia, 1990 as amended	The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include:  “...the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia...”	By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability.  Ecological sustainability will be main priority for the proposed development.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	<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>Nature Conservation Amendment Act, No. 3 of 2017</p>	<p>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.</p>	<p>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</p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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, in order to conserve biodiversity and in order to contribute to national development.	
The National Policy on Prospecting and Mining in Protected Areas	Requires that, where necessary a Memorandum of Understanding is developed between prospecting and mining Companies, the MEFT and the MME to set out additional implementation mechanisms.	The Proponent should maintain the integrity of ecosystems and natural resources, and avoiding degradation of areas highly sensitive for their ecological, social and/or cultural heritage value
Minerals (Prospecting and Mining) Act (No. 33 of 1992)	Section 52 requires mineral license holders to enter into a written agreement with affected landowners before exercising rights conferred upon the license holder.	The Proponent should enter into a written agreement with landowners before carrying out exploration on their land.  The Proponent should carry out an assessment of the impact on the receiving environment.



Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	<p>Section 52(1) mineral license holder may not exercise his/her rights in any town or village, on or in a proclaimed road, land utilized for cultivation, within 100m 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 in the event that the holder of a mineral license (which includes and EPL) intends to abandon the mineral license area.</p> <p>Section 68 stipulates that an application for an 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 in order to prevent or minimize any such effect.</p> <p>Section 91 requires that rehabilitation measures should be included in an application for a mineral license.</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> <p>The Proponent may not carry out exploration activities within the areas limited by Section 52 (1) of this Act.</p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Mine Health & Safety Regulations, 10th Draft	Makes provision for the health and safety of persons employed or otherwise present in mineral licenses area. These deal with among other matters; clothing and devices; design, use, operation, supervision and control of machinery; fencing and guards; and safety measures during repairs and maintenance.	The Proponent should comply with all these regulations with respect to their employees.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that “No person shall possess [sic] or store any fuel except under authority of a license 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 authorization from the MME for the storage of fuel on-site.
The Regional Councils Act (No. 22 of 1992)	This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning point of view, their duties include, as described in section 28 “to undertake the planning of the development of the region for which it has been established with a view to physical, social and economic characteristics, urbanisation patterns, natural resources, economic development potential, infrastructure, land utilisation pattern and sensitivity of the natural environment.	The relevant Regional Councils are considered to be I&APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Erongo Regional Council; therefore, they should be consulted.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Local Authorities Act No. 23 of 1992	To provide for the determination, for purposes of traditional government, of traditional authority councils; the establishment of such traditional authority councils; and to define the powers, duties and functions of traditional authority councils; and to provide for incidental matters.	The Arandis Town Council is the responsible local Authority of the area therefore they should be consulted.
Water Act 54 of 1956	<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>	The protection (both quality and quantity/abstraction) of water resources should be a priority.
Water Resources Management Act (No 11 of 2013)	The Act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to:	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).	
National Heritage Act No. 27 of 2004	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	The Proponent should ensure compliance with these Acts requirements. The necessary management measures and related permitting requirements must be taken. This done by the consulting with the
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	National Heritage Council of Namibia.
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.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
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.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	
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.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Labour Act (No. 6 of 1992)	Ministry of Labour (MOL) 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.

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

The international policies, principles, standards, treaties, and conventions applicable to the project are as listed in **Table 3** below.

**Table 3: International Policies, Principles, Standards, Treaties and Convention applicable to the project**

Statute	Provisions	Project Implications
Equator Principles	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.	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

Statute	Provisions	Project Implications
	<p><b>Principle 1:</b> Review and Categorization</p> <p><b>Principle 2:</b> Environmental and Social Assessment</p> <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>community-based upliftment and empowering interactions.'</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 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>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</p>

Statute	Provisions	Project Implications
	<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><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 Underserved Traditional Local Communities</p> <p><b>Performance Standard 8:</b> Cultural Heritage</p>	<p>the Client (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 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>	
<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</p>	<p>Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised</p>

Statute	Provisions	Project Implications
	viable populations of species in natural surroundings.	
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 proposed exploration programme will be undertaken in specific environmental and social conditions. Understanding the pre-project conditions of the environment will aid in laying down background "information" of the status quo and future projections of environmental conditions after proposed works on the EPL. This also helps the EAP in identifying the sensitive environmental features that may need to be protected through the recommendations and effective implementation of mitigation measures provided.

The baseline information presented below is sourced from a variety of sources including reports of studies conducted in the Erongo Region. Further information was obtained by the Consultant during the site visit.

**5.1 Biophysical Environment**

**5.1.1 Climate**

Climate has a major influence on the exploration activities proposed on the EPL. Understanding of climatic conditions helps to determine the appropriate and/or inappropriate times to conduct exploration activities.

