Excel Dynamic Solutions

# ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED PROSPECTING & EXPLORATION ACTIVITIES ON EXCLUSIVE PROSPECTING LICENCE (EPL) No. 9967 LOCATED NEAR GRUNAU, //KARAS REGION

## ENVIRONMENTAL ASSESSMENT – FINAL

## ECC REFERENCE No.: APP- 005359


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## EXECUTIVE SUMMARY

Lilou Gold Trading Namibia (Pty) Ltd (The Proponent) applied for Exclusive Prospecting Licence (EPL) No.9967 from the Ministry of Industries, Mines and Energy (MIME) on 02nd April 2024.The EPL cover a surface area of 19 358 hectares (ha) and is located near Grunau, //Karas Region. The commencement of prospecting and exploration activities on the EPL requires an Environmental Clearance Certificate (ECC).

The Proponent intends to conduct prospecting and exploration for Base & Rare metals, and Industrial Minerals.

According to Section 27 (1) of the Environmental Management Act (EMA), No. 7 of 2007, the proposed prospecting and exploration activities are among listed activities that may not be undertaken without an ECC under the Environmental Impact Assessment (EIA) Regulations. Subsequently, to ensure that the proposed activity is compliant with the national environmental legislation, the 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 the project registration. Upon submission of an Environmental and Social Impact Assessment (ESIA) Report and Draft Environmental Management Plan (EMP), an 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:** 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 and on-site ground traverses and 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 (±20cm X 20cm X 30cm) 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 be conducted by geophysical technicians with handheld instruments.

**The Proponent, is therefore, required to ensure that the affected parties are consulted before the commencement of the ground surveys, during the prospecting phase of the proposed project.**

## 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 the 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 drill-rig, drill core and geological samples store and a drill equipment parking and maintenance yard (including a fuel and lubricants storage facility).

**The Proponent is required to ensure that the affected parties are consulted before any exploration work commences within the EPL and the mitigation measures stipulated in the Environmental Management Plan (EMP) must be adhered too.**

## 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 aided in the process of identifying possible mitigation measures and alternatives to certain project activities. The communication with I&APs about the proposed prospecting and exploration activities was done through the following means and in this order to ensure that the public is notified and are 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 identified Interested and Affected Parties (I&APs) and new registered I&APs, upon request.
- Project Environmental Assessment notices were published in the Namibian and New Era Newspapers for two consecutive weeks (10 and 17 January 2025), 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 with interested parties on the 12 May 2025, however no one attended the meeting.
- The site visit assessment/observation formed the basis for the ESIA 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 poaching in the area; potential impact on water resources and soils particularly due to pollution; air quality issue: potential dust generated from the project; potential occupational health and safety risks, vehicular traffic safety and impact on services infrastructure such as local roads, vibrations and noise associated with drilling activities may be a nuisance to locals; environmental pollution (solid waste and wastewater) and potential social nuisance and conflicts (theft, damage to properties, etc.).

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 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 (Section 21 to 24). This was done via the two newspapers (New Era and The Namibian) used for this environmental assessment. A consultation through face-to-face meeting with I&APs at Grunau Hall was scheduled for the proposed project activities.

The site visit assessment which was conducted on the 12 May 2025 formed the basis of this Report and the Draft EMP, and mitigation measures have been provided thereof to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of medium rating significance. With the effective implementation the recommended management and mitigation measures, this will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from medium rating to low). To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or their Environmental Control Officer (ECO) is highly recommended. The monitoring of this implementation will not only be done to reduce the impacts' rating or maintain 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 Proponent and their contractors to effectively implement the recommended management and mitigation measures to protect both the biophysical and social environment throughout the project duration. All these would be done with the aim of promoting environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities in the community and environment at large. However, if an ECC is to be issued, the ECC should be issued on a 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 MIME with an environmental report every six (6) months
- Carrying out and submission of an annual Environmental Audit to the MEFT and MIME

**Recommendations**

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

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

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, Licenses and approvals for the proposed activities should be obtained as required. These include permits and Licenses for land use access agreements to prospect and explore and ensuring compliance with these specific legal requirements.
- The Proponent and all their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.

- Site areas where exploration activities have ceased are rehabilitated, as far as practicable, to their pre-exploration state.
- Environmental Compliance monitoring reports should be compiled and submitted to the DEAF, (MEFT).

**Disclaimer**

EDS warrants that the findings and conclusion contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work and Environmental Management Act (EMA) of 2007. These methodologies are described as representing good customary practice for conducting an ESIA of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment, or which were not reasonably identifiable from the available information. The Consultant believes that the information obtained from the record review and during the public consultation processes concerning the proposed exploration work is reliable. However, the Consultant cannot and does not warrant or guarantee that the information provided by the other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. No other warranties are implied or expressed.

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

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

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

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

**Appendix D:** Proof of public consultations

**Appendix E:** Copy of preparedness to grant the EPL

## LIST OF ABBREVIATIONS

| Abbreviation | Meaning |
|---|---|
| AMSL | Above Mean Sea Level |
| BID | Background Information Document |
| CV | Curriculum Vitae |
| DEAF | Department of Environmental Affairs and Forestry |
| EA | Environmental Assessment |
| EAP | Environmental Assessment Practitioner |
| ECC | Environmental Clearance Certificate |
| EDS | Excel Dynamic Solutions |
| ESIA | Environmental & Social Impact 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 |
| MIME | Ministry of Industries, Mines and Energy |
| PPE | Personal Protective Equipment |
| Reg | Regulation |
| S | Section |
| TOR | Terms of Reference |

## DEFINITION OF TERMS

| | |
|---|---|
| **Alternative** | A possible course of action, in place of another that would meet the same purpose and need of the proposal. |
| **Baseline** | Work done to collect and interpret information on the condition/trends of the existing environment. |
| **Biophysical** | That part of the environment that does not originate with human activities (e.g. biological, physical and chemical processes). |
| **Cumulative Impacts/Effects Assessment** | In relation to an activity, means the impact of an activity that in it may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area. |
| **Decision-maker** | The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal. |
| **Ecological Processes** | Processes which play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy and biological diversity (as an expression of evolution). |
| **Environment** | As defined in Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values. |
| **Environmental Management Plan** | As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled and monitored. |
| **Exclusive Prospecting Licence** | Is a Licence that confers exclusive mineral prospecting rights over land of up to 1000 $km^2$ in size for an initial period of three years, renewable twice for a maximum of two years at a time. |

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| **Interested and Affected Party (I&AP)** | In relation to the assessment of a listed activity includes - (a) any person, group of persons or organization interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity. |
| **Mitigate** | Practical measures to reduce adverse impacts. |
| **Fauna** | All of the animals found in a given area. |
| **Significant Impact** | 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. |
| **Flora** | All of the plants found in a given area. |
| **Mitigation** | The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment. |
| **Monitoring** | Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends). |
| **Nomadic Pastoralism** | 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. |
| **Proponent** | Organization (private or public sector) or individual intending to implement a development proposal. |
| **Public Consultation/Involvement** | A range of techniques that can be used to inform, consult or interact with stakeholders affected by the proposed activities. |
| **Protected Area** | Refers to a protected area that is proclaimed in the Government Gazette according to the Nature Conservation Ordinance number 4 of 1975, as amended. |
| **Scoping** | An early and open activity to identify the impacts that are most likely to be significant and require specialized investigation during the EIA work. Can, also be used to identify alternative |

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|---|---|
| | project designs/sites to be assessed, obtain local knowledge of site and surroundings and prepare a plan for public involvement. The results of scoping are frequently used to prepare a Terms of Reference for the specialized input into full EIA. |
| **Terms of Reference (ToR)** | Written requirements governing full EIA input and implementation, consultations to be held, data to be produced and form/contents of the EIA report. Often produced as an output from scoping. |

# 1. INTRODUCTION

## 1.1 Project Background

Lilou Gold Trading Namibia (Pty) Ltd (The Proponent) applied for an Exclusive Prospecting Licence (EPL) No. 9967 from the Ministry of Industries, Mines and Energy (MIME) on 02nd April 2024. The EPL cover a surface area of 19 358.3667 hectares (ha) and is located near Grunau (**Figure 1**), and cover (overlies) Farm Signalberg No.299, and Grabwasser No.261. The commencement of exploration activities on the EPL requires an Environmental Clearance Certificate (ECC).

The target commodities for this project are Base & Rare metals, and Industrial Minerals.

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 EA undertaken and an 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.

