

**ENVIRONMENTAL SCOPING ASSESSMENT (ESA) FOR NUCLEAR FUEL MINERALS ON EXCLUSIVE PROSPECTING LICENCE (EPLs) No. 6283 - 6284 LOCATED SOUTH-EAST OF ARANDIS, ERONGO REGION.**

**ENVIRONMENTAL ASSESSMENT REPORT – FINAL**

**ECC REFERENCE No.: 00906**

|                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                           |
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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**February 2023**

## **EXECUTIVE SUMMARY**

John Walenga (hereinafter referred to as The Proponent) has been granted Exclusive Prospecting Licences (EPLs) No. 6283 and 6284 by the Ministry of Mines and Energy (MME). The EPLs cover a combined area of 3 242.1445 hectares (ha), located about 27 km from Arandis in the Erongo region. EPL - 6283 partially covers (overlies) in farms Marmor – Pfrte No. 37 and Namib-Naukluft Park while EPL - 6284 overlies in farms such as Geluk No. 116, Bloemhof No. 13, and Marmor-Pfrte No. 37. The Proponent is interested in prospecting and exploring for Base & Rare Metals, Industrial Minerals, and Nuclear Fuels.

According to Section 27 (1) of the Environmental Management Act (EMA), No. 7 of 2007, the proposed prospecting and exploration activities are among the 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 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 Ministry of Environment, Forestry & Tourism (MEFT) as a custodian for project registration. Upon submission of an Environmental Scoping Assessment (ESA) report and draft Environmental Management Plan (EMP), an Environmental Clearance Certificate (ECC) for the proposed project may be considered by the Environmental Commissioner at the MEFT's Department of Environmental Affairs and Forestry (DEAF).

### **Brief Project Description**

**Planned Activities:** Planned Activities; Proposed Exploration

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

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

- **Desktop Study: Geological mapping:** This includes the review of geological maps of the area, on-site ground traverses, observations, and an update where relevant, of the information obtained during previous geological studies of the area.
- **Lithology geochemical surveys:** Rock and soil samples may be collected and taken for analytical chemistry laboratories to determine the target commodity content. Soil samples consist of small pits ( $\pm 20\text{cm} \times 20\text{cm} \times 30\text{cm}$ ) where 1kg samples can be extracted and sieved to collect 50g of material for submission to a laboratory.
- **Geophysical surveys:** This will entail data collection of the substrata (in most cases service of a ground geophysical contractor will be sourced), using sensors such as radar, magnetic and electromagnetic techniques to detect underground mineralization. Ground geophysical surveys are conducted by geophysical technicians with handheld instruments.

## 2. Invasive Technique

- **Detailed Exploration Drilling:** Should the soil and/or the geophysical results be positive, drilling activities will commence and drill samples will be collected for further analysis. This will determine the grade and volume of the potential mineralization. Two widely used drilling options may be adopted, these are Reverse Circulation (RC) drilling and/or diamond-core drilling. RC drilling uses a pneumatic hammer, which drives a rotating tungsten-steel bit. The technique produces an uncontaminated large-volume sample, comprised of rock chips. It is relatively quicker and cheaper when compared to other techniques like Diamond Drilling. However, diamond drilling may also be considered for this exploration programme, during advanced stages of exploration if large amounts of sample material may be required for analysis and to perform processing trials.

The drilling site will consist of a drillrig, drill core, and geological samples store and a drill equipment parking and maintenance yard (including a fuel and lubricants storage facility).

## **Public Consultation**

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. The public consultation process assisted the Environmental Consultant in identifying all potential impacts and aid 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 order to ensure that the public is notified and provided 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 relevant authoritative ministries, and upon request to all new registered Interested and Affected Parties (I&APs).
- Project Environmental Assessment notices were published in the Namibian and New Era Newspapers for two consecutive weeks (17<sup>th</sup> and 25<sup>th</sup> January 2023), briefly explaining the activity and its locality, and inviting members of the public to register as I&APs and submit their comments/concerns.
- A consultation meeting was scheduled and held with interested parties on 10 February 2023 at Arandis Town Council.
- The issue and concerns raised during the meetings and site visit assessment/observation, have formed the basis for the ESA Report and EMP.

## **Potential Impacts identified.**

The following potential 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); habitat disturbance and potential illegal hunting of wildlife in the area; potential impact on water resources (specifically groundwater) 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.

The potential negative impacts were assessed, and mitigation measures were 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 a medium project-related rating, appropriate management and, mitigation measures were recommended for implementation by the Proponent and all project-related employees.

The public was consulted as required by the EMA and its 2012 EIA Regulations (Sections 21 to 24). This was done via the two newspapers (New Era and The Namibian) used for this environmental assessment. A consultation through a face-to-face meeting with I&APs at Arandis Town Hall and whereby the I&APs raised comments and concerns on the proposed project activities.

The issues and concerns received and the site visit /assessment which was conducted on the 10<sup>th</sup> of February 2023 formed the basis of 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 of 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. The monitoring of this implementation will not only be done to reduce the impacts' rating or maintain a low rating but also to ensure that all potential impacts identified in this study and other impacts that might arise during the implementation are properly identified in time and addressed right away too.

It is vital for the Proponents 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 to promote environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities in the community and environment at large. However, if an ECC is to be issued, the ECC should be issued on the condition that the provided management measures and action plans are effectively implemented on-site and monitored. Most importantly, monitoring of the environmental components described in the impact assessment chapter should be conducted by the Proponent and applicable Competent Authority. This is to ensure that all potential impacts identified in this study and other impacts that might arise during the exploration 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, including;

- Furnishing the MEFT and MME with an environmental report every six (6) months
- Carrying out and submission of an annual Environmental Audit to the MEFT and MME

## **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 into 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 prospect, explore and, ensure compliance with these specific legal requirements.
- The Proponent and all their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.
- Site areas where exploration activities have ceased are rehabilitated, as far as practicable, to their pre-exploration state.
- Environmental Compliance monitoring reports should be compiled and submitted to the DEAF (MEFT / DEAF).

### **Disclaimer**

EDS warrants that the findings and conclusion contained herein were accomplished in accordance with the methodologies outlined 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 (EIA) of a property to identify recognized environmental conditions. There is a possibility that even with the proper application of these methodologies, there might 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 on 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.



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**Appendix D:** Proof of public consultation meeting (EIA Notification in the newspapers (*New Era* and the *Namibian*, *Minutes and Attendance register* )

**Appendix G:** Intension to grant

## 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 that 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 the 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 licence 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 animals that are found in a given area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Flora</b>                                    | All plants that are 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 the 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 inputs 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

John Walenga (hereinafter referred to as The Proponent) has been granted Exclusive Prospecting Licences (EPLs) No. 6283 and 6284 by the Ministry of Mines and Energy (MME). The EPLs cover a combined area of 3 242.1445 hectares (ha), located about 27 km from Arandis in the Erongo region as shown in **Figure 1**. EPL 6283 partially covers (overlies) in farms Marmor – Pfrte No. 37 and Namib-Naukluft Park while EPL 6284 overlies in farms such as Geluk No. 116, Bloemhof No. 13, and Marmor \_ Pfrte No. 37 as shown in **Figure 13**. The Proponent is interested in prospecting and exploring for Base & Rare Metals, Industrial Minerals, and Nuclear Fuels.

Section 27 (1) of the Environmental Management Act (EMA) (No. 7 of 2007) and its 2012 Environmental Impact Assessment (EIA) Regulations, provides a list of activities that may not be carried out without an Environmental Impact Assessment (EIA) undertaken and an Environmental Clearance Certificate (ECC) obtained. Prospecting and exploration activities are listed among activities that may not occur without an ECC. Therefore, individuals or organizations may not carry out exploration activities without an EIA undertaken and an ECC awarded.



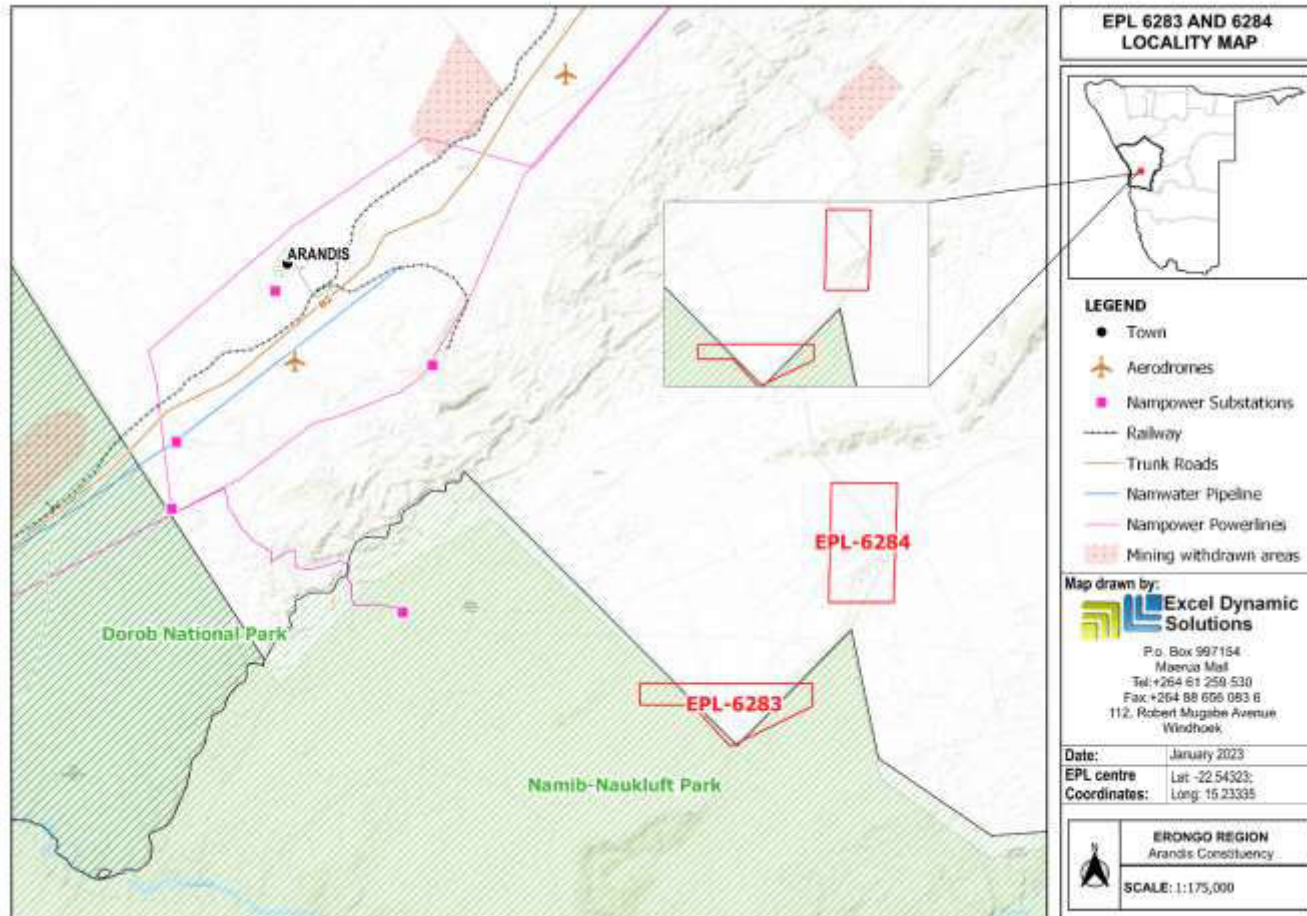


Figure 1: Locality map for EPL No. 6283 – 6284 near Arandis, Erongo Region.