Located at an elevation of 587.71 meters above sea level, Arandis has a Subtropical desert climate (Classification: BWh). The district's annual average temperature is 20.14°C and it is 4.32% lower than Namibia's averages. Arandis typically receives about 9.55 mm of precipitation and has 18.83 rainy days (5.16% of the time) annually. The average warmest month is May (24.08°C), Coldest Month is September (14.14°C), Wettest Month is March (29.21mm), Driest Month is July (0.34mm) and Humidity is 67.59%. **Figure 4** shows the climatic condition in the Arandis area.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	29.31 (84.76)	28.3 (82.94)	36.39 (97.5)	32.35 (90.23)	33.36 (92.05)	30.32 (86.58)	31.33 (88.39)	32.35 (90.23)	31.33 (88.39)	30.32 (86.58)	29.31 (84.76)	26.28 (79.3)	36.39 (97.5)
Average high °C (°F)	22.4 (72.32)	22.94 (73.29)	23.8 (74.84)	24.02 (75.24)	24.08 (75.34)	22.49 (72.48)	22.37 (72.27)	20.75 (69.35)	20.56 (69.01)	20.74 (69.33)	21.35 (70.43)	21.62 (70.92)	22.26 (72.07)
Daily mean °C (°F)	20.91 (69.64)	21.34 (70.41)	22.05 (71.69)	21.98 (71.56)	21.67 (71.01)	19.86 (67.75)	19.6 (67.28)	18.0 (64.4)	18.09 (64.56)	18.64 (65.55)	19.55 (67.19)	20.07 (68.13)	20.15 (68.27)
Average low °C (°F)	18.69 (65.64)	19.06 (66.31)	19.47 (67.05)	19.09 (66.36)	18.44 (65.19)	16.26 (61.27)	15.72 (60.3)	14.17 (57.51)	14.14 (57.45)	14.98 (58.96)	16.23 (61.21)	17.24 (63.03)	16.96 (62.53)
Record low °C (°F)	14.15 (57.47)	16.17 (61.11)	14.15 (57.47)	13.14 (55.65)	13.14 (55.65)	11.12 (52.02)	11.12 (52.02)	10.11 (50.2)	11.12 (52.02)	10.11 (50.2)	12.13 (53.83)	14.15 (57.47)	10.11 (50.2)
Average precipitation mm (inches)	16.66 (0.66)	27.75 (1.09)	29.21 (1.15)	10.38 (0.41)	5.16 (0.2)	0.37 (0.01)	0.34 (0.01)	0.54 (0.02)	3.51 (0.14)	2.9 (0.11)	4.92 (0.19)	12.84 (0.51)	9.55 (0.38)
Average precipitation days (≥ 1.0 mm)	3.49	3.77	3.95	2.48	0.45	0.09	0.09	0.09	0.56	0.65	1.1	2.11	1.57
Average relative humidity (%)	78.61	77.07	71.3	63.8	56.68	55.83	53.87	63.67	69.06	71.81	72.59	76.78	67.59
Mean monthly sunshine hours	11.58	11.59	11.62	11.35	11.13	11.01	11.03	11.28	11.59	11.68	11.69	11.66	11.43

**Figure 4: Climate in the area of Arandis (source: Climate Data Org.**

<https://weatherandclimate.com/namibia/erongo/arandis>

### 5.1.2 Topography

The EPL area is dominated by the Central-Western plains landscapes. The Central-western Plains stretches along the coast. This broad area of plains, extends inland for about 450 km. The plains were largely formed by erosion cutting into higher ground and carving out catchment areas, of several major rivers. The surface is underlain largely by gravel and thin layers of sand, granite outcrops and dolerite dykes and sills. The topography of the area is between 200 m to 450 m above the sea level, and consist of the metamorphic rocks, that were forced up out of the sea during the formation of the Gondwana continent some 500 million years ago, (Mendelsohn, 2003).