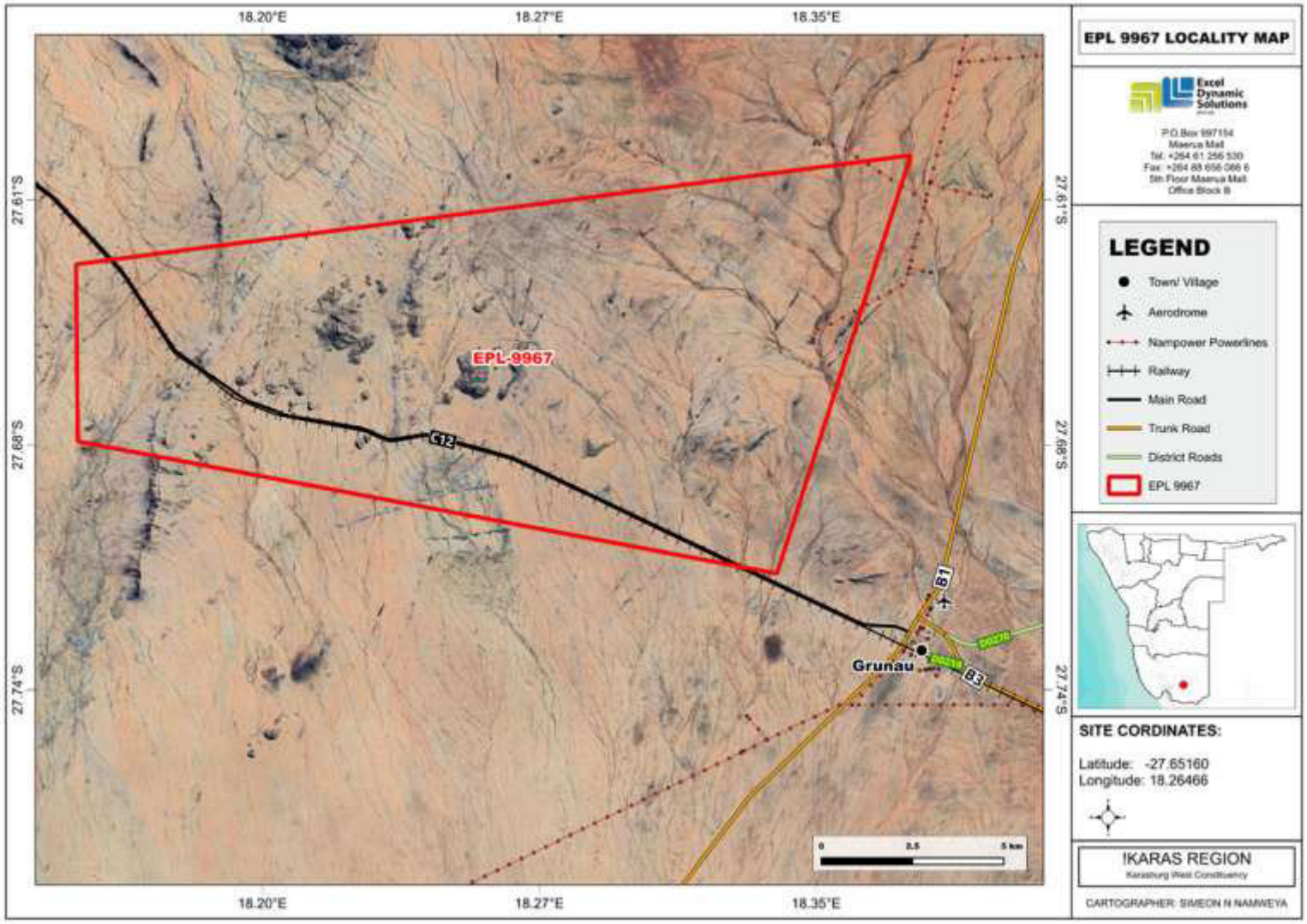


**Figure 1: Locality map of the proposed project**

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

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

The application for the ECC was compiled and submitted to MEFT, the environmental custodian for project registration purposes. Upon submission of an Environmental and Social Impact Assessment (ESIA) Report and Draft Environmental Management Plan (EMP), an ECC for the proposed project might be considered by the Environmental Commissioner at the MEFT's, DEAF.

The EIA project is headed by Mr. Nerson Tjelos. The consultation process and reporting were done by Mr. Silas David. 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 account for a significant portion of gross domestic product (GDP). Additionally, the industry produces a trained workforce and small businesses that can serve communities and may initiate related businesses. Exploration activities fosters several associated activities such as manufacturing of exploration and mining equipment, and provision of engineering and environmental services.

The mining sector forms a vital part of some of Namibia's development plans, namely: Vision 2030, and National Development Plan 5 (NDP5). Mining of minerals locally is essential to the developmental goals of Namibia in aim of contributing to the ever-increasing global demand for minerals, and for national prosperity. Therefore, successful prospective and exploration on the

EPL would lead to the mining of the target commodity, which could contribute towards achieving the goals of the national development plans.

# 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; 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 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.

**The Proponent, is therefore required to ensure that affected parties are consulted before the prospecting phase commences within the EPL. The Proponent should obtain written consent to conduct prospecting work from the affected parties.**

## 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 to determine 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 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 the Reverse Circulation (RC) drilling and/or Diamond (Core) drilling.

RC drilling uses a pneumatic hammer, which drives a rotating tungsten-steel bit. The technique produces an uncontaminated large volume sample, which is composed 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 Proponent is required to ensure the affected parties are consulted before any exploration activities commences within the EPL.**

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

### 2.3.1 Accessibility to Site

The EPL are accessible via the district roads- refer to Figure 1. Project related vehicles will be using these existing roads to access the EPL.

### 2.3.2 Material and Equipment

The input required for the prospecting and 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. Equipment 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 2 500 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-generators. 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 prospecting and exploration equipment will be stored in a tank mounted on a mobile trailer, and drip trays will be readily available on this trailer and monitored to ensure that accidental fuel spills are cleaned up as soon as they have been detected/observed. Fuel may also be stored in jerry cans placed on plastic sheeting to avoid unnecessary contamination of the ground.

### 2.3.4 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 either 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 while 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 prospecting and exploration workforce will be accommodated near the sites, upon reaching written agreement between the Proponent and the respective custodian before setting up accommodation structures (tented camps). Prospecting and exploration activities will take place during daytime only and staff will commute to 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 predicted

closure. Therefore, it is of best practice for the Proponent to ensure the project activities cease in an environmentally friendly manner and site is rehabilitated.

# 3. PROJECT ALTENATIVES

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

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

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

The alternatives considered for the proposed 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 occur 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 to be 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 loses that may never be realized if the proposed project does not go ahead include:

- Loss of foreign direct investment.

- About 5 – 10 temporary job opportunities for community members will not 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 local and national government through land lease fees, Licences lease fees and various tax structures.
- Improved geological understanding of the site area regarding the targeted commodities.
- Socio-economic benefits such as skills acquisition to local community members would be not realized.

Considering the above losses, the "no-action/go" alternative 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 severally sections of the site may be identified as no-go zones.

### 3.1.2 Exploration Location

The prospecting/exploration location is dependent on the geological setting (regional and local), the economic geology, and the exploration and mining history of the EPL area. 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. The tenement has sufficient surface area for related facilities, should an economic mineral deposit be defined.

Furthermore, the potential locations of national mineral resources are mapped and categorized by the Ministry of Industries, Mines and Energy 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 the EPL (**Figure 2**) and other licenses are available on the Namibia Mining Cadastral Map ( https://portals.landfolio.com/namibia/).