## **1.2 Terms of Reference (ToR), Scope of Works, and Appointed Environmental Assessment Practitioner**

Excel Dynamic Solutions (Pty) Ltd (EDS) has been appointed by the Proponent to undertake an environmental Assessment (EA), and thereafter, apply for an ECC for exploration work 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 Environmental Impact Assessment (EIA) Regulations (GN. No. 30 of 2012) to conduct the study.

The application for the ECC was compiled and submitted to the Ministry of Environment, Forestry, and Tourism (MEFT), 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).

The EIA project is headed by Mr. Nerson Tjelos, a qualified and experienced Geoscientist and experienced EAP. The consultation process and reporting were done by Mr. Leonard Mandume and Ms. Aili lipinge respectively and reviewed by Ms. Rose Mtuleni. EAP CV 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. It contributes to the improvement of livelihoods. In Namibia, exploration for minerals is undertaken mainly by the private sector. Mineral exploration has great potential to enhance and contribute to the development of other sectors, and its activities provide temporary employment, as well as taxes that fund social infrastructural development. The minerals sector yields foreign exchange and accounts 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 activities foster several associated activities such as the

manufacturing of exploration and mining equipment, and the 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 the Harambee Prosperity Plans (HPPs) I and II. Mining of minerals locally is essential to the developmental goals of Namibia with aim of contributing to the ever-increasing global demand for minerals, and national prosperity. Therefore, successful prospective and exploration on EPL No. 6283 – 6284 would lead to the mining of the target commodity, which could contribute towards achieving the goals of the national development plans.

#### **1.4 Namib Ecology Integrity**

The ecological integrity and diversity of fauna and flora of Western Namib are well addressed in the Strategic Environmental Management Plan (SEMP) developed in 2009, as a result of the Strategic Environmental and Socio-Economic Assessment (SEMP). The annual SEMP report (2013) indicated that the integrity and diversity of the Western Namib biodiversity are not compromised by exploration and mining activities. The report defines ecological integrity to mean that ecological processes are maintained, key habitats are protected, rare and endangered, and endemic species are not threatened. The SEMP 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 mining activities;
- Ensure workers and the public do not suffer significantly increased health risks from the exploration and mining activities;

- Safeguard the natural beauty of the desert and ensure its sense of place are not compromised unduly by exploration and mining activities.
- Identify ways of avoiding conflicts between the tourism industry and prospecting/mining, so that both industries can coexist in Western Namib;
- Protect the ecological integrity and diversity of fauna and flora of 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 mining/development;
- Maintain and enhance Namibia's international image because of environmentally, socially, and financially responsible mining operations;
- Ensure that exploration and mining and all related infrastructure developments will have the least possible negative impact on archaeological and paleontological heritage resources.

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

Prospecting and exploration of minerals are the first components of any potential mining-related project. 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 once an ECC has been issued. The exploration process includes three phases - prospecting, exploration, and the decommissioning of works.

### **2.1 Prospecting Phase**

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

This mainly entails a desktop review of geological area maps; a study of previous historical geological and mineral exploration works by previous prospectors around the vicinity of the EPL area and attempts to re-evaluate and/or reinterpret these results.

#### **2.1.2 Geophysical surveys**

Geophysical surveys entail data collection of the substrate 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 sensors, 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 are collected and taken for trace element analysis by analytical chemistry laboratories, to determine if sufficient amounts of the target commodities are present. Additionally, trenches or pits may be dug, depending on the commodity (in a controlled environment e.g., fencing off and labelling activity sites), to further investigate the mineral potential.

Soil sampling entails the digging of small pits, 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 closed immediately after obtaining the needed samples, or the sites will be secured until the trenches or pits are closed. Where necessary, the landowner and other relevant stakeholders will be engaged to obtain authorization.

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

The selection of the potential mineralization model and exploration targets is based on the local geology, trenching, drilling, and assay results of the samples collected. The planned exploration activities are aimed at delineating the mineral deposits and determining whether the deposits are economically feasible mining resources.

### **2.2.1 Detailed Exploration Drilling**

Should analyses by an analytical laboratory yield positive results, holes are drilled, and drill samples are 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 in which to set the rig, will be cleared. Two widely used drilling options may be adopted, these are Reverse Circulation (RC) drilling and/or Diamond (Core) drilling.

RC drilling uses a pneumatic hammer, which drives a rotating tungsten-steel bit. This technique produces an uncontaminated large volume sample, which is composed of rock chips. It is relatively quicker and cheaper compared to other techniques like Diamond Drilling. However, diamond drilling may also be considered for this exploration programme, during advanced stages of exploration, if large amounts of sample material may be required for analysis and to perform processing trials.

## **2.3 Other aspects of the proposed exploration operations include:**

### **2.3.1 Accessibility to Site**

The EPL is accessible via the B2 road that diverts into an existing road. All project related vehicles will be using these existing roads to access the EPL.

### **2.3.2 Material and Equipment**

The input required for the exploration program in terms of vehicles and equipment includes: 4X4 vehicles, truck, drill rigs, excavator / front-end loader, dozer/s, drilling fluids stored in manufacturers approved containers, air compressors, generator for power supply. Equipments and vehicles will be stored at a designated area near the accommodation site, or a storage site established within the EPL area.

### **2.3.3 Services and Infrastructure**

**Water:** About 4 000 liters of water will be required per month for exploration activities. This water will be used for cooling down and washing equipment, drilling-related activities, and ablution. Potable water will also be made available for the exploration crew on site. The water will be sourced from elsewhere (Upon acquiring all the required permit and reaching agreement with relevant authorities) and transported to the site.

**Power supply:** Power required during the operation phase will be provided from diesel-generator. About 2,500 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 by a diesel bowser.

**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 or observed. Fuel may also be stored in jerry cans placed on plastic sheeting to avoid unnecessary contamination of the ground.

### **2.3.4 Waste Management**

The site will be equipped with secured waste bins for each type of waste (i.e., general and hazardous). Depending on the amount generated, waste will be sorted and collected as often as necessary 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:** Mobile chemical ablution facilities will be provided on-site. The wastewater will be transported offsite to the treatment facility by the designated/appointed external waste management contractor.

**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.

### **2.3.5 Health and safety**

The Proponent should ensure that adequate and appropriate Personal Protective Equipment (PPE) is provided to every project personnel working on site. A minimum of three first aid kits will be readily available on site to attend to potential minor injuries.

### **2.3.6 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 will be constructed around the storage site to ensure animals are not put at risk.

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

### **2.3.7 Accommodation**

The exploration workforce will be accommodated in Arandis, upon reaching a written agreement between the Proponent and the respective landowner or custodian (Arandis Town Council) before setting up accommodation structures (tented camps). Exploration activities will take place during the daytime only, and staff will commute to the exploration site(s) from their place of accommodation.

## **2.4 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 the predicted closure. Therefore, it is best practice for the proponent to ensure the project activities cease in an environmentally friendly manner and the site is rehabilitated.



### 3. PROJECT ALTERNATIVES

Alternatives are defined as “*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 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 no prospecting and exploration activity occurs on site. 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 discontinued, the current land use for the proposed site will remain unchanged.

The 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 the following:

Loss of foreign direct investment.

About 5 – 10 temporary job opportunities for community members will not come to realization.

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 the local and national governments through land lease fees, licence lease fees, and various tax structures.

Improved geological understanding of the site area regarding the targeted commodities.

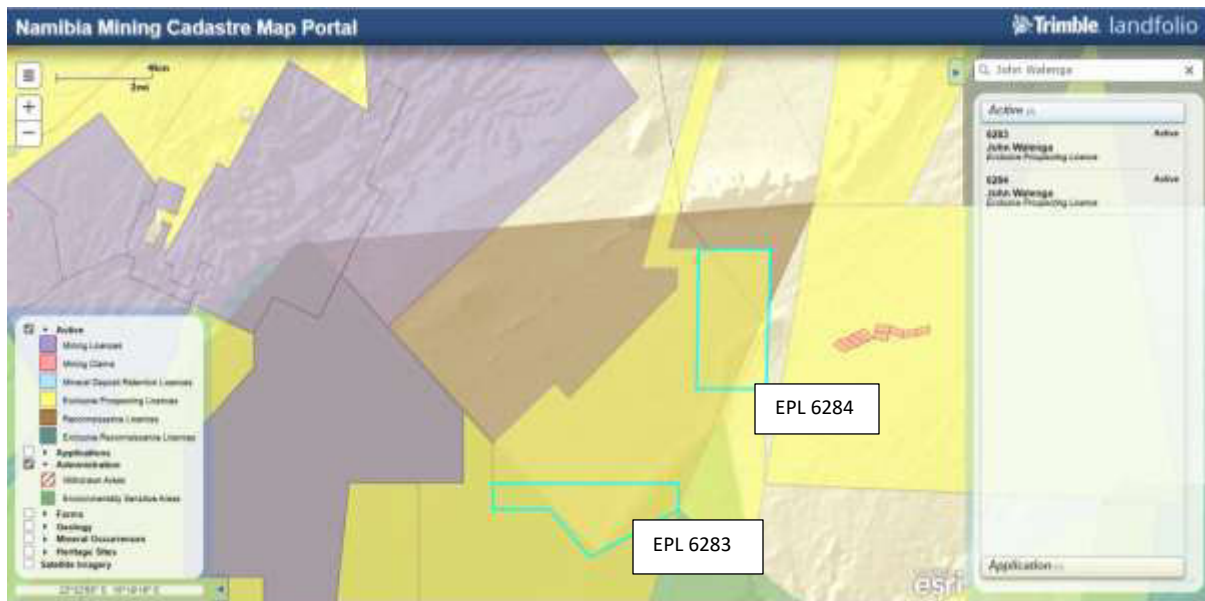
Socio-economic benefits such as skills acquisition for local community members would not realized.