**Figure 5** shows the landscape of the project area.

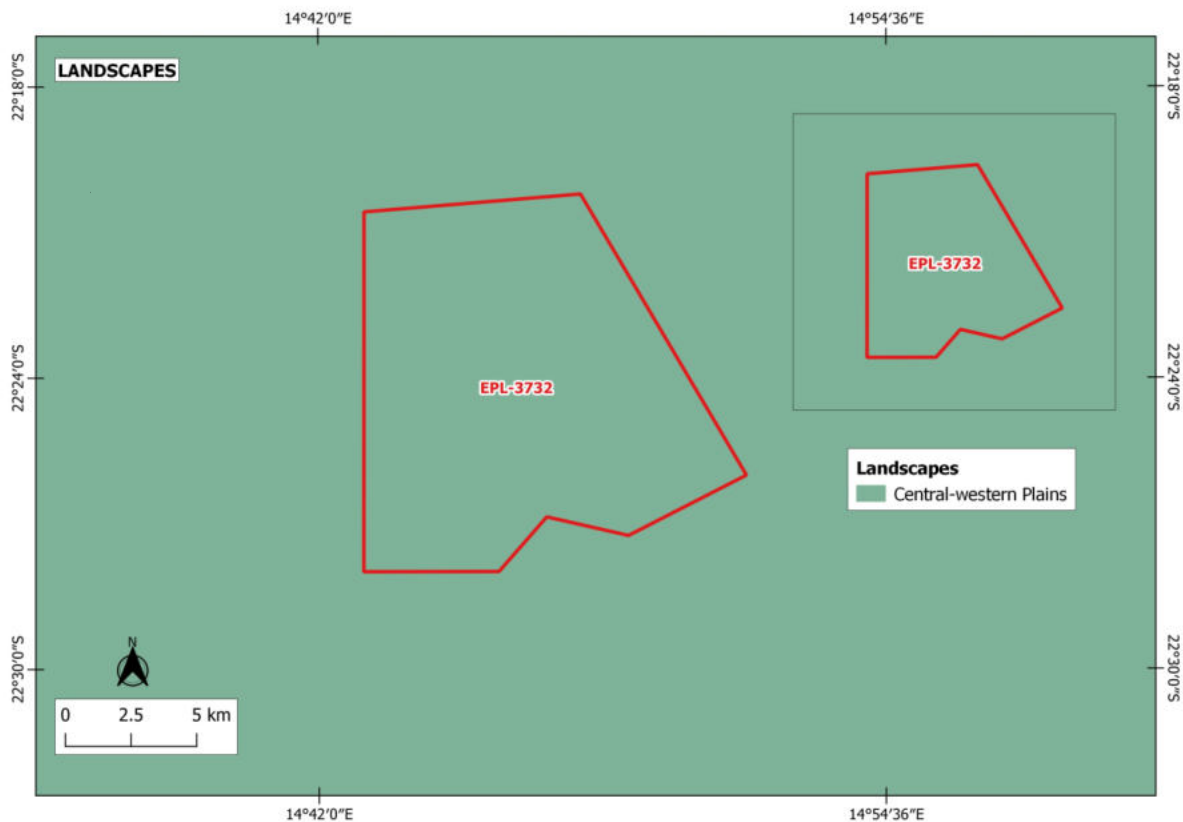


Figure 5: landscape map of EPL 3732

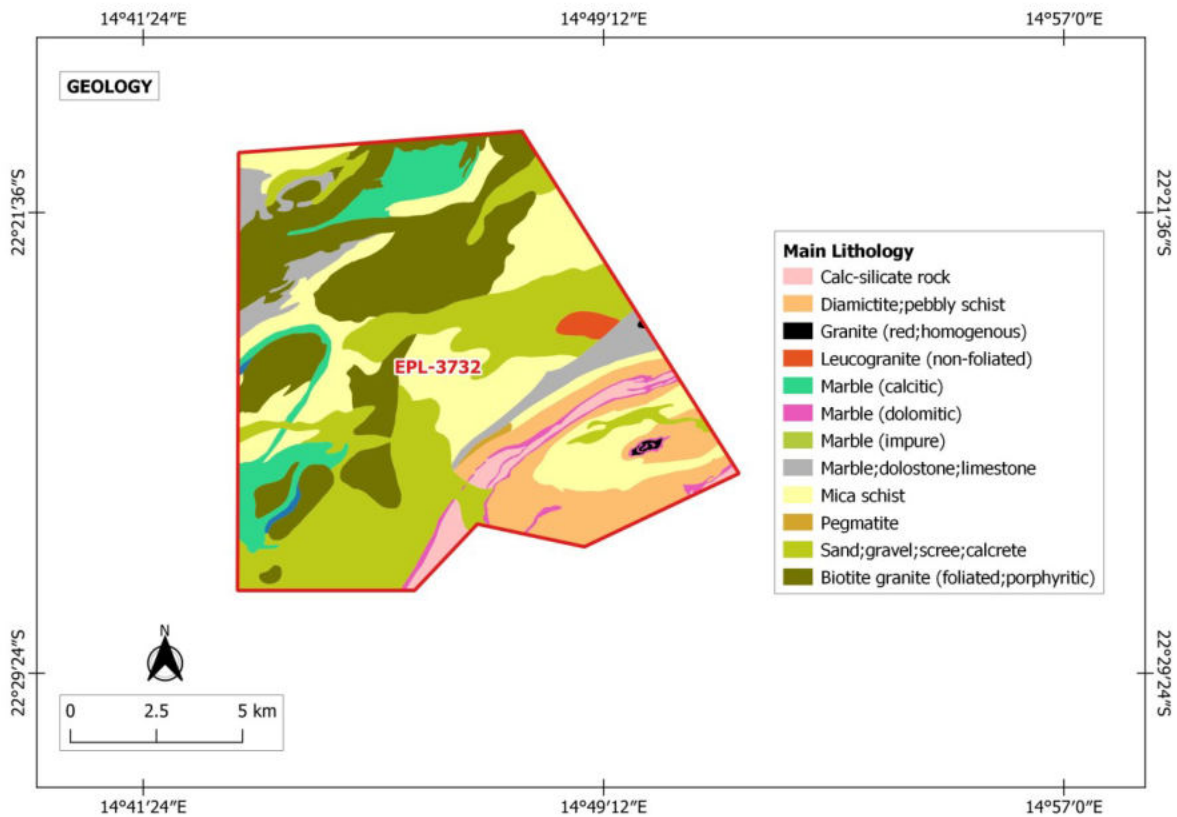
### 5.1.3 Geology and Soil

#### Geology

The project area is underlain by the Damara Granites and Swakop Group. The area is particularly characterized by the Swakop group of the Damara Supergroup. The Swakop Group and other large area of the Central western formations can be traced to the period 550Ma at the formation of the Gondwana. The main lithology of the project area The Swakop Group and other large areas of the western-central and coastal Namibia were formed from deep water deposit (Mendelsohn, 2003).

The Rossing Mountain is a group of partly granite hills rising in a horseshoe shape to 669 m a.s.l., located c. 40 km east of Swakopmund. The highest hills are on the western side of the group and slope steeply to the west, whilst on the eastern side the lower slope is mantled by a long ramp of mainly windblown sand. The granite of the Rossing Mountain, which belongs to the granites of

the Damaran Orogeny, is predominantly fine grained, and is cut across by coarse grained alaskite veins. Most of the exposed granite mass is densely jointed according to the orthogonal pattern; massive compartments are rare and of small size. Joints and alaskite veins are subject to preferential weathering, resulting in the development of gullies. (Migon & Goudie, 2000). The main lithology of the project area is shown below in **Figure 6**.



**Figure 6: Geology map of EPL 3732**

## Soil

The EPL area is covered by Petric Gypsisols and rock outcrops. Gypsisols consists of accumulations of calcium sulphate which are characteristic of Gypsisols, which are restricted to the very dry areas of the central Namib. The calcium sulphate is dissolved out of the rock and soil, and then carried by percolating water beneath the surface, where it remains in a variety of forms; as powder, peddles, stone or gypsum crystals. (Mendelsohn, 2003). These soils have a very low fertility level and therefore only the toughest vegetation survive here (Mendelsohn et al, 2003). **Figure 7** below shows the soil types map found within the EPL area.