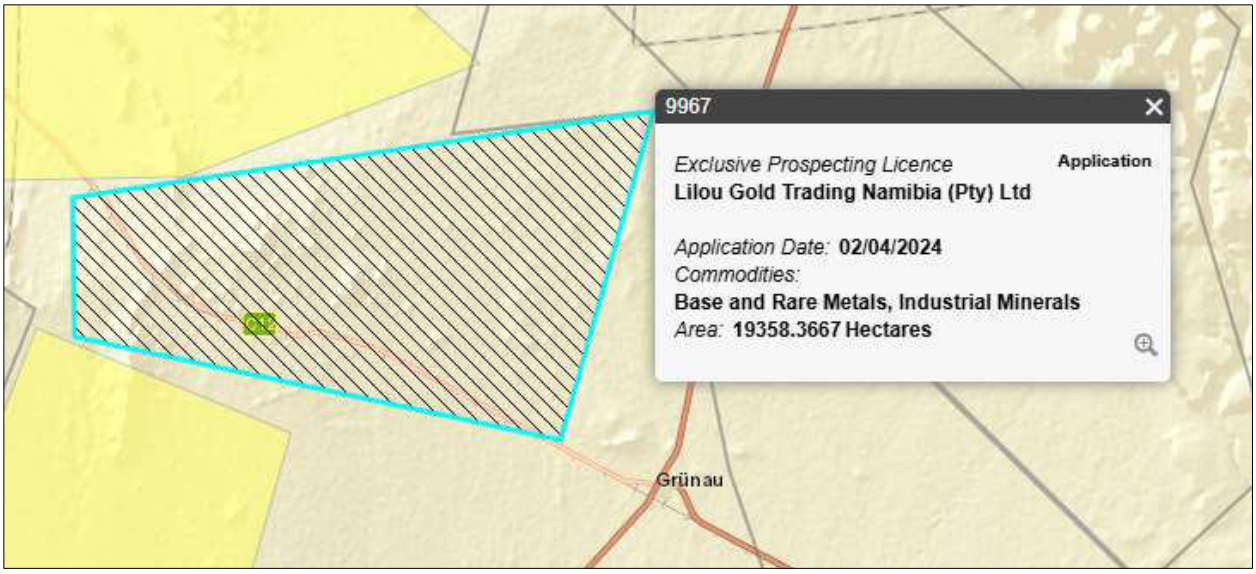


**Figure 2: Status and location of the EPL on the MIME mining cadastre**

### 3.1.3 Exploration Methods

It is anticipated that the invasive exploration methods will be utilized. If any other alternative 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 be implemented.

# 4. LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES

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

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

This EA 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 to complete 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 and related activities are presented in **Table 1.**

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

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|---|---|---|
| The Constitution of the Republic of Namibia, 1990 as amended | The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include: | By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability.<br>Ecological sustainability will be main priority for the proposed development. |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|---|---|---|
| | "…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…"<br><br>Article 95(l) commits the state to actively promote and maintain the welfare of the people by adopting policies aimed at the:<br><br>"…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." | |
| The National Policy on Prospecting and Mining in Protected Areas | Requires that, where necessary a Memorandum of Understanding is developed between prospecting and mining Companies, the MEFT and the MIME to set out additional implementation mechanisms. | The Proponent should maintain the integrity of ecosystems and natural resources, and avoiding degradation of areas highly sensitive for their ecological, social and/or cultural heritage value. |
| Minerals (Prospecting and Mining) Act (No. 33 of 1992) | Section 52 requires mineral Licenses holders to enter into a written agreement with affected landowners before exercising rights conferred upon the Licenses holder. | The Proponent should enter into a written agreement with landowners before carrying out exploration. |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|---|---|---|
| | 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.<br><br>Section 54 requires written notice to be submitted to the Mining Commissioner in the event that the holder of a mineral License (which includes an EPL) intends to abandon the mineral Licenses area.<br><br>Section 68 stipulates that an application for an EPL shall contain the particulars of the condition of, and any existing damage to, the environment in the area to which the application relates and an estimate of the effect which the proposed prospecting operations may have on the environment and the proposed steps to be taken in order to prevent or minimize any such effect.<br><br>Section 91 requires that rehabilitation measures should be included in an application for a mineral Licenses. | The Proponent should carry out an assessment of the impact on the receiving environment.<br><br>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.<br><br>The Proponent may not carry out exploration activities within the areas limited by Section 52 (1) of this Act. |

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

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|---|---|---|
| | | |
| Local Authorities Act No. 23 of 1992 | To provide for the determination, for purposes of traditional government, of traditional authority councils; the establishment of such authority councils; and to define the powers, duties and functions of traditional authority councils; and to provide for incidental matters. | Grunau is the responsible local Authority of the area therefore they should be consulted. |
| Water Act 54 of 1956 | The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No. 54 of 1956 is still in force:<br>Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duly of care to prevent pollution (S3 (k)).<br>Provides for control and protection of groundwater (S66 (1), (d (ii)).<br>Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)). | The protection (both quality and quantity/abstraction) of water resources should be a priority. |
| Water Resources Management Act (No 11 of 2013) | The Act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to: | |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|---|---|---|
| | Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68). | |
| National Heritage Act No. 27 of 2004 | To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters. | The Proponent should ensure compliance with these Acts requirements. The necessary management measures and related permitting requirements must be taken. This done by the consulting with the 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/ Guideline | Relevant Provisions | Implications for this project |
|---|---|---|
| Public Health Act (No. 36 of 1919) | Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health." | The Proponent and all its employees should ensure compliance with the provisions of these legal instruments. |
| Health and Safety Regulations GN 156/1997 (GG 1617) | Details various requirements regarding health and safety of labours. | |
| Road Traffic and Transport Act, No. 22 of 1999 | The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto. Should the Proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits will be required. | Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for. |

| Legislation/Policy/ Guideline | Relevant Provisions | Implications for this project |
|---|---|---|
| Labour Act (No. 6 of 1992) | Ministry of Labour (MOL) is aimed at ensuring harmonious 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 2** 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 with which companies must comply with to apply for approved funding by Equator Principles Financial Institutions (EPFIs). The Principles apply to all new project financings globally across all sectors.<br>**Principle 1:** Review and Categorization | These principles are an attempt to: '…encourage the development of socially responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based |

| Statute | Provisions | Project Implications |
|---|---|---|
| | **Principle 2**: Environmental and Social Assessment<br><br>**Principle 3:** Applicable Environmental and Social Standards<br><br>**Principle 4:** Environmental and Social Management System and Equator Principles Action Plan<br><br>**Principle 5:** Stakeholder Engagement<br><br>**Principle 6:** Grievance Mechanism<br><br>**Principle 7:** Independent Review<br><br>**Principle 8:** Covenants<br><br>**Principle 9:** Independent Monitoring and Reporting<br><br>**Principle 10:** Reporting and Transparency | upliftment and empowering interactions.' |
| The International Finance Corporation (IFC) Performance Standards | The International Finance Corporation's (IFC) Sustainability Framework articulates the Corporation's strategic commitment to sustainable development and is an integral part of IFC's approach to risk management. The Sustainability Framework comprises IFC's Policy and Performance Standards on Environmental and Social Sustainability, and IFC's Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability. | The Performance Standards are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the Client (Borrower) in |

| Statute | Provisions | Project Implications |
|---|---|---|
| | 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:<br><br>**Performance Standard 1:** Assessment and Management of Environmental and Social Risks and Impacts.<br><br>**Performance Standard 2:** Labour and Working Conditions<br><br>**Performance Standard 3:** Resource Efficient and Pollution Prevention and Management.<br><br>**Performance Standard 4:** Community Health and Safety.<br><br>**Performance Standard 5:** Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement.<br><br>**Performance Standard 6:** Biodiversity Conservation and Sustainable Management of Living Natural Resources<br><br>**Performance Standard 7:** Indigenous Peoples/Sub-Saharan African Historically Undeserved Traditional Local Communities.<br><br>**Performance Standard 8:** Cultural Heritage. | 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. |

| Statute | Provisions | Project Implications |
|---|---|---|
| | **Performance Standard 9:** Financial Intermediaries (FIs).<br><br>**Performance Standard 10:** Stakeholder Engagement and Information<br><br>A full description of the IFC Standards can be obtained from<br><br>http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards?cq_ck=1522164538151#ess1 | |
| The United Nations Convention to Combat Desertification (UNCCD) 1992 | 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.<br><br>The convention objective is to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and environmental sustainability United Nation Convention. | The project activities should not be such that they contribute to desertification. |
| Convention on Biological Diversity 1992 | Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use.<br><br>Promote the protection of ecosystems, natural habitats, and the maintenance of | Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised. |

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

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

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

# 5. ENVIRONMENTAL BASELINE

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

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

## 5.1 Biophysical Environment

## Climate

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

The project area is situated in Southern Namibia in the //Karas Region, and the area is classified as a Subtropical desert climate. The area experiences an annual temperature of about 25 $^{0}$C, and typically receives about 18.8 mm of rain, (EDS, 2023).

## 5.1 Topography and Landscape

The EPL area is dominated by the Gamchab basin, which is a large basin formed by rivers eroding away the terrain to the north of the Orange River. These rivers flow and erode the landscape only sporadically after heavy rain fall. The landscape is dominated by large, open valleys of gently sloping ground covered with sparse layers of grass. There are many prominent dolerite sills in the Basin. The landscape is named after the Gomchab River, the largest of several rivers that drain the basin, (Mendelsohn, 2003). **Figure 3** below shows the topographic and landscape map.