Considering the above losses, the “no-action or go” alternative is considered a viable option for the project, although, in the case where parts of the EPL are considered environmentally sensitive and/or protected, one or several sections of the site may be identified as no-go zones.

### **3.1.2 Exploration Location**

The prospecting and exploration location is dependent on the geological setting (regional and local), the economic geology, and the exploration and mining history of the EPL area. 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). Therefore, finding an alternative location for the planned exploration activities is not possible. Should an economic mineral deposit be defined, the tenement has sufficient surface area for related facilities.

Furthermore, the potential locations of national mineral resources are mapped and categorized by the Ministry of Mines and Energy (MME) on the Namibia Mining Cadastral Map. The mining cadastre contains information on Exclusive Prospecting Licenses, Mining Claims and Licenses, Mineral Deposit Retention Licenses, Reconnaissance Licenses and Exclusive Reconnaissance Licenses. Information on EPL 6283 - 6284 (**Figure 2**) and other licenses are available on the Namibia Mining Cadastral Map ( <https://portals.landfolio.com/namibia/>).



**Figure 2: Status and location of the EPLs on the MME mining cadastre**

### **3.1.3 Exploration Methods**

It is anticipated that invasive exploration methods will be utilized. If any other viable exploration methods other than those described in this report are found to achieve the purpose more effectively and/or efficiently without aggravating any environmental measures put in place, they should be implemented.

**No blasting activities is anticipated to occur during the exploration phase for this project.**

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

Prospecting and exploration activities have legal implications associated with certain applicable legal standards. A summary of applicable and relevant international policies and Namibian legislation, policies and guidelines relevant 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, that must be fulfilled to establish the proposed prospecting and exploration activities.

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

This ESA was carried out according to the Environmental Management Act (EMA) (Act No. 7 of 2007) and its Environmental Impact Assessment (EIA) Regulations (GG No. 4878, GN No. 30).

The EMA has stipulated requirements for completing the required documentation to obtain an Environmental Clearance Certificate (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 Licences, right of other forms of authorization, and the renewal of a Licences, 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.*

Other legal obligations that are relevant to the proposed activities of EPL No. 6283 - 6284 and related activities are presented in **Table 2**.

**Table 1: Applicable local, national and international standards, policies and guidelines governing the proposed development**

| Legislation/Policy/<br>Guideline                                        | Relevant Provisions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Implications for this<br>project                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The Constitution of the Republic of Namibia, 1990 as amended.</p>    | <p>The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include:</p> <p>“...the duty to investigate complaints concerning the over-utilization of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia...”</p> <p>Article 95(l) commits the state to actively promote and maintain the welfare of the people by adopting policies aimed at the:</p> <p>“...Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State.”</p> | <p>By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability.</p> <p>Ecological sustainability will be main priority for the proposed development.</p> |
| <p>The National Policy on Prospecting and Mining in Protected Areas</p> | <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>The Proponent should maintain the integrity of ecosystems and natural resources, and avoiding degradation of areas highly sensitive for their ecological,</p>                                                                                                    |

| Legislation/Policy/<br>Guideline                           | Relevant Provisions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Implications for this<br>project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | social and/or cultural heritage value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Minerals<br>(Prospecting and Mining) Act (No. 33 of 1992). | <p>Section 52 requires mineral Licenses holders to enter into a written agreement with affected landowners before exercising rights conferred upon the Licenses holder.</p> <p>Section 52(1) mineral Licenses 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 Licenses (which includes an EPLs) intends to abandon the mineral Licenses area.</p> | <p>The Proponent should enter into a written agreement with the landowners before carrying out exploration.</p> <p>The Proponent should carry out an assessment of the impact on the receiving environment.</p> <p>The Proponent should include as part of their application for the EPL, measures by which they will rehabilitate the areas where they intend to carry out mineral exploration activities.</p> <p>The Proponent may not carry out exploration activities within the areas limited by Section 52 (1) of this Act.</p> |

| Legislation/Policy/<br>Guideline                                              | Relevant Provisions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Implications for this<br>project                                                                             |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|                                                                               | <p>Section 68 stipulates that an application for an EPLs 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 Licenses.</p> |                                                                                                              |
| <p>Mine Health &amp; Safety Regulations, 10th Draft.</p>                      | <p>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.</p>                                                                                                                                                                                                  | <p>The Proponent should comply with all these regulations with respect to their employees.</p>               |
| <p>Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001).</p> | <p>Regulation 3(2)(b) states that “no person shall possess [sic] or store any fuel except under authority of a licenses 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”.</p>                                                                                                                                                                                                              | <p>The Proponent should obtain the necessary authorization from the MME for the storage of fuel on-site.</p> |

| Legislation/Policy/<br>Guideline           | Relevant Provisions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Implications for this<br>project                                                                                                                                                                                                 |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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. |
| Local Authorities Act No. 23 of 1992       | To provide for the determination, purposes of traditional government, traditional authority councils; 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 No. 54 of 1956                   | The Water Resources Management Act No. 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force:                                                                                                                                                                                                                                                                                                                                                                                                         | The protection (both quality and quantity or abstraction) of water resources should be a priority.                                                                                                                               |



| Legislation/Policy/<br>Guideline                      | Relevant Provisions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Implications for this<br>project |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
|                                                       | <p>Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duty of care to prevent pollution (S3 (k)).</p> <p>Provides for control and protection of groundwater (S66 (1), (d (ii))).</p> <p>Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).</p>                                                                                                                                                                                                                                                                                                    |                                  |
| <p>Water Resources Management Act (No 11 of 2013)</p> | <p>The Act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objectiveness of this act are to:</p> <p style="padding-left: 40px;">Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).</p> |                                  |

| Legislation/Policy/<br>Guideline            | Relevant Provisions                                                                                                                                                                                                                                                        | Implications for this<br>project                                                                                                                                                                                                     |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| National Heritage Act No. 27 of 2004        | To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters. | The Proponent should ensure compliance with these Acts requirements. The necessary management measures and related permitting requirements must be taken. This done by the consulting with the National Heritage Council of Namibia. |
| The National Monuments Act (No. 28 of 1969) | The Act enables the proclamation of national monuments and protects archaeological sites.                                                                                                                                                                                  |                                                                                                                                                                                                                                      |
| Soil Conservation Act (No 76 of 1969)       | The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.                                           | Duty of care must be applied to soil conservation and management measures must be included in the EMP.                                                                                                                               |

| Legislation/Policy/<br>Guideline                              | Relevant Provisions                                                                                                                                                                                                                                                                                                                                                                                                                                          | Implications for this<br>project                                                                                                         |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Public Health Act<br>(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<br>Regulations GN<br>156/1997 (GG<br>1617). | Details various requirements regarding health and safety of labours.                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                          |
| Road Traffic and<br>Transport Act, No.<br>22 of<br>1999.      | The Act provides for the establishment of the Transportation Commission of Namibia; 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 matters incidental thereto. Should the Proponent wish to undertake activities involving road transportation or access to 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/<br>Guideline | Relevant Provisions                                                                                                                                                                                                                                                                                | Implications for this<br>project                                                                                                 |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Labour Act (No. 6 of 1992)       | Ministry of Labour (MoL) is aimed at ensuring harmonious labours relations through promoting social justice, occupational health and safety and enhanced labours market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act No. 6 of 1992. | The Proponent should ensure that the prospecting and exploration activities do not compromise the safety and welfare of workers. |

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

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

**Table 2: 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 (IS) with which companies must comply 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</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</p> |

| Statute | Provisions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Project Implications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | <p>responsibilities related to environmental and social sustainability.</p> <p>As of 28 October 2018, there are ten (10) Performance Standards (Performance Standards on Environmental and Social Sustainability) that the IFC requires a project Proponents to meet throughout the life of an investment. These standard requirements are briefly described below:</p> <p><b>Performance Standard 1:</b> Assessment and Management of Environmental and Social Risks and Impacts.</p> <p><b>Performance Standard 2:</b> Labour and Working Conditions</p> <p><b>Performance Standard 3:</b> Resource Efficient and Pollution Prevention and Management.</p> <p><b>Performance Standard 4:</b> Community Health and Safety.</p> <p><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</p> | <p>disclosure obligations of 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>Undeserved Traditional Local Communities.</p> <p><b>Performance Standard 8:</b> Cultural Heritage.</p> <p><b>Performance Standard 9:</b> Financial Intermediaries (FIs).</p> <p><b>Performance Standard 10:</b> Stakeholder Engagement and Information</p> <p>A full description of the IFC Standards can be obtained from</p> <p><a href="http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1">http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1</a></p> |                                                                                           |
| <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’s 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.</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</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>Removal of vegetation cover and destruction of natural habitats should</p>             |

| Statute                                                                  | Provisions                                                                                                                                                                                                                               | Project Implications                                                            |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|                                                                          | <p>protected areas, with a view to ensuring their conservation and sustainable use.</p> <p>Promote the protection of ecosystems, and natural habitats, and the maintenance of viable populations of species in natural surroundings.</p> | <p>be avoided, and where not possible minimised.</p>                            |
| <p>Stockholm Declaration on the Human Environment, Stockholm (1972).</p> | <p>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”.</p>                                                   | <p>Protection of natural resources and prevention of any form of pollution.</p> |

#### **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 under specific environmental and social conditions. Understanding the pre-project conditions of the environment will aid in laying down background "information" on the status quo and future projections of environmental conditions after proposed works on the EPL. 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

### Climate

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

Around Arandis, the summers are short, warm, and mostly clear; the winters are cool, windy, and clear. High temperatures around the project area are mainly experienced between February and June, at an average of 24.08 °C, and the lowest temperatures are experienced at an average of 14.14 °C in September. The highest average rainfall of 29.21 mm is experienced in March, and the lowest average rainfall of 0.34 mm is experienced in July. Moreover, January months experience the highest humidity of 78.61% and low humidity in July at 53.87%. **Figure 3** shows the climatic condition in Arandis.