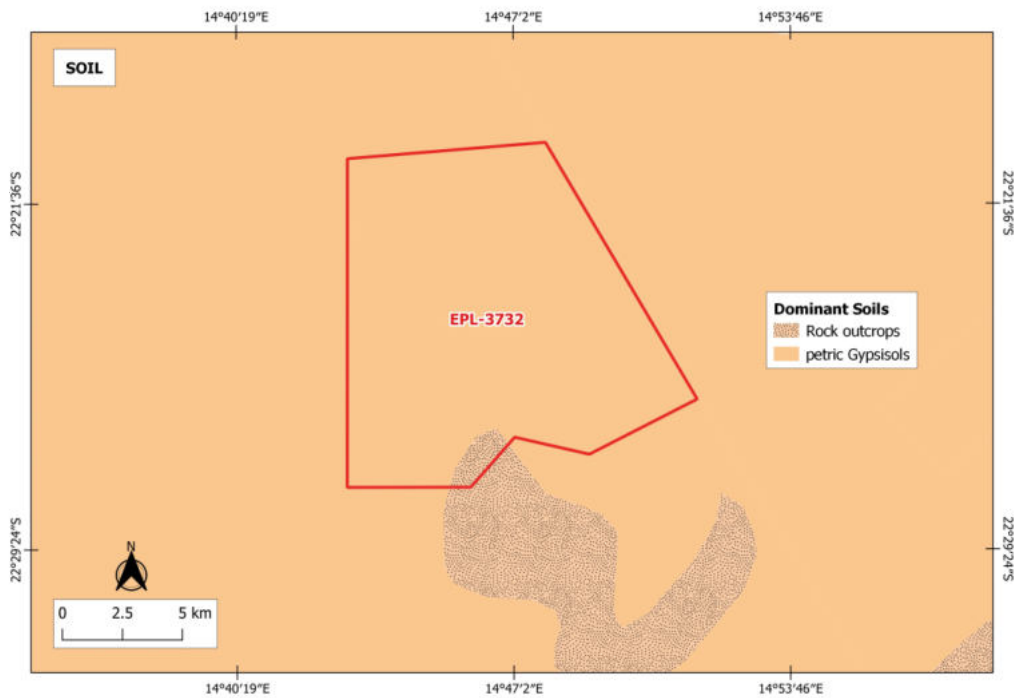


Figure 7: Soil type map for EPL 3732

#### 5.1.4 Hydrology and Water Resources

In terms of surface water/ hydrology, there are minor Rivers that flows within the EPL area. Therefore, the Proponent is recommended to adhere to the regulation stipulated in the Minerals (Prospecting and Mining) Act (No. 33 of 1992), Section 52(1) when conducting exploration activities within the EPL. In terms of groundwater (hydrogeology), the EPL is mainly covered by rock bodies with little groundwater potential aquifer, and their nature potentially does not allow the storage, transmission and flow of groundwater. The EPL is mainly covered by low sensitivity to groundwater pollution due to the nature of the rock bodies in the EPL. **Figure 8** shows the hydrology map of the EPL area.

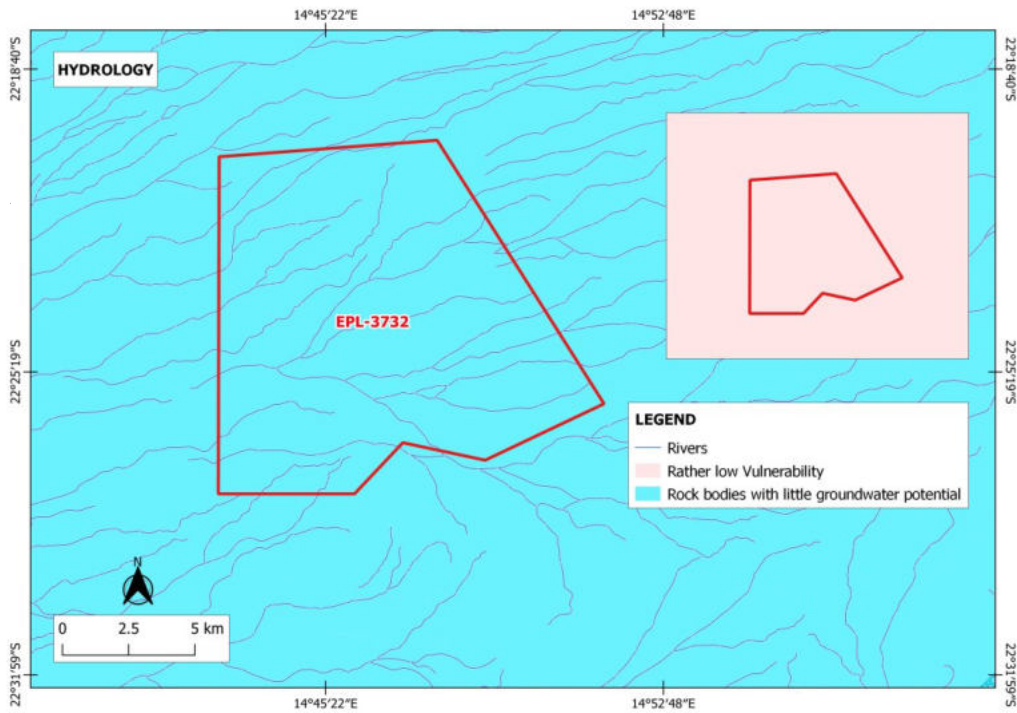


Figure 8: Hydrological map of EPL-3732

### 5.1.5 Flora and Fauna

#### Flora

The Project area lies within the Dorob National Park which contains the Namib Desert Biome. The project area is expected to contain *Arthroa leubnitzia*, *Zygophyllum stapfii*, *Boscia Albitrunca* and lichens. According to Migon & Goudie. (2000), occasional fog supports various species of lichens. Furthermore, Mendelsohn et al. (2002) views the grazing and browsing as extremely low in the general area.. During the site visit that was conducted on the 18<sup>th</sup> of September 2023, lichens such as, Namib Sun (*Stellarangia elegantissima*) (A) and Gypsum Lichen (*Acarospora gypsi-deserti*) (B) where observed on site as shown in (Figure 10).