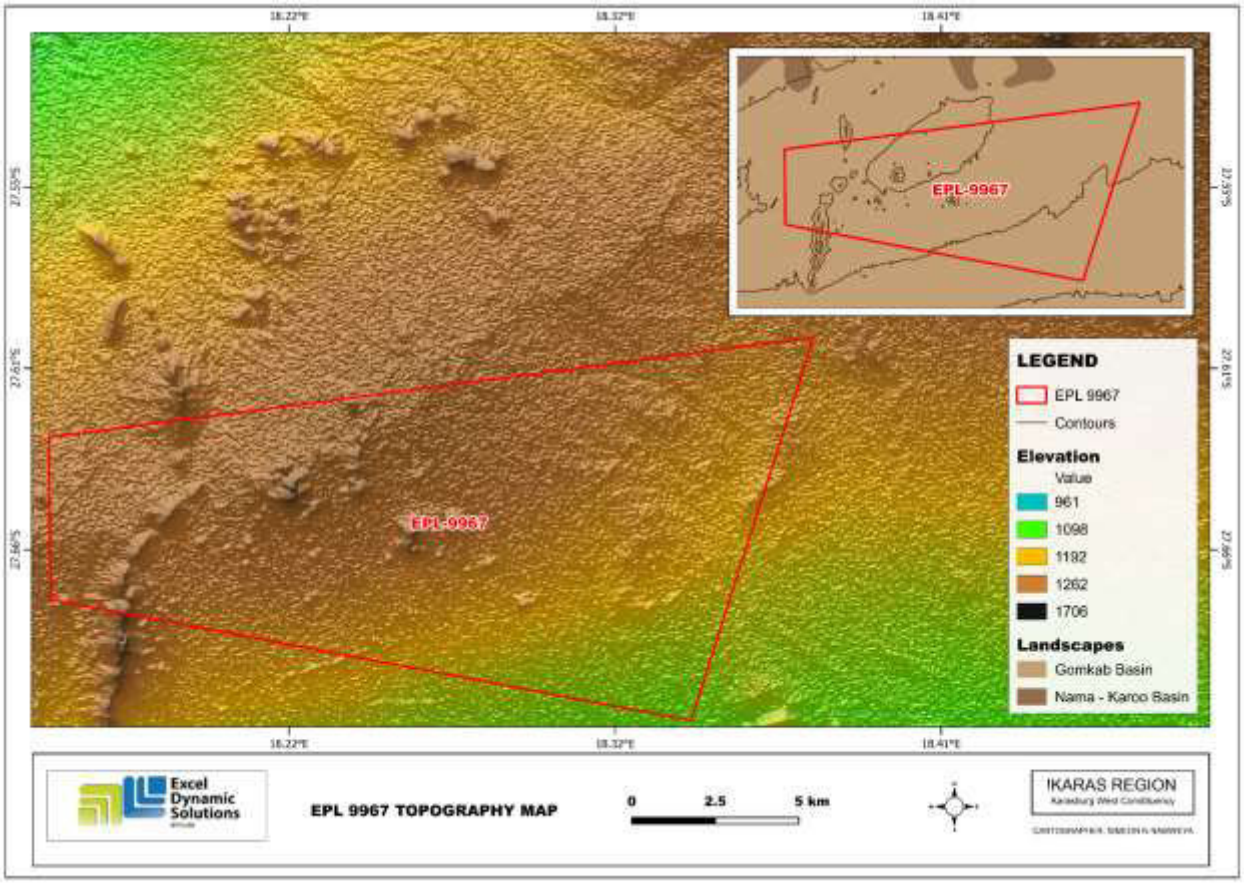


**Figure 3: Topographic and landscape map of the project area**

## 5.2 Geology and Soil

### Geology

Geologically, the project area lies within the rocks of the Namaqualand Metamorphic Complex, the larger belt of Proterozoic rocks that occurs across the EPL. The Namaqua metamorphic events are dated at around 1190 Ma and contains granulite facies rocks formed in two or more thermotectonic cycles during the mid-Proterozoic. The EPL contains pre to syntectonic biolite-rich augen gneiss, and pre-tectonic gneiss, ortho-amphibolite, metasedimentary rocks (Mendelsohn, 2003). **Figure 4** below shows the geology map for the project.

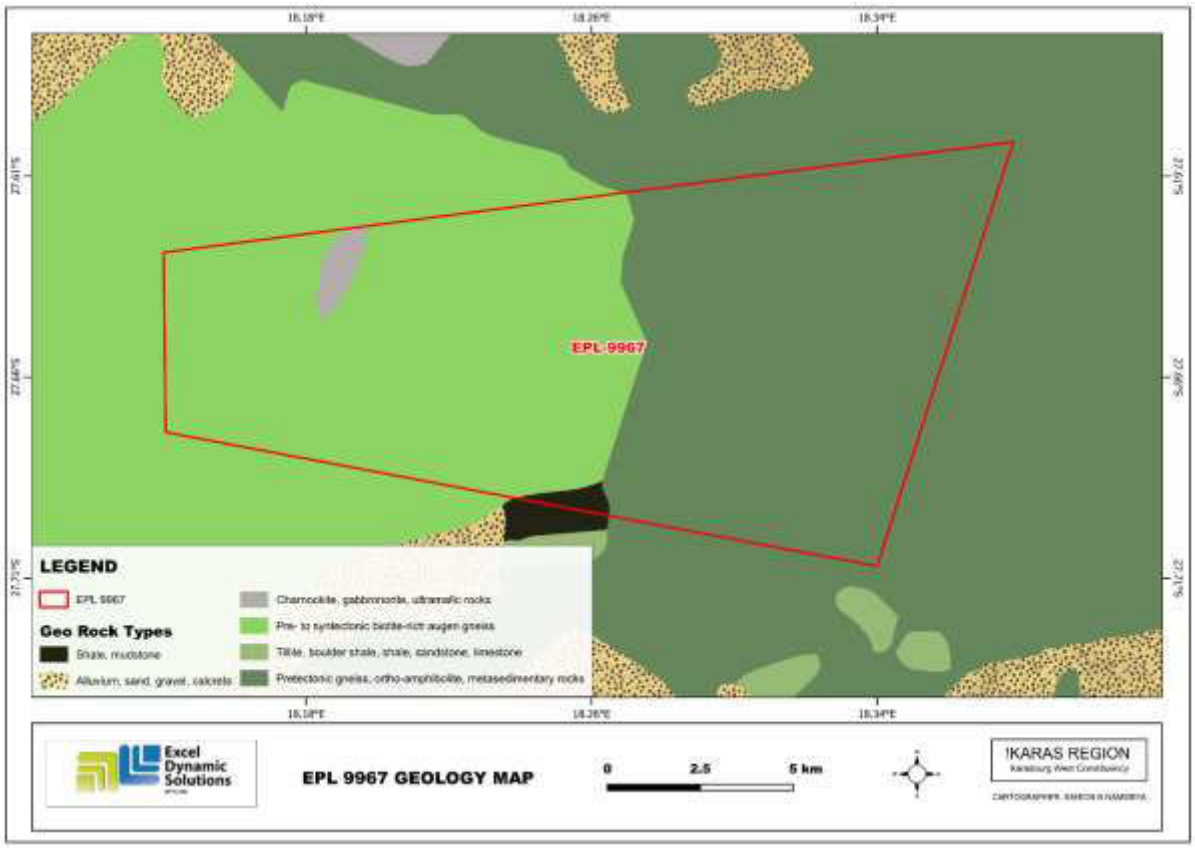


**Figure 4: A map of the general geology of the project area**

### Soil

The EPL is dominated by the Eutric Regosols soil which is characterized as medium or textured soils of actively eroding landscapes, the thin layers lying directly above the rock surfaces from which they formed. Although not as shallow as the Leptosols soils, these soils never reach depths

of more than 50 cm. The central regions of the country are dominated by regosols, which are especially susceptible to erosion where there is any degree of slope, (Mendelsohn, 2003). **Figure 5** below is a map of the soil types found within the EPL area, and **figure 6** shows the Eutric Regosol soil observed on site.

During 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 conversed in way that does not promote soil erosions, which may result in creation of gullies.