| Month                                 | Jan              | Feb              | Mar              | Apr              | May              | Jun              | Jul              | Aug              | Sep              | Nov              | Oct              | Dec              | Year             |
|---------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Record high °C (°F)                   | 29.31<br>(84.76) | 28.3<br>(82.94)  | 36.39<br>(97.5)  | 32.35<br>(90.23) | 33.36<br>(92.05) | 30.32<br>(86.58) | 31.33<br>(88.39) | 32.35<br>(90.23) | 31.33<br>(88.39) | 30.32<br>(86.58) | 29.31<br>(84.76) | 26.28<br>(79.3)  | 36.39<br>(97.5)  |
| Average high °C (°F)                  | 22.4<br>(72.32)  | 22.94<br>(73.29) | 23.8<br>(74.84)  | 24.02<br>(75.24) | 24.08<br>(75.34) | 22.49<br>(72.48) | 22.37<br>(72.27) | 20.75<br>(69.35) | 20.56<br>(69.01) | 20.74<br>(69.33) | 21.35<br>(70.43) | 21.62<br>(70.92) | 22.26<br>(72.07) |
| Daily mean °C (°F)                    | 20.91<br>(69.64) | 21.34<br>(70.41) | 22.05<br>(71.69) | 21.98<br>(71.56) | 21.67<br>(71.01) | 19.86<br>(67.75) | 19.6<br>(67.28)  | 18.0<br>(64.4)   | 18.09<br>(64.56) | 18.64<br>(65.55) | 19.55<br>(67.19) | 20.07<br>(68.13) | 20.15<br>(68.27) |
| Average low °C (°F)                   | 18.69<br>(65.64) | 19.06<br>(66.31) | 19.47<br>(67.05) | 19.09<br>(66.36) | 18.44<br>(65.19) | 16.26<br>(61.27) | 15.72<br>(60.3)  | 14.17<br>(57.51) | 14.14<br>(57.45) | 14.98<br>(58.96) | 16.23<br>(61.21) | 17.24<br>(63.03) | 16.96<br>(62.53) |
| Record low °C (°F)                    | 14.15<br>(57.47) | 16.17<br>(61.11) | 14.15<br>(57.47) | 13.14<br>(55.65) | 13.14<br>(55.65) | 11.12<br>(52.02) | 11.12<br>(52.02) | 10.11<br>(50.2)  | 11.12<br>(52.02) | 10.11<br>(50.2)  | 12.13<br>(53.83) | 14.15<br>(57.47) | 10.11<br>(50.2)  |
| Average precipitation mm (inches)     | 16.66<br>(0.66)  | 27.75<br>(1.09)  | 29.21<br>(1.15)  | 10.38<br>(0.41)  | 5.16<br>(0.2)    | 0.37<br>(0.01)   | 0.34<br>(0.01)   | 0.54<br>(0.02)   | 3.51<br>(0.14)   | 2.9<br>(0.11)    | 4.93<br>(0.19)   | 12.84<br>(0.51)  | 9.55<br>(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 3: Shows the climate condition around the project area (source: Arandis climate: Climate-Data.org)**

## Wind

The prevailing wind direction around the project area is averaged out over four seasons (**figure 4**). The highest wind speeds are reached in autumn and winter in a NNE direction, and in autumn in a SWW direction. During spring and summer, the prevailing winds are from westerly directions (Gunhild, 2015).

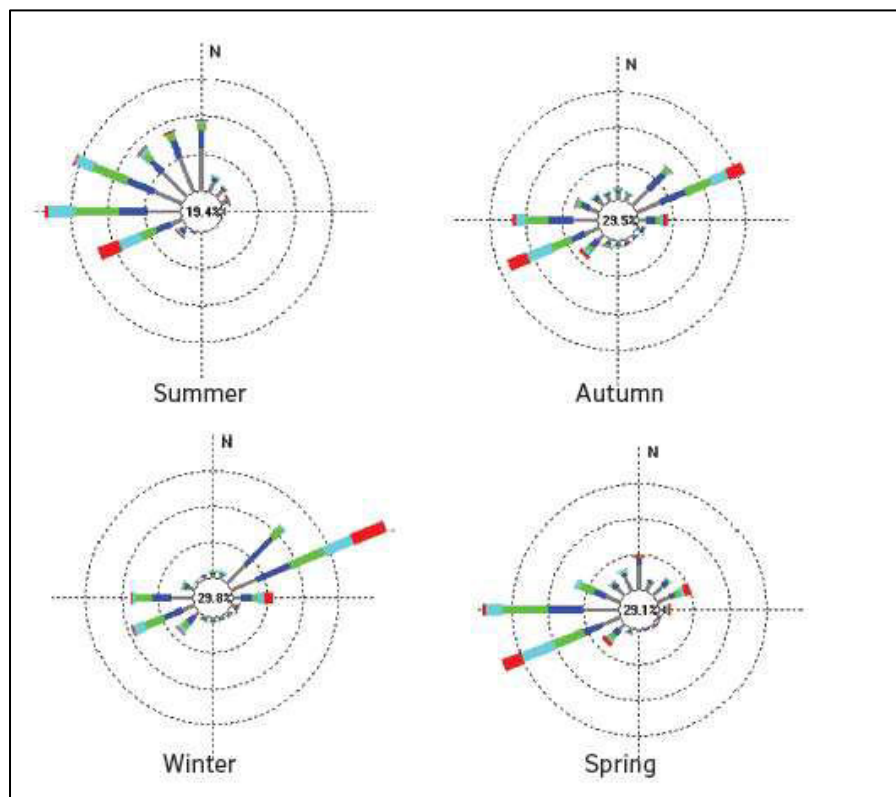
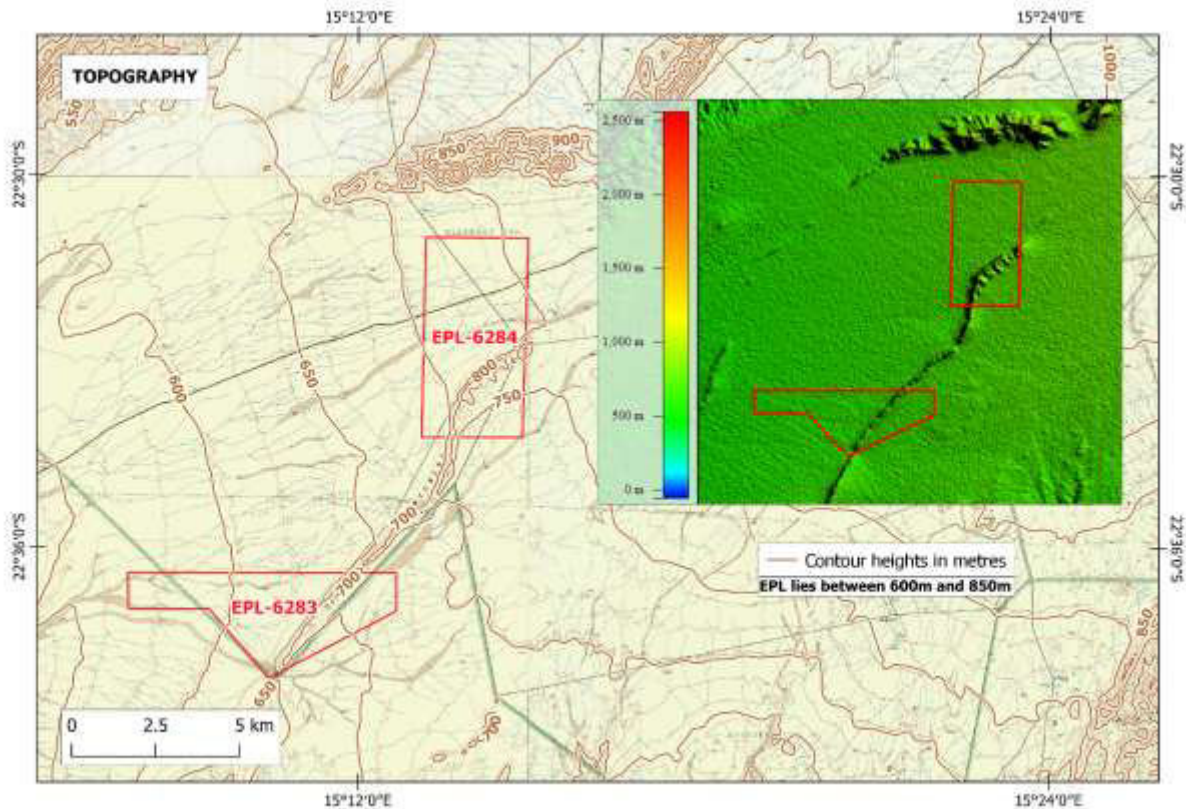


Figure 4: Shows the direction around the project area (source: Gunhild, 2015)

## 5.2 Topography

The EPLs 6283–6284 are located within the Central Western Plain, which consists of areas of dissection and erosional cutbacks into higher ground and carving out the catchment areas of several major rivers such as the Khan, Omaruru, Swakop and Ugab Rivers. The EPL area is located at approximately 600- 850 metres above sea level. **Figure 5** show the topography map of the EPLs and **Figure 6** shows the general overview of the EPLs.



**Figure 5 : Topography map of project areas**

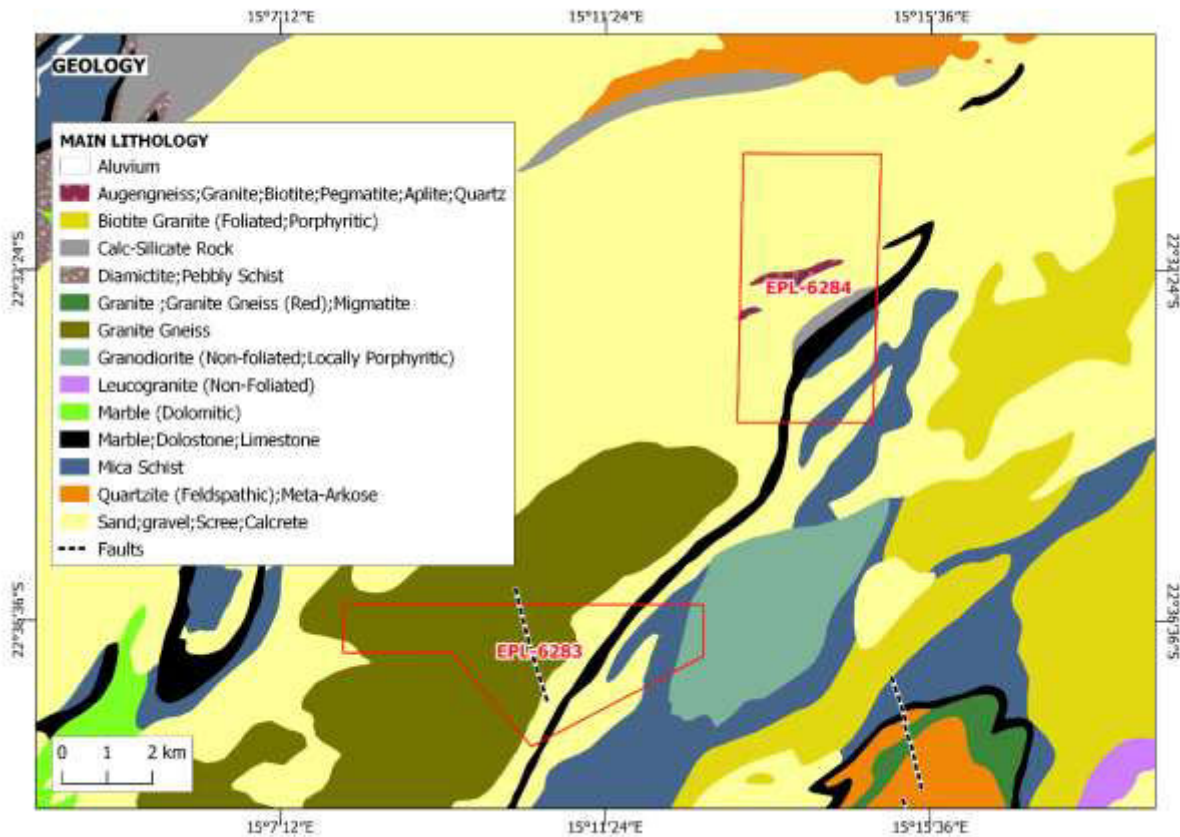


**Figure 2 The general overview of EPLs 6283 - 6284 located near Arandis.**

## **5.3 Geology and Soil**

### **Geology**

Geologically, the area of Arandis falls within the Southern Central Zone of the Neo-Proterozoic Damara Orogenic Belt (Mendelsohn, 2003). The EPL 6283 is dominated by granite gneiss, and EPL - 6284 is dominated by sand, gravel, scree, and calcrete. Figure 6 below shows the general geology map for the project and Figure 7 shows the general mountains that are found within the EPL .