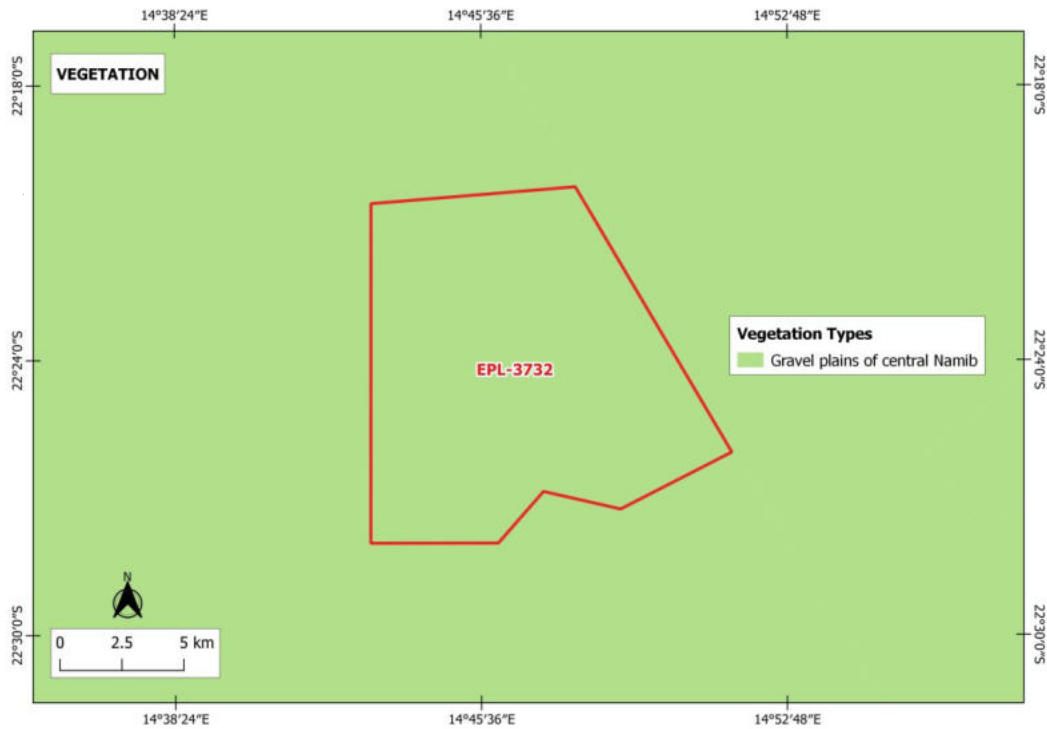


Figure 9: Vegetation map for EPL 3732

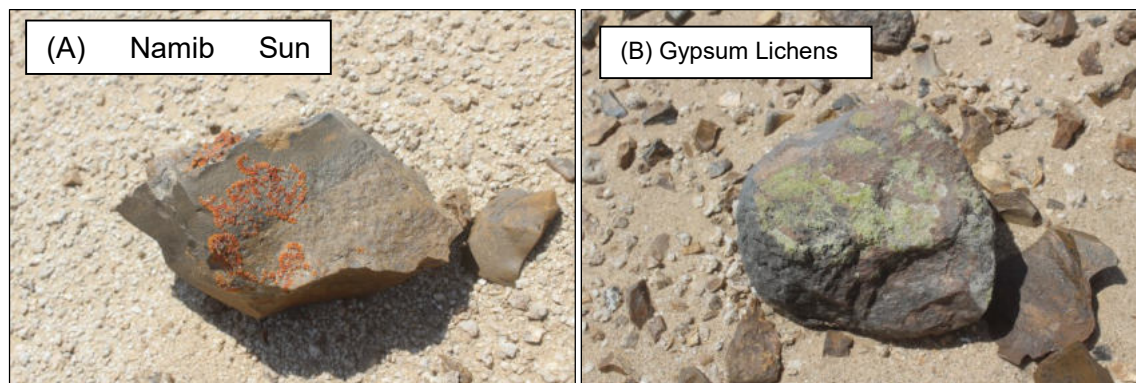


Figure 10: Shows the Lichens observed during the site visit

### Fauna

The EPL lies within an area prone to have Springbok, black-backed jackal, brown hyaena and oryx. About 270 bird species recorded here include Damara Tern, Ludwig's Bustard, Rüppell's Korhaan, African Black Oystercatcher and Gray's Lark (Cunningham, 2022).

### Sensitivity Areas within EPL 3732: No-go exploration areas



The areas mentioned below are regarded as sensitive within the EPL during exploration phase:

**Ephemeral drainage lines:** The various other smaller ephemeral drainage lines which form part of the Swakop River tributaries. These, often well vegetated drainage lines, are virtual lifelines for most vertebrate fauna, especially ungulates, small mammals and birds that forage along these vegetated areas, (Cunningham, 2022).

**Rocky outcrops/ridges and inselbergs:** Ridges, outcrops and inselbergs are generally viewed as unique habitat for vertebrate fauna not necessarily associated with the surrounding areas. Various geckos are rock and crevasse dwelling species associated with these landforms, (Cunningham, 2022).

## **5.2 Heritage and Archaeology**

### **5.2.1 Local Level and Archaeological Findings**

Archaeological sites in Namibia are protected under the National Heritage Act of 2004 (No. 27 of 2004). Evidence shows that, the emergence of modern humans and their ancestors have lived in Namibia for more than one million years, and there are fossil remains of lineal hominin ancestors as early as the Miocene Epoch (Kinahan, 2017). Namibia has a relatively complete sequence covering the mid-Pleistocene to Recent Holocene period, represented by thousands of archaeological sites mainly concentrated in the central highlands, escarpment, and Namib Desert. Abundant evidence has been found of human occupation since at least the mid-Pleistocene (Shackley, 1985). The Erongo region is among the archaeological sensitive landscapes in Namibia, the region is home to 37 declared national monuments in the country and other non-designated archaeological sites, and thus make it archaeologically and historically sensitive

### **5.2.2 Surrounding Land Uses**

The EPL falls within Dorob National Park as shown in **Figure 10**. The Proponent is required to secure a signed agreement from the affected landowners (MEFT) to gain access to the areas of interest for prospecting and exploration investigations as per the Section 52 of the Minerals (Prospecting and Mining) Act No. 33 of 1992 and Section 2.2.3 of the Minerals Policy of Namibia.