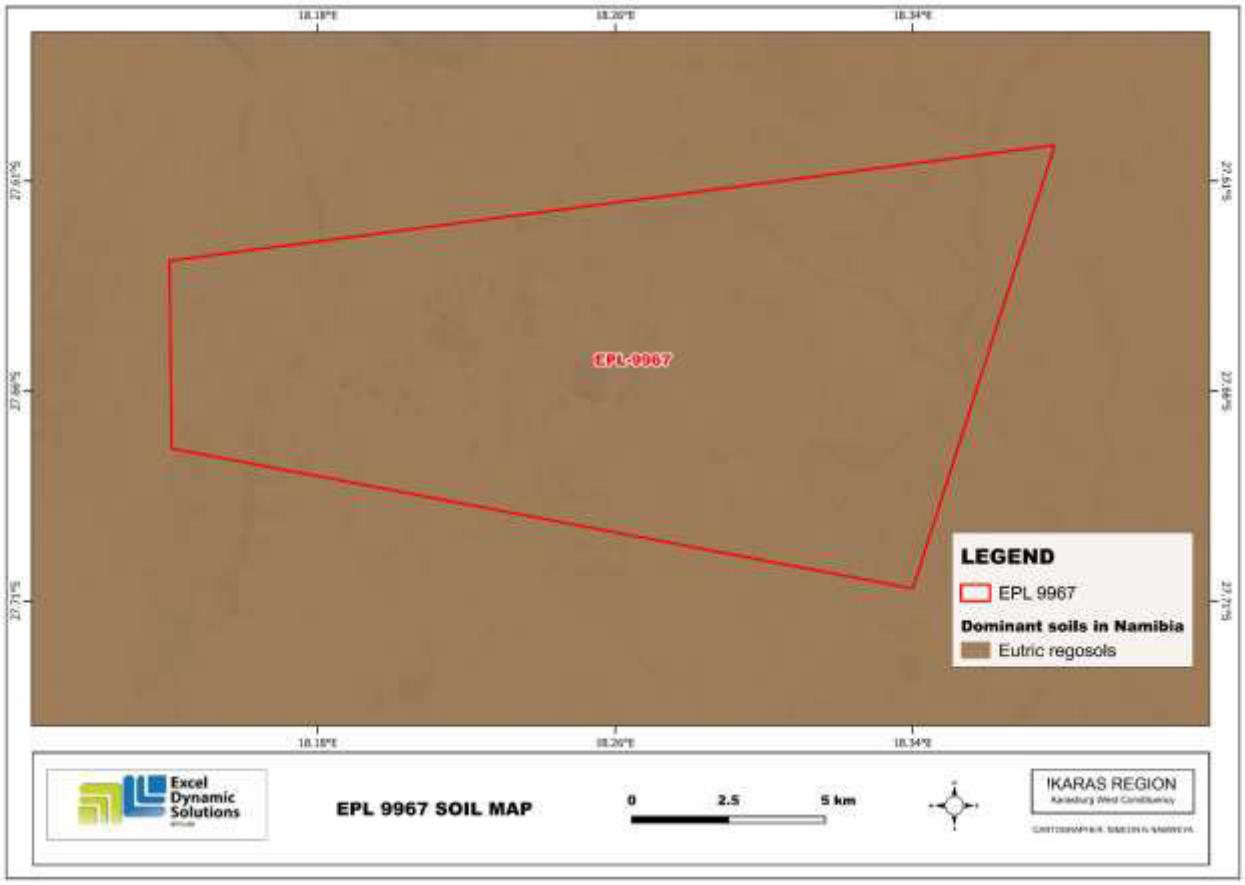


**Figure 5: Shows the dominant soil types found within the EPL**

**Figure 6: Shows the Eutric Regosol soil observed within the EPL during site assessment**

## 5.3 Hydrology and groundwater

The project area lies within an aquifer with rock bodies with little groundwater potential. This aquifer consists of non-permeable rocks or sand which allow water to easily absorbed underground. The nature of the rocks and sand also allow moderate, groundwater pollution around the project area. In terms of the surface water system, the Vaalput and Naob Rives run through the EPL. Therefore, the mitigation measures outlined in the EMP regarding the management of pollution to groundwater and surface water system should be adhered to. **Figure 7** shows the groundwater map of the project area.

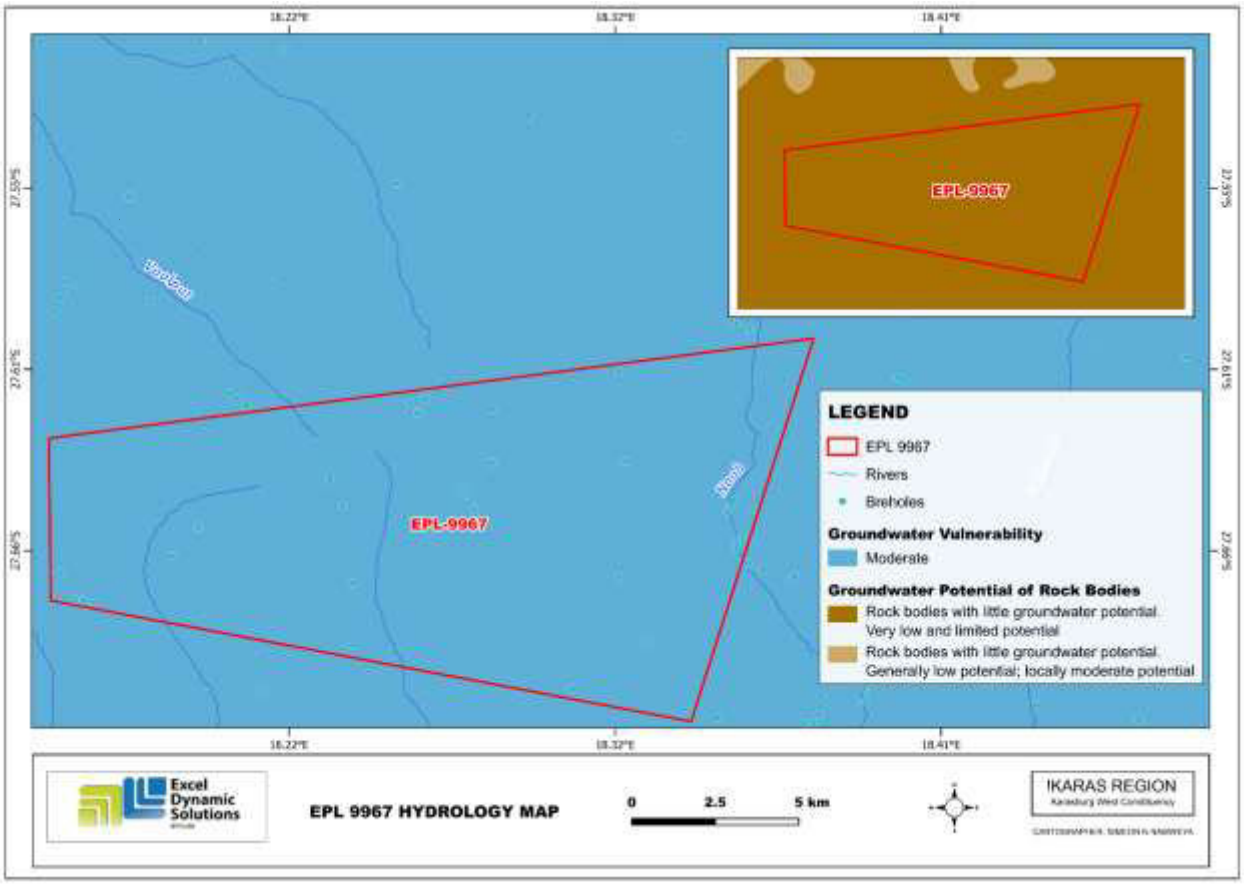


**Figure 7: Shows the groundwater and surface Water System map**

## 5.4 Flora and Fauna

### Fauna

The area is predominantly suitable for small livestock, it hosts a variety of small to large wildlife animals such as Kudu, Springbok, Duiker, Klipspringer, Steenbok and Jackal. The Kudu are abundant among the 'Koppies" and roam free, leaping over any fence that may come in their way; whereas the springbok on the other hand are bound to single encampments, because they lack the suppleness and length to jump over fences. Gemsbok are also widely scattered across the region in addition to Zebra and Red Hartebeest, (EDS, 2023). **Figure 8** shows animal evidence observed within the EPL.