**Figure 6: A map of the general geology of the project area**

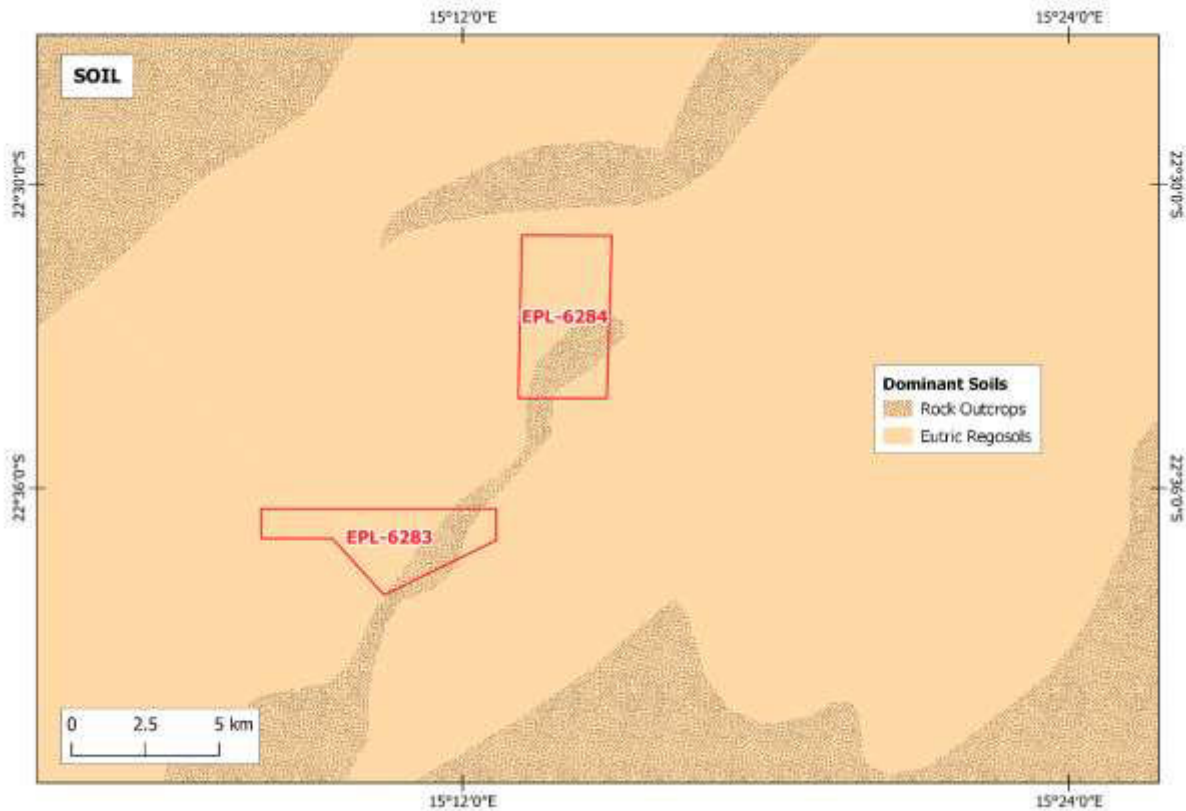


**Figure 7 The typical mountains found within the EPL**

## **Soil**

The major part of the EPL area contains Eutric regosols and the minor portion contains rock outcrops. The Regosols are medium or fine-textured soils of actively eroding landscape, the thin layers lying directly above the rock surfaces from which they formed. These soils never reach a depth of more than 50 cm (Mendelsohn, 2003). Figure 8 below is a map of the soil types found within the EPL area.

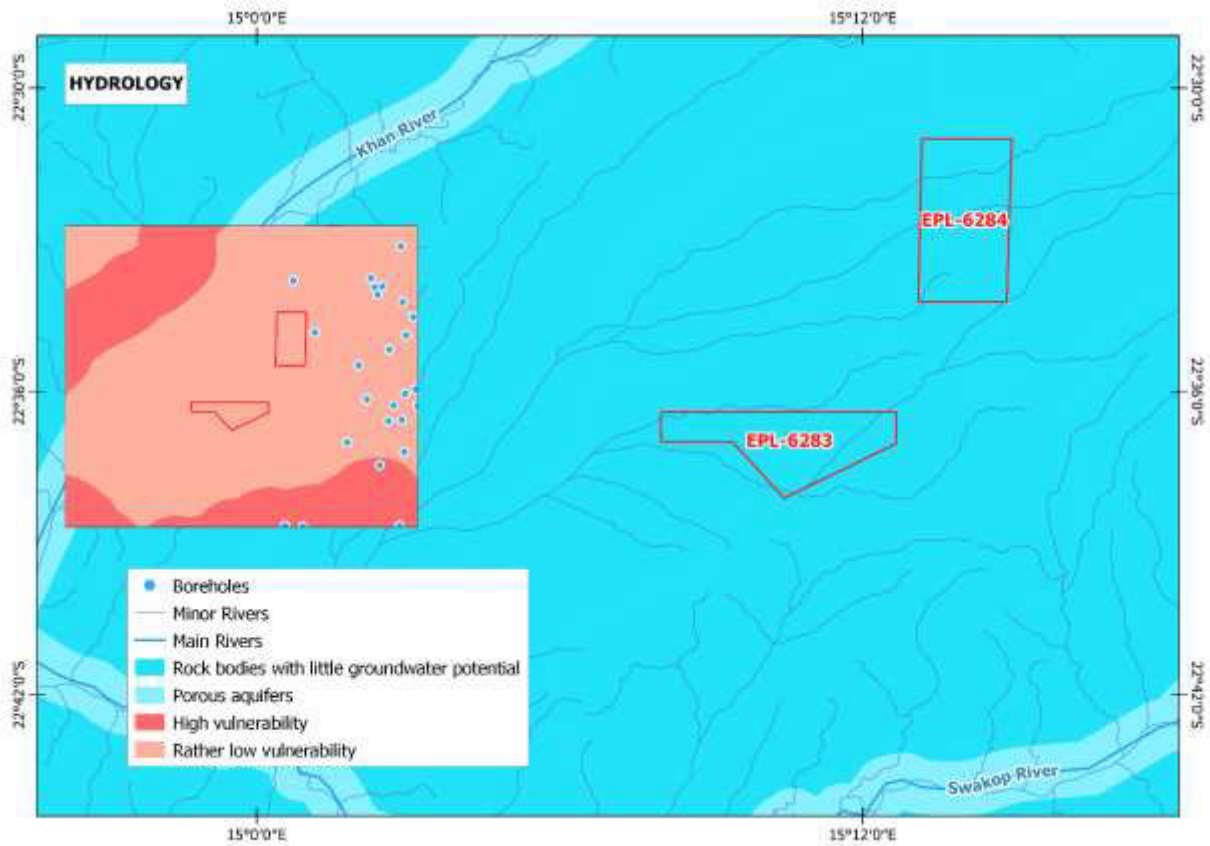
During the prospecting phase of the project, soil sampling may be conducted. Therefore, the Soil Conservation Act (No 76 of 1969) should be taken into account to ensure that soils are conserved in way that does not promote soil erosion, which may result in the creation of gullies.



**Figure 3: Shows the dominant soil types found within the EPLs.**

#### 5.4 Hydrology and Water Resources

In terms of groundwater, the EPL contains rock bodies with little groundwater potential, which means that the rock bodies are of a moderate permeable. The area along the Khan River running further east of the EPL is considered to have a high rate of groundwater vulnerability. There are minor rivers in the EPL, thus the mitigation measures outlined in this report should be strictly adhered to (please refer to section 7.3.4). **Figure 9** shows the groundwater map of the project area and **Figure 10** shows the typical minor river that is found with the project area.



**Figure 9: Surface hydrology, aquifers, and ground vulnerability around the EPLs.**





**Figure 10 : the minor river that was seen within one of the EPL during the site visit.**

## 5.5 Flora and Fauna

### Flora

The project area is mainly covered by *Arthroa leubnitziae* (pencil bush), *Aloe asperifolia* (Sand paper aloe) and *Zygophyllum stapfii* (Dollar bush) which are mainly found on the plains, and *Euphorbia Virosa* (Milk Bish) and various *Commiphora* species (Kanniedood) on the hillsides, other common species include; *Aslepias buchenaviana*, *Salsola tuberculata*, *Pelargoium otaviense*, *Adenolobus pechueli*, *Aizoanthemum membrumconnectens*, *Sarcocaulon marlothii*, *Trichocaulon pedicellatum*, *Euphorbia Virosa* and *Hereroa puttkamerana*. Few other tree species are also found around the project area such as the *Acacia erioloba* (Camel thorn), *Acacia reficiens* (Reb umbrella thorn) and *parkinsonian africana* (Green-hair tree) dominate along the drainage lines while *Faidherbia albida* (Ana boom), *Tamarix usneoides* (Tamarisk) and *Salvadora persica* (Mustard tree) which are mainly common along the Khan river (Burke, 2005).

There are two endemic plant species around the project area which are *Lithops ruschiorum* and *Adenia pechueli* (Burke, 2005). **Figure 11** show vegetation observed on the EPLs during the site visit.



Figure 11: a cactus species found within one of the EPL.