1. 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 license –

(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 have to negotiate a contract with landowners to gain access for or mining purposes.

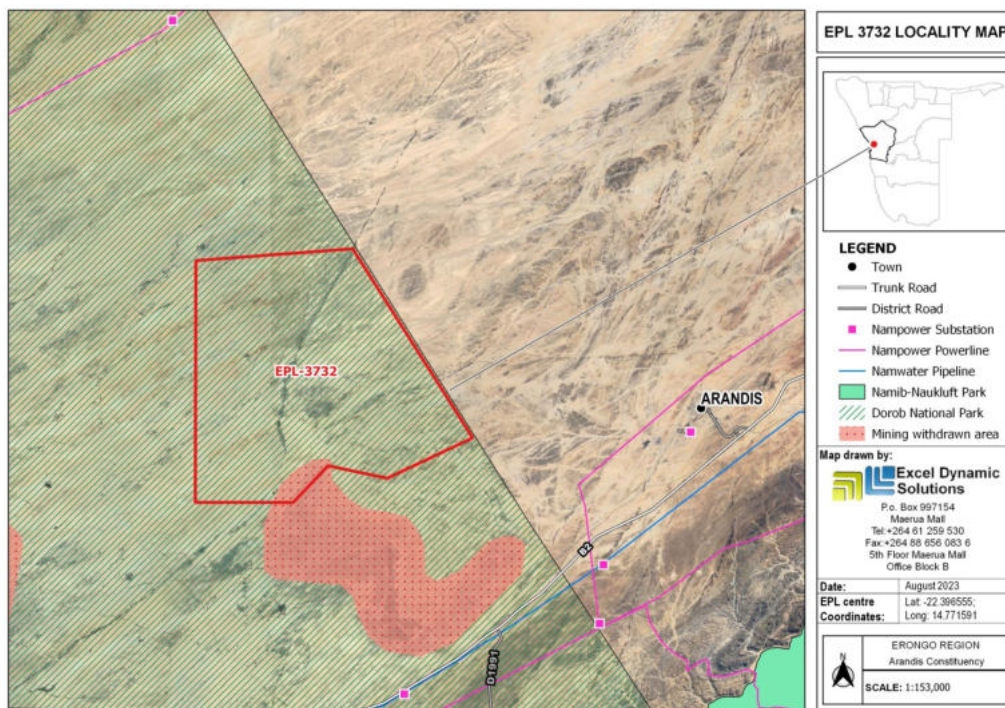


Figure 11: Map showing land use within and surrounding the EPL

### 5.3 Socio-Economic conditions

The statistics shown in the **Table 2** below are derived from the 2011 Namibia Population and Housing Census (NSA, 2011), and presented from a local and regional perspective.

Table 2: Statistics of the Project area

Erongo Region	
Population	150, 809

Population aged 60 years and above	6%
Population aged 5 to 14 years	17%
Population aged 15 to 59 years	67%

<b>Swakopmund</b>	
Attribute	Indicator
Population	10, 093
Females	4, 852
Males	5, 241
Population under 5 years	10%
Population aged 5 to 14 years	19%
Population aged 15 to 59 years	64%
Population aged 60 years and above	8%
Female: Male Ratio	100:108
Population employed	72%
Homemakers	5%
Students	49%
Retired or Old age income recipients	46%
Income from pension	10%
Income from cash remittance	3%
Wages and Salaries	72%

## **6 PUBLIC CONSULTATION PROCESS**

Public consultation forms part of 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 to what extent further investigations are necessary. Public consultation can also aid in the process of identifying possible mitigation measures. Public consultation for this scoping study has been done in accordance with 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 were given a chance to register after project advertisement notices in the newspapers. Newspaper advertisements were placed in two widely-read national newspapers in the region (*The Namibian Newspaper* and *New Era Newspaper*). The project advertisement/announcement ran for two consecutive weeks. The summary of pre-identified and registered I&APs is listed in **Table 3** below and the complete list of I&APs is provided in **Appendix D**.

**Table 3: 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
Ministry of Health and Social Services
<b>Regional, Local and Traditional Authorities</b>
Erongo Regional Council
Arandis Town Council
<b>General Public</b>
Interested 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 with regards to the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing brief information about the proposed project was compiled (**Appendix E**) and emailed to all new registered Interested and Affected Parties (I&APs);
- Project Environmental Assessment notices were published in *The Namibian and New Era newspapers* (30 August 2023 and 06 September 2023) (**Appendix F**), briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns;
- A public meeting was scheduled and held on **18 September 2023**, at the Swakopmund MEFT office at 09:40 as shown in **Figure 11** and site notice placed at the Arandis Town Hall and Arandis Town Council as shown in **Figure 12**. The consultation meeting minutes were taken and are attached as **Appendix G**.



Figure 12: Consultation meeting at MEFT office, Swakopmund



Figure 13: Site notice placed at the Arandis Town Hall and Arandis Town Council

### 6.3 Feedback from Interested and Affected Parties

Issues were raised by I&APs (from the consultation meeting) and these issues have been recorded and incorporated in the ESA Report and EMP. The summary of the key issues is presented in **Table 4** below.