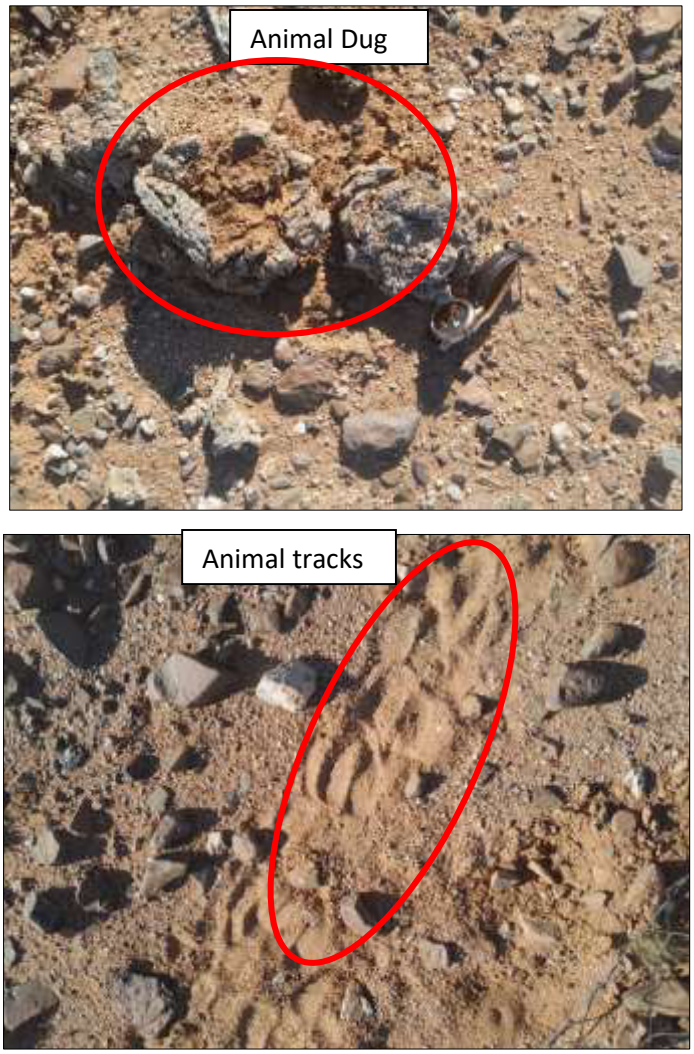


**Figure 8: Shows animal evidence observed within the EPL during site visit**

## Flora

During the site visit which was conducted on 12 May 2025 a variety of shrub species, grasses such as Stipagrostis ciliate, known as the tall bushman grass, is a species of grass in the Poaceae family. It occurs in Namibia's Namib Desert and the Kalahari. The grass grows 30-100 cm tall and can be annual or perennial dependent on the amount of rainfall. It can be distinguished by a ring of long white hair surrounding each node. Trees identified within the EPL are Acacia Mellifera, a low, branched tree with a more or less spherical crown. Black bark on stem becomes ash-grey to light brown on the branches, bearing small, short, sharply hooked spones in pairs. It has a shallow but extensive root system radiating from the crown, allowing the plant to exploit soil moisture and nutrients from a large volume of soil. The Acacia Erioloba are also comment in the area and they

are identified by large, grey, kidney-shaped, seed-carrying pods. During the dry season fallen flowers and pods are eaten by livestock and wildlife animals (e.g. elephant, giraffe and eland). The pods are highly nutritious and are collected in commercial and communal areas to feed domestic stock in times of drought, and although nutritious, the seeds can become insect-infested causing stock losses. The straight, paired-thorns, protect the trees from over-browsing. It is a protected species and may not be damaged, cut or chopped. Thus, the forestry Act 12 of 2001 should be adhered to, during the exploration activities on the EPL. **Figure 9** shows the vegetation map, and **figure 10** shows Stipagrostis ciliate observed on site.

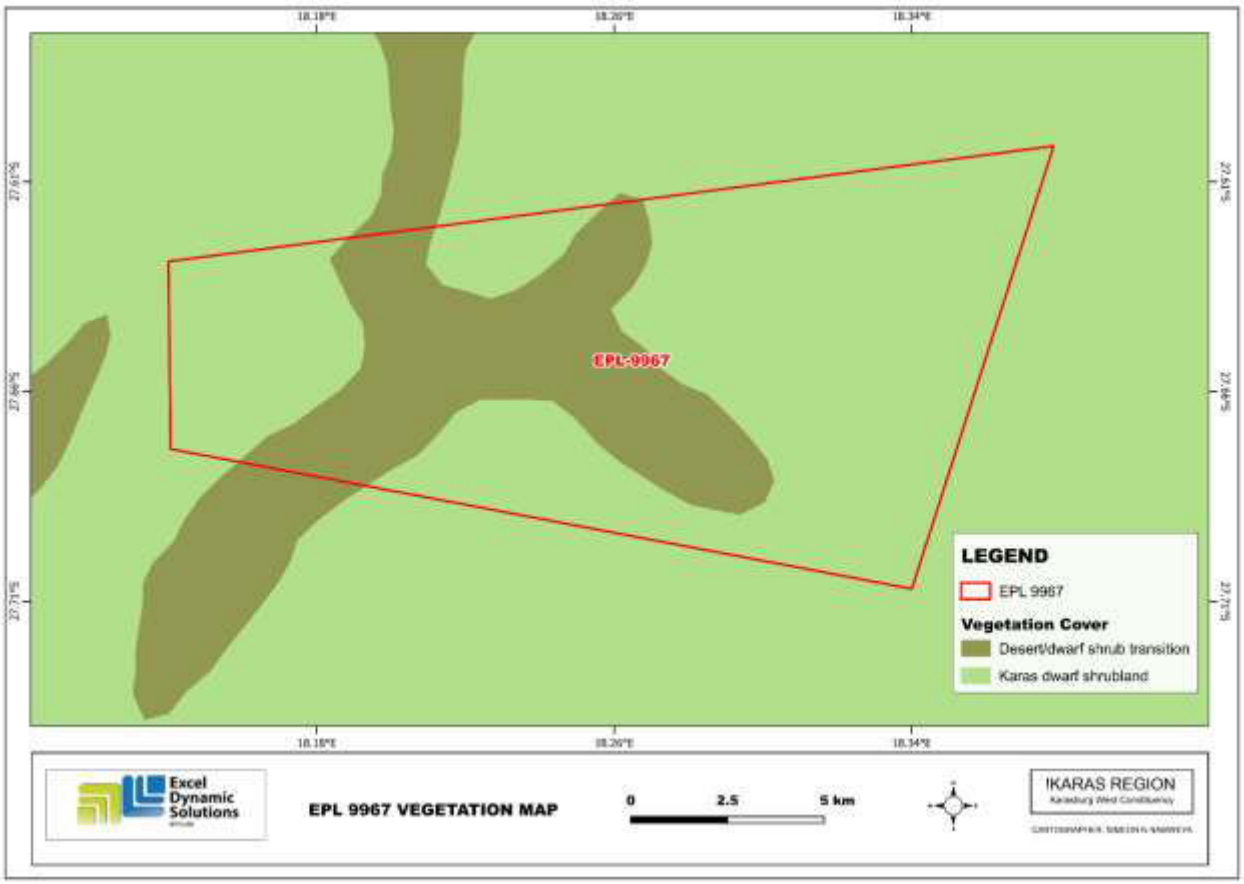


**Figure 9: Shows the vegetation map for the project area**

**Figure 10: Shows the Stipagrostis ciliate observed on site**

## 5.5 Surrounding Land Uses

The EPL falls within Commercial land as shown in **Figure 11**. The Proponent is required to secure a signed agreement from the affected landowners to gain access to the areas of interest for prospecting and exploration investigations as per the Section 52 of the Minerals (Prospecting and Mining) Act No. 33 of 1992 and Section 2.2.3 of the Minerals Policy of Namibia.