## Fauna

Namibia is a large, semi-arid to arid country in the south-western region of southern Africa. The general Arandis area is regarded as “low” in overall (all terrestrial species) diversity while the overall terrestrial endemism, on the other hand is “moderate to high” (Mendelsohn et al. 2002). The overall diversity and abundance of large herbivorous mammals (big game) is viewed as “low” with 1-2 species, while the overall diversity of large carnivorous mammals (large predators) is viewed as “average to high” with 4 species important of which brown hyena have “medium” densities (Mendelsohn et al. 2002) Wildlife animals that are found within the area of the EPL

include Ostriches, (*Struthio camelus*), the world largest bird and wild cats (leopard or cheetah). Figure 12 shows the the ostriches that were seen during the site visit.



Figure 12: An ostriches spotted around the project area

## 5.6 Heritage and Archaeology

Archaeological remains in Namibia are protected under the National Heritage Act (27 of 2004), which makes provision for archaeological impact assessments of proposed projects like these. The archaeology of the Central Namib has been greatly studied in some detail for other previous mining and exploration-related projects, and the present assessment required only a site inspection as the basis of an impact assessment. In the field, identified archaeological sites are

assessed as to their significance and vulnerability, using two independent parallel scales devised for archaeological assessment in Namibia.

### 5.7 Surrounding Land Uses

The EPL area lies within the //Gaingu Conservancy area and Namib Naukluft National Park (Figure 13). Therefore, the Proponent must ensure it enhances the conservation of biodiversity and the maintenance of the ecological integrity of the //Gaingu Conservancy. **The Proponent is required to enter into a written agreement with affected landowners before exercising any rights conferred upon the EPL as per Section 52 of the Minerals (Prospecting and Mining) Act No. 33 of 1992 and Section 2.2.3 of the Minerals Policy of Namibia.**

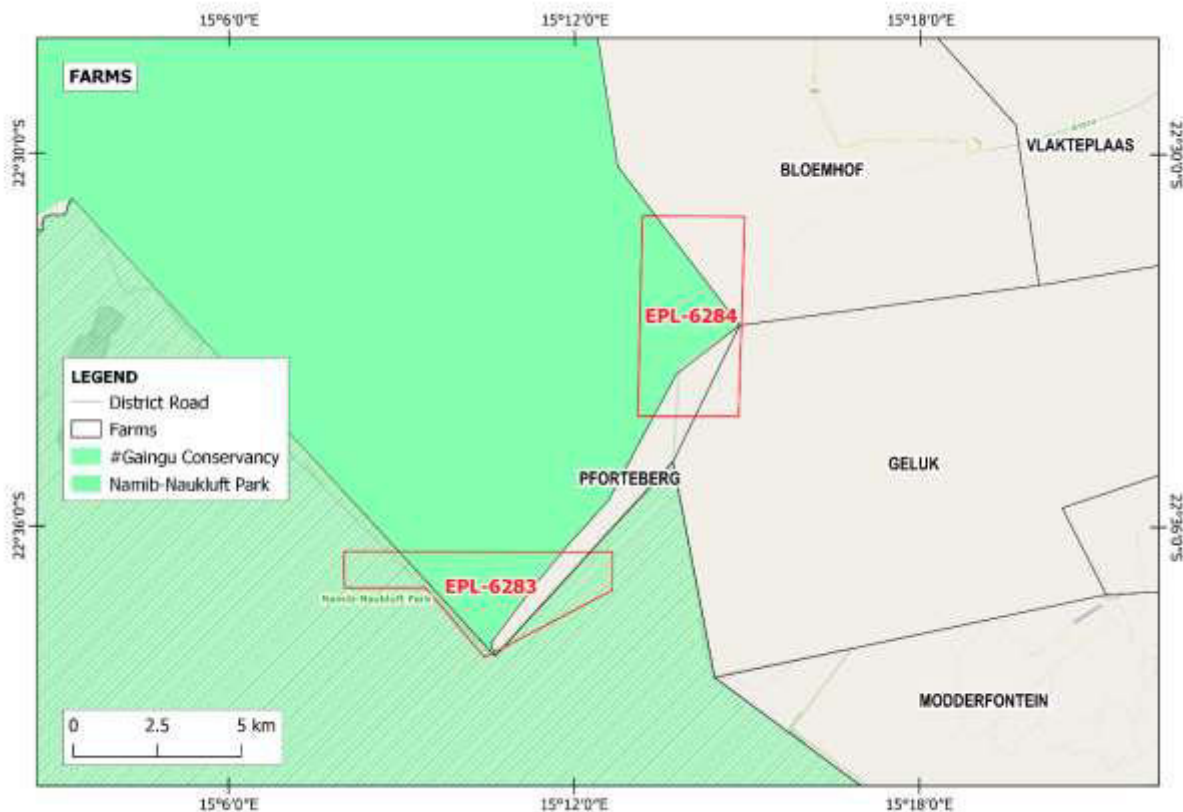


Figure 13: EPLs No. 6283 – 6284 Land Use Map

### 5.8 No-go zone exploration areas

The following aspects within the EPL No. 6283 - 6284, are recommended that no exploration activities should be conducted:

- **Minor river:** No exploration activities are permitted to be conducted within 100 m of any minor river within the EPL area. Therefore, the Mineral (Prospecting and Mining) Act (No. 33 of 1992), Section 52(1) should be adhered to.

## **5.9 Socio-economic condition**

### **Population of the Erongo Region**

The Erongo Region covers an area of 63,586 km<sup>2</sup>, which makes up 7.7 per cent of Namibia's total area of about 823,680 km<sup>2</sup>. The population of the Erongo Region was 150 809 (approximately 70 986 females and 79 823 males) in 2011, representing a population density of 2.4 persons per square kilometer. Arandis 's population was 4 720 in 2011. (Namibia Statistics Agency, 2011).

### **Economy and infrastructure**

Arandis is a town in the Erongo Region of western central Namibia. It has been called the "Uranium Capital" of the world as it is located just 15 km outside the world's largest open-pit uranium mine, the Rössing Uranium Mine. Besides Rössing, Arandis also serves the Husab and Trekkopje uranium mines.

Arandis is located about 57 km northeast of the coastal town of Swakopmund, 100 km from the port of Walvis Bay and about 2 km from the B2 main road, it is linked via road and railway to Windhoek, Swakopmund and Walvis Bay. The Arandis Railway Station exists as a crossing loop on the Trans-Namib Railway between Swakopmund and Usakos. Arandis is also linked to the rest of Namibia by air from Arandis Airport.



**Figure 14:**The gravel road that is found within the project area.

### **Services and Opportunities**

Services and facilities in Arandis include accommodation facilities such as Bed & Breakfasts , and lodges, tourism cafés and restaurants, supermarkets, healthcare facilities, banking services, and transport infrastructure (road, rail and air). The town is considered safe and clean, with a low crime rate.

Arandis offers ample opportunities for economic growth: Uranium rush status, residential, commercial erven, industrial development (factories and warehouses), various SMEs, and farming opportunities. Arandis sources its power supply from Erongo RED and obtains water from NamWater main water supply as well as from a desalination plant in the area.

## 6. PUBLIC CONSULTATION PROCESS

Public consultation is an important component of the Environmental Assessment (EA) process. It provides potential Interested and Affected Parties (I&APs) with an opportunity to comment on and raise any issues related to the project, for consideration as part of the assessment process. This assists the Environmental Assessment Practitioner (EAP) in identifying all potential impacts and the extent to which 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 seeing project advertisement notices in the newspapers. Newspaper advertisements were placed in two widely-read national newspapers in the region. The project advertisement or announcement ran for two consecutive weeks. The summary of pre-identified and registered I&APs is listed in **Table 5** below, and the complete list of I&APs is provided in **Appendix D**.

**Table 3: Summary of Interested and Affected Parties (I&APs)**

| National (Ministries and State-Owned Enterprises) |
|---------------------------------------------------|
| Ministry of Environment, Forestry and Tourism     |
| Ministry of Mines and Energy                      |
| Ministry of Health and Social Services            |
| Regional, Local authorities                       |
| Erongo Regional Council                           |
| Arandis Town Council                              |
| //Gaingu Conservancy                              |
| General Public                                    |



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 which have been used in guiding this process. Communication with I&APs regarding the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing brief information about the proposed project was compiled and emailed to relevant Authoritative Ministries, and upon request, to all new registered Interested and Affected parties (I&APs).
- Project Environmental Assessment notices were published in the Namibian and New Era Newspapers for two consecutive weeks (17th and 24th January 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 interested parties on the 10<sup>th</sup> of February 2023 at Arandis Town Council.
- The issue and concerns raised during the meetings and site visit assessment/observation, have formed the basis for the ESA Report and EMP.



**Figure 5: Public notices placed at the Arandis Town Hall, Erongo Region**



**Figure 6: Public meeting held at Arandis Town Council Hall**

### **6.3 Feedback from Interested and Affected Parties**

Issues were raised by I&APs (from the consultation meeting) and via email. The issues raised have been noted and incorporated in the ESA Report and EMP. The summary of the key issues is presented in **Table 6** below.

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

| Issues                | Concerns /Comments                         |
|-----------------------|--------------------------------------------|
| Are the farms active? | Are there people living within those farm? |

## **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. In environmental assessment, the focus is 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 follows:

#### **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
- Boosts local economic growth and regional economic development.
- Opens up other investment opportunities and infrastructure-related development benefit

#### Negative impacts:

- Physical land/soil disturbance,
- Impact on local biodiversity (fauna and flora) and habitat disturbance,
- Potential impact on water resources and soils particularly due to pollution,
- Air quality issues: potential dust from surface excavation, and drilling,
- Potential occupational health and safety risks associated with the movement/operation of machinery and equipment on site,
- 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 (waste generation)
- Impact on archaeological or cultural heritage resources,

- Potential social nuisance and conflicts between land owners/users and the Proponent.

## 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 are assessed in terms of scale/extent (spatial scale), duration (temporal scale), magnitude (severity) and probability (likelihood of occurring), as presented in **Table 7**, **Table 8**, **Table 9** and **Table 10**, respectively.

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 for the project in various features of the biophysical and social environment. The following criteria were applied in this impact assessment:

### 7.2.1 Extent (spatial scale)

Extent is an indication of the physical and spatial scale of the impact. **Table 7** shows the rating of impact in terms of the 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:<br>Site only | Impact is beyond the site boundary:<br>Local | Impacts felt within adjacent biophysical and social environments:<br>Regional | Impact widespread far beyond site boundary:<br>Regional | Impact extend National or over international boundaries |

### 7.2.2 Duration

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

**Table 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 9** 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-<br>(10)                                                                                                                                                        | M/H-<br>(8)                                                                                                                                           | M-<br>(6)                                                                                                   | M/L-<br>(4)                                                                                                 | L-<br>(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 10** 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 exists. | 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 (**Tables 7, 8, 9 and 10**) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

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

The maximum value per potential impact is 100 Significance Points (SP). Potential impacts were rated as high, moderate or low significance, based on the following significance rating scale (**Table 11**).