Table 4: Summary of main issues and comments received during the public meeting

Issues	Concerns
National Protected Park (Dorob National Park)	The project lies within the National park which is rich in sensitive vegetation.
Multiple-track roads	The project lies within a National protected park

## 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 done 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 development. The potential positive and negative impacts that have been identified from the prospecting activities are listed as follow:

Positive impacts:

- Creation of jobs to the locals (primary, secondary and tertiary employment).
- Producing of a trained workforce and small businesses that can service communities and may initiate related businesses
- Boosting of the local economic growth and regional economic development.
- Open up other investment opportunities and infrastructure-related development benefits

Negative impacts:

- Land degradation and Biodiversity Loss
- Generation of dust
- Water Resources Use
- Soil & Water Resources Pollution
- Waste Generation
- Occupational Health & Safety risks
- Vehicular Traffic Use & Safety
- Noise & Vibrations
- Disturbance to Archaeological & Heritage Resources
- Impacts on local Roads
- Social Nuisance: local property intrusion & disturbance
- Impacts associate with closure and decommissioning of exploration works

## **7.2 Impact Assessment Methodology**

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

The identified impacts were assessed in terms of scale/extent (spatial scale), duration (temporal scale), magnitude (severity) and probability (likelihood of occurring), as presented in **Table 5**, **Table 6**, **Table 7** and **Table 8**, respectively.

In order 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 5** shows rating of impact in terms of extent of spatial scale.

**Table 5: 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 6** shows the rating of impact in terms of duration.

**Table 6: 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 7** shows the rating of impact in terms of intensity, magnitude or severity.

**Table 7: 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 actually occurring. This determination is based on previous experience with similar projects and/or based on professional judgment. **Table 8** shows impact rating in terms of probability of occurrence.

**Table 8: 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 5, Table 6, Table 7** and **Table 8**) 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 9**).

**Table 9: Significance rating scale**

Significance	Environmental Significance Points	Colour Code
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

<i>Significance</i>	<i>Environmental Significance Points</i>	<i>Colour Code</i>
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 of time 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 possible analysis) 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 a form of management action plans are provided in the Draft Environmental Management Plan.

### 7.3 Assessment of Potential Negative Impacts

The main potential negative impacts associated with the operation and maintenance phase are identified and assessed below:

#### 7.3.1 Land Degradation and Loss of Biodiversity

**Fauna:** The trenching, pitting and drilling activities done 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 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 not only the domestic animals (livestock) grazing at the explored sites of the EPL, but also the wildlife present on the explored areas. Disturbance, not only due to human and vehicle movements, but also potential illegal hunting (poaching) of local wildlife by project related workers. This could lead to the loss or a number reduction of specific faunal species which also impacts tourism in the community.

Another potential activity that will impact the faunal community is the un-rehabilitated and/or unfenced boreholes, trenches and pits used for exploration (once they are no longer in use). If these holes and pits/trenches are not fenced off or closed off by rehabilitating them. This could pose a high risk of site domestic and wild animals falling into these holes and pits, causing injuries and potentially mortalities.

**Flora:** Direct impacts on flora will mainly occur through clearing for the exploration access roads and associated infrastructure. The dust emissions from drilling may affect surrounding vegetation through the fall of dust. Some loss of vegetation has an inevitable consequence on the development. However, given the abundance of the shrubs and site-specific areas of exploration on the EPL, the impact will be localized, therefore manageable.

Under the status, the impact can be of a high significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a medium significance rating. The impact is assessed in **Table 10** below.

**Table 10: Assessment of the impacts of exploration on biodiversity**

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

### 7.3.2 Generation of Dust (Air Quality)

Dust emanating from site access roads when transporting exploration equipment and supply (water) to and from site (time-to-time) may compromise the air quality in the area. Vehicular movements from heavy vehicles such as trucks would potentially create dust even though it is not always so severe. The hot and dry environment, loose and sandy nature of the substrate and low vegetation cover causes ambient fugitive dust levels. Additionally, activities carried out as part of the exploration works such as drilling would contribute to the dust levels in the air. The medium significance of this impact can be reduced to a low significance rating by properly implementing mitigation measures. The impact is assessed in **Table 11** below.

**Table 11: Assessment of the impacts of exploration on air quality**

<b>Mitigation Status</b>	<b>Extent</b>	<b>Duration</b>	<b>Intensity</b>	<b>Probability</b>	<b>Significance</b>
<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>

### 7.3.3 Water Resources Use

Water resources is impacted by project developments/activities through pollution (water quality). The impact of the project activities on the resources would be dependent on the water volumes required by each project activity. Commonly exploration activities use a lot of water, 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 for.

The drilling method to be employed for this project's exploration activities is Reverse Circulation Drilling. The required water for exploration is about 3000 litres per month. This water will be used for drilling purposes such cooling and washing drilling equipment, drinking and other domestic purposes. Given the low to medium groundwater potential of the project site area, the Proponent will cart water volumes from outside the area and store it in industry standard water cartage

reservoirs/tanks on site. The exploration period is limited time wise, therefore, the impact will only last for the duration of the exploration activities and ceases upon their completion.

Without the implementation of any mitigation measures, the impact can be rated as medium, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in the **Table 12** below.

**Table 12: 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 - 2	L - 2	L/M - 2	L - 12

### 7.3.4 Soil and Water Resources Pollution

The proposed exploration activities are associated with a variety of potential pollution sources (i.e., lubricants, fuel, and wastewater) that may contaminate/pollute soils and eventually groundwater and surface water. The anticipated potential source of pollution to water resources from the project activities would be hydrocarbons (oil) from project vehicles, machinery, and equipment as well as potential wastewater/effluent from exploration related activities.

The spills (depending on volumes spilled on the soils) from these machinery, vehicles and equipment could infiltrate into the ground and pollute the fractured or faulted aquifers on site, and with time reach further groundwater systems in the area. However, it should be noted that the scale and extent/footprint of the activities where potential sources of pollution will be handled is relatively small. Therefore, the impact will be moderately low.