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

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

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

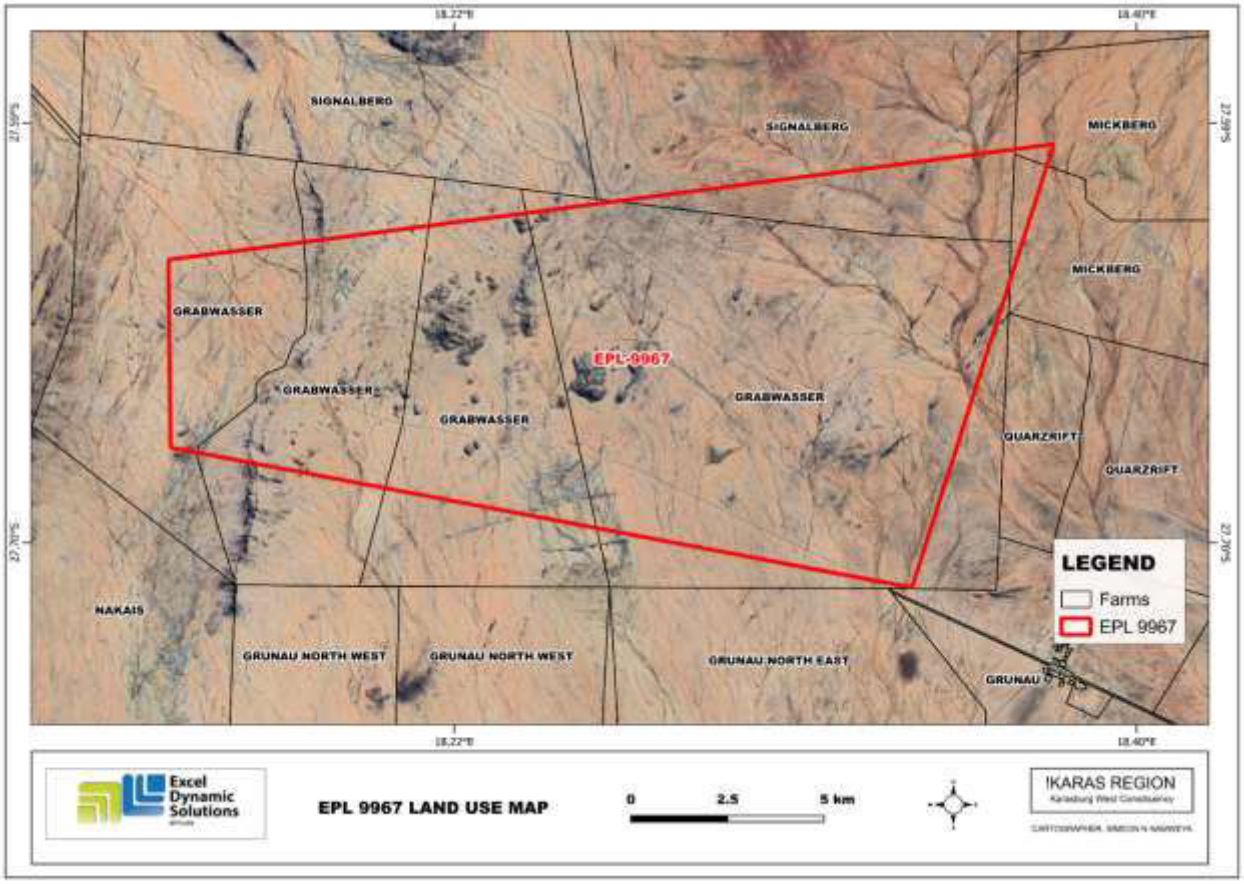


**Figure 11: EPL Land Use Map**

## 5.6 Heritage and Archaeology

No archaeological artifacts have been recorded during site assessment. However, it should be noted that more archaeological significant may potentially be discovered during the exploration phase. Therefore, the regulations stipulated in the National Heritage Act No. 27 of 2004 should be adhered to.

### 5.7 Socio-economic condition

**Tourism**

Top tourist attractions in the //Karas region include the quaint coastal town of Luderitz, Namibia's famous Ghost town, Kolmanskop, a former diamond settlement that was deserted in the 1950s. Giant's Playground and Brukkaros Mountain, the latter not an extinct volcano as is popularly thought but the remnants of a gaseous explosion that took place many millions of years ago. Lying at the center of this region is the unofficial capital of the south, Keetmanshoop, the gateway to many of these attractions. The /Ai-/Ais Hot springs and further south lies the Fish River Canyon the second largest canyon in the world, (EDS, 2023).

**Farming**

The //Karas region is predominantly a small stock farming area, consisting mostly of animals such as sheep or goats. Game farming and irrigation farming along the Naute Dam and the Orange River have gained significantly in importance, (EDS, 2023).

## 6. PUBLIC CONSULTATION PROCESS

Public consultation is an important component of an Environmental Assessment (EA) process. It provides potential Interested and Affected Parties (I&APs) with an opportunity to comment on and raise any issues 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 to 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 study has been done in accordance with the EMA and its EIA Regulations.

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

Relevant and applicable national, regional, and local authorities, local leaders, and other interested members of the public were identified. Pre-identified I&APs were contacted directly, while other parties were given a chance to register after project advertisement notices in the newspapers. Newspaper advertisements were placed in two widely-read national newspapers in the region. The project advertisement/announcement ran for two consecutive weeks. The summary of pre-identified and registered I&APs is listed in **Table 3** below.

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

| **National (Ministries and State-Owned Enterprises)** |
|---|
| Ministry of Environment, Forestry and Tourism |
| Ministry of Industries, Mines and Energy |
| Ministry of Health and Social Services |
| **Regional, Local authorities** |
| //Karas Regional Council |
| **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 and these 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 identified Interested and Affected Parties (I&APs), and upon request, to all new registered I&APs.
- Project Environmental Assessment notices were published in The Namibian and New Era Newspapers (10 and 17 January 2025), inviting members of the public to register as I&APs and to submit their comments/concerns.

- The consultation meeting was scheduled with interested parties on 12 May 2025, however, there was no attendance from the affected parties.
- The site visit assessment, and observation formed basis for the ESIA Report and EMP.

**Figure 12: Public Site Notice placed at Shell service station, Grunau**

### 6.3 Feedback from Interested and Affected Parties

No comment, issues or concern have been received.

# 7. IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES

## 7.1 Impact Identification

Proposed developments/activities are usually associated with different potential positive and/or negative impacts. For an environmental assessment, the focus is placed mainly on the negative impacts. This is done to ensure that these impacts are addressed by providing adequate

mitigation measures such that an impact's significance is brought under control, while maximizing the positive impacts of the development. The potential positive and negative impacts that have been identified from the prospecting activities are listed as follow:

Positive impacts:

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

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)
- 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 4**, **Table 5**, **Table 6** and **Table 7**, respectively.

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

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

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

### 7.2.1 Extent (spatial scale)

Extent is an indication of the physical and spatial scale of the impact. **Table 4** shows rating of impact in terms of extent of spatial scale.

**Table 4: Extent or spatial impact rating**

| Low (1) | Low/Medium (2) | Medium (3) | Medium/High (4) | High (5) |
|---|---|---|---|---|
| Impact is localized within the site boundary: Site only | Impact is beyond the site boundary: Local | Impacts felt within adjacent biophysical and social environments: Regional | Impact widespread far beyond site boundary: Regional | Impact extend National or over international boundaries |

### 7.2.2 Duration

Duration refers to the timeframe over which the impact is expected to occur, measured in relation to the lifetime of the project. **Table 5** shows the rating of impact in terms of duration.

**Table 5: 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 6** shows the rating of impact in terms of intensity, magnitude or severity.

**Table 6: Intensity, magnitude or severity impact rating**

| Type of criteria | Negative | | | | |
|---|---|---|---|---|---|
| | H- (10) | M/H- (8) | M- (6) | M/L- (4) | L- (2) |
| **Qualitative** | Very high deterioration, high quantity of deaths, injury of | Substantial deterioration, death, illness or injury, loss of habitat / | Moderate deterioration, discomfort, partial loss of habitat / | Low deterioration, slight noticeable alteration in | Minor deterioration, nuisance or irritation, minor change |

| Type of criteria | Negative | | | | |
|---|---|---|---|---|---|
| | H-<br>(10) | M/H-<br>(8) | M-<br>(6) | M/L-<br>(4) | L-<br>(2) |
| | illness / total loss of habitat, total alteration of ecological processes, extinction of rare species | diversity or resource, severe alteration or disturbance of important processes | biodiversity or resource, moderate alteration | habitat and biodiversity. Little loss in species numbers | 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 7** shows impact rating in terms of probability of occurrence.

**Table 7: Probability of occurrence impact rating**

| Low (1) | Medium/Low (2) | Medium (3) | Medium/High (4) | High (5) |
|---|---|---|---|---|
| Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards. | Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards | Possible, distinct possibility, frequent. Low to medium risk or vulnerability to natural or induced hazards. | Probable if mitigating measures are not implemented. Medium risk of vulnerability to natural or induced hazards. | Definite (regardless of preventative measures), highly likely, continuous. High risk or vulnerability to natural or induced hazards. |

### 7.2.5 Significance

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

Once the above factors **(Table 4**, **Table 5**, **Table 6** and **Table 7)** have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

SIGNIFICANCE POINTS (SP) = (MAGNITUDE + DURATION + SCALE) X PROBABILITY

The maximum value per potential impact is 100 significance points (SP). Potential impacts were rated as high, moderate or low significance, based on the following significance rating scale **(Table 8)**.