**Table 9: Significance rating scale**

| <i>Significance</i> | <i>Environmental Significance Points</i> | <i>Colour Code</i> |
|---------------------|------------------------------------------|--------------------|
| High (positive)     | >60                                      | H                  |
| Medium (positive)   | 30 to 60                                 | M                  |



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

**Positive (+):** Beneficial impact

**Negative (-):** Deleterious/ adverse + Impact

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

For an impact with a significance rating of high (-ve), mitigation measures are recommended to reduce the impact to a medium (-ve) or low (-ve) significance rating, provided that the impact with a medium significance rating can be sufficiently controlled with the recommended mitigation measures. To maintain a low or medium significance rating, monitoring is recommended for a period 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-and post-mitigation.

The risk and/or 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, ecosystem, 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 first to 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 will reduce to lower significance (Booth, 2011).

This assessment focuses on the three project phases namely; prospecting, exploration (and possible analysis) and decommissioning. The potential negative impacts stemming from the proposed activities of the EPLs 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 drilling activities of the exploration project would result in land degradation, which could lead to habitat loss for a diversity of flora and fauna ranging from microorganisms to large animals and trees. 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 cause some disturbance to wildlife present in the explored areas. Disturbance, not only due to human and vehicle movements but also to the potential illegal hunting 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.

Un-rehabilitated and/or unfenced boreholes, trenches, and exploration pits used for exploration (once they are no longer in use) may have long-term impacts on faunal habitats in the area, e.g. wildlife may trip or fall into the holes or pits, causing injuries and potentially mortalities.

**Flora:** Direct impacts on flora mainly occur through clearing for the exploration access routes and associated infrastructure, and if there really is a need for new road construction, the Proponent should apply for this permit .

Dust emissions from drilling may affect surrounding vegetation through the fall of dust. Some loss of vegetation is an inevitable consequence of the development.

Under this status, the impact can have a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a low significance . The impact is assessed in **Table 12** below.

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

| Mitigation Status      | Extent  | Duration | Intensity | Probability | Significance  |
|------------------------|---------|----------|-----------|-------------|---------------|
| <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> |

**Mitigations and recommendations to minimize the loss of biodiversity:**

- The Proponent must avoid unnecessary f vegetation removal, to promote a balance between biodiversity and their operations.
- Vegetation found on the site, but not in targeted exploration sites must not be removed, but must be left to preserve biodiversity on the site.
- Shrubs or trees found along trenching, drilling, or sampling spots on sites must not be removed unnecessarily.
- Movement of vehicles and machinery must be restricted to existing roads and tracks to prevent unnecessary damage to vegetation.
- No onsite vegetation must be cut or used for firewood related to the project’s operations. The Proponent must provide firewood for his onsite camp workers from an authorized firewood producer or seller.
- Design access roads appropriately in a manner that disturbs minimal vegetation as possible.
- Vegetation clearing to be kept to a minimum. The vegetation of the site is largely low and open and therefore vegetation clearing must only be applied where necessary and within the EPL footprint.
- Formulate and implement suitable and appropriate operational management guidelines for the cleared areas, and ensure to incorporate progressive rehabilitation measures within the guidelines.
- Workers must refrain from disturbing, killing or stealing farm animals and killing small soil and rock outcrops’ species found on sites.
- Illegal hunting of wildlife in the EPL area is strictly prohibited.

- Environmental awareness on the importance of biodiversity preservation must be provided to the workers.

### 7.3.2 Generation of Dust (Air Quality)

Dust emanating from site access roads when transporting exploration equipment and supplies (water) to and from the site (time to time) may compromise the air quality in the area. Vehicular movements from heavy vehicles such as trucks could potentially create dust, even though not so severely. The hot and dry environment, hard and sandy nature of the substrate and low vegetation cover cause 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 13** below.

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

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

#### Mitigations and recommendations to minimize dust:

- Exploration vehicles must not drive at a speed of more than 40 km/h, in order to avoid dust generation around the area.
- The Proponent must ensure that the exploration schedule is limited to the given number of days of the week and hours of the day to keep the vehicle-related dust level minimal in the area.
- If and when the project reaches the advanced stages of exploration, producing high levels of dust, a reasonable amount of water must be used on gravel roads, using regular water sprays on gravel routes and near exploration sites to suppress the dust that may be emanating from certain exploration areas on the EPL.

### 7.3.3 Water Usage

Water resources may be impacted by project developments or activities through pollution (water quality). The impact of the project activities on the resources would be dependent on the water volumes required for each project activity. Commonly, exploration activities use a lot of water, mainly for drilling. However, this depends on the target mineral, and the type of drilling methods employed (diamond drilling is more water-consuming compared to reverse circulation drilling).

Reverse Circulation drilling method will be employed for the project's drilling activities, and it requires about 4,000 litres/month. Given the low groundwater potential of the project site area, the Proponent might need to cart in volumes of water from outside the area and store it in industry standard water reservoirs or tanks on site. The exploration period is temporally limited, therefore, the impact will only last for the duration of the exploration activities and cease upon completion of works.

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 **Table 14** 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       |

#### Mitigations and recommendations to manage water use:

- Water reuse and recycling methods should be implemented as far as practicable, e.g. water used to cool off exploration equipment can be captured and used for cleaning project equipment, if possible.
- Water storage tanks must be inspected daily to ensure that there is no leakage, resulting in wasted water on site.

- Water conservation awareness and training on saving measures must be provided to all the project workers, to ensure accountability and so that they understand the importance of conserving water.

### 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), which may contaminate/pollute soils and eventually surface and groundwater, since the EPL is vulnerable to pollution. 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 volume) from this machinery, vehicles, and equipment could infiltrate into the ground and pollute the fractured or faulted aquifers on site, and with time, reach farther groundwater systems. However, it must be noted that the scale and extent/footprint of the activities where potential sources of pollution will be handled are relatively small. Therefore, the impact is moderately low.

The implementation of pre-mitigation measures will reduce the significant impact from a moderate to low significance. The impact is assessed in **Table 15** below.

**Table 13: Assessment of the project impacts on soils and water resources (pollution)**

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

#### Mitigations and recommendations to manage soil and water pollution:

- Spill control preventive measures must be in place on-site to manage soil contamination, to minimize and/or prevent the contamination from reaching water resources bodies. Some of the soil control preventive measures that can be implemented include:

- Identification of oil storage locations on site and allocation of drip trays and other tools for the removal of polluted soils suitable for that specific surface (soil or hard rock cover) on the sites.
- Maintain equipment and fuel storage tanks to ensure that they are in good condition to prevent leaks and spills.
- The oil storage and use locations must be visually inspected regularly for container or tank condition and spills.
- All project employees must be sensitized to the impacts of soil pollution and advised to follow appropriate fuel delivery and handling procedures.
- The Proponent must develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible.
- Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training.
- Project machinery and equipment must be equipped with drip trays where possible, to contain possible oil spills during operation on site.
- Polluted soil must be removed immediately and put in a designated waste type container for later disposal.
- Drip trays must be readily available and monitored to ensure that accidental fuel spills along the tank trailer path/route around the exploration sites are cleaned on time (soon after the spill has happened).
- Polluted soils must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility.
- The washing of equipment contaminated with hydrocarbons, as well as the washing and servicing of vehicles, must take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources.
- The portable chemical toilets must be emptied promptly and treated at a wastewater treatment facility.
- No exploration may be conducted of 100 m within river channels within the EPL area.
- No exploration activities may be conducted within 100 m of the monitoring boreholes or any water source infrastructure within the EPL area.

### 7.3.5 Waste Generation

During the prospecting and exploration phase, domestic and general waste are 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 the case of spills and leakages. 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 rating will decrease to low significance, upon implementing the mitigation measures. The assessment of this impact is given in **Table 16**.

**Table 14: Assessment of waste generation impact**

| Mitigation Status      | Extent  | Duration | Intensity | Probability | Significance  |
|------------------------|---------|----------|-----------|-------------|---------------|
| <b>Pre-mitigation</b>  | L/M: -2 | L/M: -2  | M: -6     | M: -3       | <b>M: -30</b> |
| <b>Post-mitigation</b> | L: -1   | L: -1    | L: -2     | L/M: -2     | <b>L: -8</b>  |

#### **Mitigations and recommendations to waste management:**

- Workers must be sensitized to dispose of waste in a responsible manner in areas provided for that purpose and not to litter.
- After each day's work, the Proponent must ensure that there is no waste left on the sites.
- All domestic and general operational waste produced daily must be contained onsite until such that time it will be transported to designated waste sites.
- Biodegradable and non-biodegradable wastes must be stored in separate containers and collected regularly for disposal at a recognized landfill/or dump site.
- No waste may be buried or burned on site or anywhere else.



- The exploration site must be equipped with separate waste bins for hazardous and general or domestic waste.
- Sewage waste must be stored as per the portable chemical toilets supplied on site and regularly disposed of at the nearest treatment facility.
- Oil spills must be taken care of by removing and treating soil affected by spills.
- A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.
- Careful storage and handling of hydrocarbons on site is essential.
- Potential contaminants, such as hydrocarbons and wastewater must be contained on site and disposed of in accordance with municipal wastewater discharge standards so that, they do not contaminate surrounding soils and eventually groundwater.
- An emergency plan must be available for major or minor spills at the site during operation activities (with consideration of air, groundwater, soil, and surface water) and during the transportation of the product(s) to the sites.

### 7.3.6 Occupational Health and Safety Risks

Project personnel (workers) involved in the exploration activities may be exposed to health and safety risks associated with the dust emanating during exploration. This also refers to 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 17** 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       |

**Mitigations and recommendations to minimize health and safety issues:**

- The operations must comply with the Labour Act’s health and safety regulations.
- If necessary, and according to the amount of labour required for the works, the Proponent must commit to and make provisions for medical check-up for all the workers at the site to monitor the impact of project-related activities on the health of workers.
- As part of their induction, the project workers must be provided with an awareness training of the risks of mishandling equipment and materials on site as well as the health and safety risks associated with their respective jobs.
- When working on site, employees must be properly equipped with adequate personal protective equipment (PPE), such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, and hard hats.
- Heavy vehicles, equipment, and fuel storage site must be properly secured, and appropriate warning signage placed where visible.
- Drilled boreholes that are no longer in use after being drilled should be properly marked for visibility and capped/closed off.
- Ensure that after completion of exploration holes and trenches, drill cuttings are put back into the hole and the holes are filled and levelled, and the trenches backfilled.
- An emergency preparedness plan must be compiled, and all personnel appropriately must be trained.
- Workers must not be allowed to drink alcohol prior to and during working hours, nor allowed on site when under the influence of alcohol as this may lead to mishandling of equipment which results in injuries and other health and safety risks.
- Site areas that are considered temporary risks must be equipped with cautionary signs.