Pre-mitigation measure implementation, the impact significance is low to moderate and upon implementation, the significance will be reduced to low. The impact is assessed in **Table 13** below.

**Table 13: Assessment of the project impact on soils 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

### 7.3.5 Waste Generation

During the prospecting and exploration phase, domestic and general waste is produced on site. If the generated waste is not disposed of in a responsible way, land pollution may occur on the EPL or around the site. 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. In addition to this, the permit for the Dorob National park, stipulates that no rubbish should be exposed off in the park. Therefore, the exploration programme needs to have appropriate waste management for the site. 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. 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 14**.

**Table 14: 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

### 7.3.6 Occupational Health and Safety Risks

Project personnel (workers) involved in the exploration activities may be exposed to health and safety risks. These are in terms of accidental injury, owing to either minor (i.e., superficial physical injury) or major (i.e., 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. If machinery and equipment are not properly stored, the safety risk may be a concern for project workers.

The impact is probable and has a medium significance rating. However, with adequate mitigation measures, the impact rating will be reduced to low. This impact is assessed in **Table 15** below and mitigation measures provided.

**Table 15: 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

### 7.3.7 Vehicular Traffic Use and Safety

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

Depending on the project needs, trucks, medium and small vehicles will be frequenting the area to and from exploration sites on the EPL. This would potentially increase slow moving heavy vehicular traffic along these roads. The impact would not only be felt by the district road users but also the local road users (via local access gravel and single-track roads). This would add additional pressure on the roads.

However, only so many times a week or even monthly that the exploration related heavy trucks will be transporting materials and equipment from and to 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 16** below.

**Table 16: Assessment of the impacts of exploration on road use (vehicular traffic)**

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

### 7.3.8 Noise and vibrations

Prospecting and exploration work (especially drilling) may be a nuisance to surrounding communities due to the noise produced by the activity. Excessive noise and vibrations can be a health risk to workers on site. The exploration equipment used for drilling on site is of medium size and the noise level is bound to be limited to the site only, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium significance. To change the impact significance from the pre-mitigation significance to low rating, the mitigation measures should be implemented. This impact is assessed in **Table 17** below.

**Table 17: Assessment of the impacts of noise and vibrations from exploration**

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

### 7.3.9 Disturbance to Archaeological and Heritage resources

The specialist archaeological assessment conducted, indicates that some sections and within the boundaries of the proposed project site area are highly sensitive and archaeologically significant in terms of heritage resources that characterizes the need of a detailed investigation of any other existing archaeological cultural materials in the areas. This area was mapped out, and coordinates taken to establish “No-Go-Areas”, due to their sensitivity the areas were documented, and they 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 establishment of 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 18**.

**Table 18: Assessment of the impacts of exploration on archaeological & heritage resources**

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

### 7.3.10 Impact on Local Roads/Routes

Prospecting and exploration projects are usually associated with movement of heavy trucks and equipment or machinery that use locals frequently. The heavy trucks travelling on the local roads and exert more pressure on them. These local roads in remote areas may not be in a good condition already for light vehicles, and the additional vehicles such as heavy ones may make it worse and difficult to be used by small (vehicles) that already struggled on the roads before they got worse. This will be a concern if maintenance and care is not done during the exploration phase. The impact would be short-term (during exploration only) 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 19**.

**Table 19: Assessment of exploration on local services (roads and water)**

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

### Mitigations and recommendations to minimize the impact on local services

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

### 7.3.11 Social Nuisance: Local Property intrusion and Disturbance or Damage

The presence of some out-of-area workers may lead to social annoyance to the local community. This could particularly be a concern if there is cause of damage or vandalism to properties of the locals. The private properties of the locals could be houses, fences, vegetation, or domestic and wild animals (livestock and wildlife) or any properties of economic or cultural value to the landowners or occupiers of the land. The damage or disturbance to properties may not only be private but local public properties too. The unpermitted and unauthorized entry to private properties may cause crashes between the affected property (land) owners and the Proponent.

Pre-implementation of mitigation measures, the impact is rated as of medium significance. However, upon mitigation (post-mitigation), the significance will change from medium to low rating. The impact is assessed below (**Table 20**).

**Table 20: Assessment of 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

### 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”.

Similarly, to many other exploration projects, one cumulative impact to which the proposed project and associated activities potentially contribute is the:

- **Impact on road infrastructure:** The proposed exploration activity contributes cumulatively to various activities and travelling associated with tourism and 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 water:** While the contribution of this project will not be significant, mitigation measures to reduce water consumption during exploration are essential.

## **8 CONCLUSIONS AND RECOMMENDATIONS**

### **8.1 Conclusion**

In conclusion, it is crucial for the Proponent and their contractors to effectively implement the recommended management and mitigation measures, in order to protect both the biophysical and social environment throughout the project duration. All these would be done with the aim of promoting environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities in the host community and environment at large. This is 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. Lastly, should the ECC be issued, the Proponent will be expected to be compliant with the ECC conditions as well as legal requirements governing the mineral exploration and related activities.

### **8.2 Recommendations**

The potential positive and negative impacts stemming from the proposed exploration activities on EPL No. 3732 were identified, assessed and appropriate management and mitigation measures (to negative impacts) made thereof for implementation by the Proponent, their contractors and project related employees.

Most of the potential impacts were found to be of medium rating significance. With the effective implementation the recommended management and mitigation measures, this will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from medium rating to low). To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or a project Environmental Control Officer (ECO) is highly recommended. The monitoring of this implementation will not only be done to maintain the reduce impacts' rating or maintain low rating but to also ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away.

The Environmental Consultant 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 on monitoring the implementation of these measures.

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 ensuring 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.

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