**Table 8: Significance rating scale**

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

**Positive (+):** Beneficial impact

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

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

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

The assessment of the exploration phases is done for pre-mitigation and post-mitigation.

The risk/impact assessment is driven by three factors*:*

**Source*:*** The cause or source of the contamination.

**Pathway*:*** The route taken by the source to reach a given receptor

**Receptor*:*** A person, animal, plant, eco-system, property or a controlled water source. If contamination is to cause harm or impact, it must reach a receptor.

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

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

## 7.3 Assessment of Potential Negative Impacts

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

### 7.3.1 Land Degradation and Loss of Biodiversity

**Fauna:** The drilling activities of the exploration project would 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 results 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 on the explored areas.

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 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 is a need for new road construction, the Proponent should apply for this permit and must consult the affect parties.

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

Under the status, the impact can be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating. The impact is assessed in **Table 9** below.

**Table 9: Assessment of the impacts of exploration on biodiversity**

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|---|---|---|---|---|---|
| **Pre mitigation** | M: -4 | M: -4 | M: -6 | M/H: -4 | M: -56 |
| **Post mitigation** | L/M: -3 | L/M: -3 | L/M: -4 | L/M: -2 | L: -20 |

### 7.3.2 Generation of Dust (Air Quality)

Dust emanating from site access roads when transporting exploration equipment and supply (water) to and from site (time-to-time) may compromise the air quality in the area. Vehicular movements from heavy vehicles such as trucks 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 causes ambient fugitive dust levels. Additionally, activities carried out as part of the exploration works such as drilling would contribute to the dust levels in the air. The medium significance of this impact can be reduced to a low significance rating by properly implementing mitigation measures. The impact is assessed in **Table 10** below.

**Table 10: Assessment of the impacts of exploration on air quality**

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|---|---|---|---|---|---|
| **Pre mitigation** | M: -4 | M: -3 | M/L: -3 | M/H: 4 | M: -40 |
| **Post mitigation** | L: -2 | L: -2 | L: -2 | L: -1 | L: -6 |

### 7.3.3 Water Usage

Water resources may be impacted by project developments/activities through pollution (water quality). The impact of the project activities on the resources would be dependent on the water volumes required 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 drilling activities, and it requires about 2,500 litres/month. Given the low groundwater potential of the project site area, the Proponent might need to cart in water volumes from outside the area and store it in industry standard water reservoirs/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 11** below.

**Table 11: Assessment of the project impact on water resource use and availability**

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|---|---|---|---|---|---|
| **Pre mitigation** | M: -3 | M/H: -3 | L/M: -3 | M/H: -4 | M: -36 |
| **Post mitigation** | L/M: -2 | L/M: -2 | L: -2 | L/M: -2 | L: -12 |

### 7.3.4 Soil and Water Resources Pollution

The proposed exploration activities are associated with a variety of potential pollution sources (i.e., lubricants, fuel, and wastewater), 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 these machinery, vehicles and equipment could infiltrate into the ground and pollute the fractured or faulted aquifers on site, and with time, reach further groundwater systems. However, it must be noted that the scale and extent/footprint of the activities where potential sources of pollution will be handled is relatively small. Therefore, the impact is moderately low.

Pre-mitigation measure implementation, the impact significance is moderate and upon implementation, the significance will be reduced to low. The impact is assessed in **Table 12** below.

**Table 12: Assessment of the project impact on soils and water resources (pollution)**

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|---|---|---|---|---|---|
| **Pre mitigation** | M: -3 | M/H: -3 | M: -5 | M: -3 | M: -33 |
| **Post mitigation** | L: -1 | L: -1 | L: -2 | L/M: -2 | L: -8 |

### 7.3.5 Waste Generation

During the prospecting and exploration phase, domestic and general waste is produced on site. If the generated waste is not disposed of in a responsible way, land pollution may occur on the EPL or around the site. Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. 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 13**.

**Table 13: Assessment of waste generation impact**

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

| | | | | | |
|---|---|---|---|---|---|
| **Pre mitigation** | L/M: -3 | L/M: -2 | M: -6 | M: -3 | M: –33 |
| **Post mitigation** | L: -1 | L: -2 | L: -2 | L/M: -2 | L: -10 |

### 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 exploration activities. 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 14** below and mitigation measures provided.

**Table 14: Assessment of the impacts of exploration on health and safety**

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

### 7.3.7 Vehicular Traffic Use and Safety

The district roads are the main transportation routes for all vehicular movement in the area and provide access to the EPL and connect the project area to other towns. Therefore, traffic volume will increase on these district roads during exploration as the project would need a delivery of supplies and services on site. These service and supplies will include but 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 would potentially increase slow moving heavy vehicular traffic along these roads. The impact would be felt by the local road users. This would add additional pressure on the roads.

However, the exploration related heavy trucks will only be transporting materials and equipment to and from site, 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 15** below.

**Table 15: Assessment of the impacts of exploration on road use (vehicular traffic)**

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|---|---|---|---|---|---|
| **Pre mitigation** | M: -4 | M/H: -4 | L/M: -6 | M/H: -4 | M: -56 |
| **Post mitigation** | L/M: -2 | L/M: -2 | L: -2 | L/M: -2 | L: -12 |

### 7.3.8 Noise and vibrations

Prospecting and exploration work (especially drilling) may be a nuisance to surrounding communities due to the noise produced by the activity. Excessive noise and vibrations can be a health risk to workers on site. The exploration equipment used for drilling on site is of medium size and the noise level is bound to be limited to the site only, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium significance. To change the impact significance from the pre-mitigation significance to low rating, the mitigation measures should be implemented. This impact is assessed in **Table 16** below.

**Table 16: Assessment of the impacts of noise and vibrations from exploration**

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|---|---|---|---|---|---|
| **Pre mitigation** | L/M: -3 | L/M: -3 | M: -6 | M/H: -3 | M: –36 |
| **Post mitigation** | L: -2 | L/M: -2 | L: -2 | L/M: -2 | L: -12 |

### 7.3.9 Disturbance to Archaeological and Heritage Resources

There are no archaeological artifacts recorded in the area during site visit, and there is a possibility of unveiling/discovering new archeological and/or cultural materials in the proposed project area. If such materials are found the areas must be mapped out and coordinates taken to establish "No-Go-Areas", due to their sensitivity and then documented. They may be protected either by fencing them off or demarcation for preservation purposes, or excluding them from any development i.e., no exploration activities should be conducted near these recorded areas through the establishment of buffer zones.

This impact can be rated as medium significance if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be reduced to a lower rating. The impact is assessed in **Table 17**.

**Table 17: Assessment of the impacts of exploration on archaeological & heritage resources**

| Mitigation Status | Extent | Duration | Intensity | Probability | Significance |
|---|---|---|---|---|---|
| **Pre mitigation** | M - 3 | M/H - 4 | M - 6 | M/H - 4 | M – 52 |
| **Post mitigation** | L/M - 2 | L/M - 2 | L - 2 | L/M - 2 | L - 12 |

### 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 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 18)**.

**Table 18: Assessment of social impact of community property damage or disturbance**

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

## 7.4 Cumulative Impacts Associated with Proposed Exploration

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

Similar to many other exploration projects, 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 travelling 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.
- Clean up of site work areas and transporting the recently generated waste to the nearby approved waste management facility (as per agreement with the facility operator/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 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, may the ECC be issued, the Proponent will be expected to be compliant with the ECC conditions as well as legal requirements governing mineral exploration and related activities.

## 8.2 Recommendations

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

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 directly, or by a project Environmental Health Control Officer (ECO). 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 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.

## 9. REFERENCES


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

Geological Survey of Namibia (2015). Strategic Environmental Management Plan (SEMP) for the Central Namib Uranium Mining Province, 2013 Annual Report. Ministry of Mines and Energy, Windhoek, Republic of Namibia

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

NSA. (2011). Retrieved from https://digitalnamibia.nsa.org.na/

NSA. (2011). Digital Namibia: Namibia statistics of Namibia. Retrieved February 17, 2022, from https://digitalnamibia.nsa.org.na/