- When working on the exploration site, all exploration personnel will be outfitted with the necessary respiratory gear. This includes wearing a dust mask.
- Only employees who are wearing personal protective equipment (PPE) are permitted to visit the exploration site. This includes the overall, safety boots, protective hat, and glasses;
- The exploration team will receive hygiene training or induction, as it is crucial to prevent ingesting radioactive / elements. This must include a training on how to wash their hands on a regular base and encouraging them to dine in a sanitary environment;
- Warning signs must be posted all around the exploration site.
- Employees must be kitted out with Dosimeters to ensure that no harmful doses of radiation are received over a given period of time.
- Employees must be kitted out with respiratory protective equipment and general protective equipment to protect against dust.

### **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 Swakopmund, Walvis Bay and, Arandis Town. 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 services and supplies will include but are not limited to water, waste removal, procurement of exploration machinery, equipment, and others.

Depending on the project needs, trucks, and medium and small vehicles will be frequenting the area to and from exploration sites on the EPL. This will potentially increase slow moving heavy vehicular traffic along these roads. The impact would be felt by the local road users such as those accessing farms (via local access gravel and single-track roads). This would add additional pressure on the roads.

However, the exploration-related heavy trucks will only be transporting materials and equipment to and from the site, a limited number of times a month 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 18** below.

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

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

**Mitigations and recommendations to minimize impact on road safety and related vehicular traffic issues:**

- The transportation of exploration materials, equipment and machinery must be limited, in order to reduce the pressure on local roads.
- Heavy truck loads must comply with the maximum allowed speed limit for respective vehicles while transporting material and equipment or machinery on public and access roads.
- Any water carting schedules must be set up efficiently to ensure the number of water-carting vehicles on local roads is limited.
- Drivers of all project vehicles must be in possession of valid and appropriate driving Licenses and adhere to road safety rules.
- Drivers must drive slowly (40km/hour or less) and be on the lookout for wildlife as well as residents or travelers.
- The Proponent must ensure that the site access roads are well equipped with temporary road signs to cater for vehicles travelling to and from site throughout the project's life cycle.
- Project vehicles must be in a road worthy condition and serviced regularly to avoid accidents owing to mechanical faults.
- Vehicle drivers must only make use of designated site access roads as provided and agreed.
- Vehicle's drivers must not be allowed to operate vehicles while under the influence of any intoxicants.

- No heavy trucks or project related vehicles must be parked outside the project site boundary or demarcated areas for such purpose.
- To control traffic movement on site, deliveries from and to site should be carefully scheduled. This must optimally be during weekdays and between the hours of 8am and 5pm.
- The site access road(s) must be upgraded to an unacceptable standard to be able to accommodate project related vehicles.

### 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 a low rating, the mitigation measures should be implemented. This impact is assessed in **Table 19** below.

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

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

#### Mitigations and recommendations to minimize noise:

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

- When operating the drilling machinery onsite, workers must be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.

### 7.3.9 Disturbance to Archaeological and Heritage resources

The archaeological site visit conducted on 08 August 2022 revealed that there are historical buildings and objects from historical exploration or mining activity conducted within the EPL. In the unlikely event that archaeological traces are exposed during site works, the expected nature of the impact would be in the form of direct physical disturbance or destruction. The expected magnitude of this impact would be low. Due to the fact that impacts on archaeological sites are irreversible, these would be on a medium, local spatial scale. The consequences of the impact would be localized, and its significance would be low. The interpretation of this assessment would indicate a low significance, indicating that the risk of archaeological impact is so low as to have no influence on the project decision. The impact is assessed in **Table 20**.

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

| Mitigation Status        | Extent  | Duration | Intensity | Probability | Significance  |
|--------------------------|---------|----------|-----------|-------------|---------------|
| <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> |

#### Mitigations and recommendations to minimize impact on archaeological and heritage resources:

- If any archaeological material or human burials are uncovered during the course of prospecting or exploration activities, then work in the immediate area must be halted, the find would need to be reported to the heritage authorities and may require inspection by an archaeologist.
- A “No-Go-Area” must be put in place where there is evidence of sub-surface archaeological materials, archaeological site, historical, rock paintings, cave/rock shelter or past human dwellings. It can be a demarcation by fencing off or avoiding the site completely by not working closely or near the known site. The ‘No-Go Option’ might have a neutral impact significance.

- On-site personnel (s) and contractor crews must be sensitized to exercise and recognize “chance finds heritage” in the course of their work.
- During the prospecting and exploration works, it is important to take note and recognize any significant material being unearthed, and making the correct judgment on which actions should be taken.
- If there is a possibility of encountering or unearthing of archaeological materials, then it is better to change the layout design so as to avoid the destruction that can occur.
- Direct damage to archaeological or heritage sites should be avoided as far as possible and, where some damage to significant sites is unavoidable, scientific/historical data should be rescued.
- All ground works must be monitored and where any stratigraphic profiles in context with archaeological material are exposed, these must be recorded, photographed and coordinates taken.
- The footprint impact of the proposed prospecting and exploration activities must be kept to minimal to limit the possibility of encountering chance finds within the EPL boundaries.
- A landscape approach of the site management must consider culture and heritage features in the overall planning of exploration infrastructures within and beyond the License/EPL boundaries;
- An archaeologist, Heritage specialist or a trained site manager must be on-site to monitor all significant earth moving activities that may be implemented as part of the proposed project activities.
- When there is removal of topsoil and subsoil on the site for exploration purposes, the site must be monitored for subsurface archaeological materials by a qualified Archaeologist or site manager.
- Show overall commitment and compliance by adapting “minimalistic or zero damage approach” throughout the exploration activities.
- In addition to these recommendations above, there must be a controlled movement of the people i.e. a contractor, exploration crews, equipment, setting up of camps and everyone else involved in the prospecting and exploration activities. This is recommended to limit the proliferation of informal pathways, gully erosion and disturbance to surface and sub-surface artifacts such as stone tools and other buried materials, etc.

- There must be a controlled movements of heavy loads such as abnormal vehicles and kinds of heavy duty machineries within the EPL. This means avoiding chances of crossing paths that may lead to the destruction of on and sub-surface archaeological materials.
- It is essential that cognizance be taken of the larger historical landscape of the area to avoid the destruction of previously undetected heritage sites. Should any previously undetected heritage or archaeological resources be exposed or uncovered during exploration phases of the proposed project, these should immediately be reported to the heritage specialist or heritage authority (National Heritage Council of Namibia).
- The Proponent and Contractors must adhere to the provisions of Section 55 of the National Heritage Act in event significant heritage and culture features are discovered in the course of exploration works.
- Whoever is going to be in charge of mitigation and monitoring measures must have the authority to stop any exploration or construction activities that is in contravention with the National Heritage Act of 2004 and National Heritage Guidelines as well as the overall project EMP.

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

The presence of project personnel in the area may lead to social annoyance to the local community. This could particularly be a concern if some workers enter or damage local private or public property. The private property could be houses, fences, vegetation, or wildlife, or any properties of economic or cultural value to the local land owners/users. The unpermitted and unauthorized entry to private property 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 22**).

**Table 19: Assessment of social impact of community property damage or disturbance**

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



|                         |       |       |         |         |        |
|-------------------------|-------|-------|---------|---------|--------|
| <b>Post- mitigation</b> | L: -1 | L: -1 | M/L: -4 | M/L: -2 | L: -12 |
|-------------------------|-------|-------|---------|---------|--------|

**Mitigations and recommendation to minimize the issue of damage to or intrusion of properties:**

- The Proponent must inform their workers on the importance of respecting property by refraining from property intrusion or vandalism, and poaching or snaring of wildlife.
- Any workers or site employees found guilty of intruding on private property must have been dealt with as per their employer' (Proponent)'s code of employment conduct.
- The project workers must be advised to respect the community and local's private property, values, and norms.
- No worker must be allowed to wander or loiter on private property without permission.
- The cutting down or damaging of vegetation belonging to the affected I&APs or neighbours is strictly prohibited.

**7.4 The cumulative Impacts Associated with Proposed Exploration**

According to the International Finance Corporation (2013), cumulative impacts are defined as “those that result from the successive, incremental, and/or combined effects of an action, project, or activity (collectively referred to in this document as “developments”) when added to other existing, planned, and/or reasonably anticipated future ones”.

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

- **Impact on road infrastructure:** The proposed exploration activity contributes cumulatively to various activities such as existing prospecting and mining activities and travel associated with tourism and local daily routines. The contribution of the proposed project to this 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.

## **7.5 Mitigations and Recommendations for Rehabilitation**

The rehabilitation of explored (disturbed) sites will include, but not be limited to the following:

- Backfilling of trenches and/or pits in such a way that subsoil is replaced first, and topsoil is replaced last.
- Levelling of stockpiled topsoil. This will be done to ensure that the disturbed sites are left as close to their original state as much as possible.
- Closing off and capping of all exploration drilling boreholes to ensure that they do not pose a risk to people and animals in the area. The boreholes should not only be filled with sand alone, as wind will scour the sand and re-establish the holes.
- Removal of exploration equipment and vehicles from the site. Transporting all machinery and equipment as well as vehicles to designated offsite storage facilities.
- Cleanup of site work areas and transport the recently generated waste to the nearby approved waste management facility (as per agreement with the facility operator or owner).

## **8. CONCLUSIONS AND RECOMMENDATIONS**

### **8.1 Conclusions**

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 of the project activities in the host community and the 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 the legal requirements governing mineral exploration and related activities.

## 8.2 Recommendations

The potential positive and negative impacts of the proposed exploration activities on EPL Nos. 6283 – 6284 were identified and assessed and, appropriate management and mitigation measures (to mitigate negative impacts) were made thereof, for implementation by the Proponent, their contractors and all project employees.

Most of the potential impacts were found to be of medium significance. With the effective implementation of the recommended management and mitigation measures, this will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from a medium rating to a low). To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or by a project Environmental Health and Safety Officer (EHS). The monitoring of this implementation will be carried out to maintain a low significance rating, and 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 directed towards monitoring the implementation of these measures.

It is therefore, recommended that in the event of ECC issuance, the proposed prospecting and exploration activities may be granted an Environmental Clearance Certificate, provided that:

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, Licenses and approvals for the proposed activities should be obtained as required. These include obtaining 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.
- Sites where exploration activity has ceased are rehabilitated, as far as practicable, to their pre-exploration state.



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