Excel Dynamic Solutions (Pty) Ltd

ENVIRONMENTAL SCOPING ASSESSMENT (ESA)
FOR
THE PROPOSED PROSPECTING AND EXPLORATION ACTIVITIES ON THE EXCLUSIVE PROSPECTING LICENCE (EPL) NO. 10110 LOCATED SOUTH - EAST OF SWAKOPMUND, IN THE ERONGO REGION, NAMIBIA

ENVIRONMENTAL ASSESSMENT REPORT: FINAL

ECC APPLICATION NUMBER: 006311

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EXECUTIVE SUMMARY

Excel Dynamic Solutions (Pty) Ltd (*The Consultant)* was appointed by Linghang Mining Investment (Pty) Ltd (*The Proponent*) to act on their behalf in obtaining the Environmental Clearance Certificate (ECC) for prospecting and exploration activities on Exclusive Prospecting License (EPL) No.10110. The 1330.4119 hectares EPL is located about 30 km southeast of Swakopmund, in the Arandis constituency, Erongo region. EPL No. 10110 (center coordinates; -22.11148, 14.56123) overlies the Namib – Naukluft Park. The target commodities for prospecting and exploration are Industrial Minerals, Precious Metals, Dimension Stone, Nuclear Fuel Minerals, Base and Rare Metals and Semi – Precious stones.

EPL 10110 lies in Namib – Naukluft Park. Thus, the regulations stipulated in the National Policy on Prospecting and Mining in Protected Areas (2018) in relation to the intended exploration area are highly recommended.

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

PROJECT DESCRIPTION

Planned Activities: Proposed Exploration Methods

The Proponent intends to adopt a systematic prospecting and exploration approach to the project as follows:

1. **Non-invasive Techniques:** Mainly include desktop study, geological mapping, lithology geochemical surveys, and geophysical surveys.
2. **Invasive Techniques:** Include drilling and associated activities.

PUBLIC CONSULTATION

The public consultation process assists the Environmental Consultant in identifying all potential impacts and aids in the process of identifying possible mitigation measures and alternatives to certain project activities. The communication with Interested & Affected parties (I&APs) regarding the proposed prospecting and exploration activities was done through the following means to ensure that the public is notified and allowed to comment on the proposed project:

- A Background Information Document (BID) containing brief information about the proposed exploration works was compiled and emailed to pre-identified Interested and Affected Parties (I&APs), and upon request to all newly registered I&APs;
- The Project's Environmental Assessment notices were published in *New Era* and *The Namibian* on 2 and 9 September 2025 providing a brief overview of the proposed activity and its location, and inviting the public to register as Interested and Affected Parties (I&APs) and share their comments or concerns.
- Site notices regarding the stakeholder engagement meeting were placed on the notice board at the Swakopmund's MEFT.
- A public consultation meeting was held on 19th of August 2025 at 14:30 with MEFT officials , where they raised their concerns and comments regarding the proposed project**.**

Potential Impacts identified.

The following potential impacts are anticipated:

- **Positive impacts**: Creation of jobs, production of a trained workforce, boosting of local and regional economic development, opening other investment opportunities, infrastructure-related development benefits and Improved support for local businesses through the procurement of locally available goods and services.
- **Negative impacts**: Disturbance to grazing and arable land, land degradation and biodiversity loss, generation of dust, pressure of the available water resources, pollution of soil & water resources, minor waste generation, occupational health & safety risks, vehicular Traffic Use & Safety, noise & Vibrations, disturbance to archaeological & heritage resources, impacts on local roads, social Nuisance: local property intrusion & disturbance and impacts associated with closure and decommissioning of exploration works.

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

RECOMMENDATIONS

The Environmental Consultant is assured that the possible negative impacts of the proposed project can be effectively controlled and reduced through the successful implementation of the suggested management and mitigation measures, along with a committed effort to monitor their execution.

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

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses, and approvals for the proposed activities should be obtained. These include permits and licenses for land use access agreements to explore and ensure compliance with these specific legal requirements.
- The Proponent and all their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.
- Sites, where exploration activities have ceased, are rehabilitated, as far as practicable, to their pre-exploration state.
- Environmental Compliance monitoring reports should be compiled and submitted to the DEAF Portal as per the provision made on the MEFT/DEAF's portal.

Disclaimer

Excel Dynamic Solutions (EDS) warrants that the findings and conclusion contained herein were accomplished by the methodologies outlined in the Scope of Work and Environmental Management Act (EMA) of 2007. These methodologies are described as representing good customary practice for conducting an EIA of a property to identify recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist 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 outlined 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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LIST OF ABBREVIATIONS

Abbreviation	**Meaning**
BID	Background Information Document
CV	Curriculum Vitae
DEA	Department of Environmental Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EDS	Excel Dynamic Solutions
ESA	Environmental Scoping Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan

ERC	Erongo Regional Council
EPL	Exclusive Prospecting Licence
GG	Government Gazette
GN	Government Notice
I&Aps	Interested and Affected Parties
MASL	Metres Above Sea Level
MAFWLR	Ministry of Agriculture, Fisheries, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
MIME	Ministry of Industry, 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 that play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy, and biological diversity (as an expression of evolution).
Environment	As defined in the Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water, and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values.
Environmental Management Plan	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environmental effects are to be mitigated, controlled, and monitored.
Exclusive Prospecting Licence	It is a license that confers exclusive mineral prospecting rights over land of up to 1000 km2 in size for an initial period of three years, renewable twice for a maximum of two years at a time
Interested and Affected Party (I&AP)	About the assessment of a listed activity includes - (a) any person, group of persons or organization interested in or affected by activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity.
Proponent	As defined in the Environmental Management Act, a person who proposes to undertake a listed activity.
Mitigate -	Practical measures to reduce adverse impacts.
Significant impact	Means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.
Fauna	All of the animals that are found in a given area.
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 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

Excel Dynamic Solutions (Pty) Ltd (*The Consultant)* was appointed by Linghang Mining Investment (Pty) Ltd (*The Proponent*) to act on their behalf in obtaining the Environmental Clearance Certificate (ECC) for prospecting and exploration activities on Exclusive Prospecting License (EPL) No.10110. The 1330.4119 hectares EPL is located about 30 km southeast of Swakopmund, in the Arandis constituency, Erongo region (see figure 1). EPL No. 10110 (center coordinates; -22.11148, 14.56123) overlies the Namib – Naukluft Park (see figure 2). The target commodities for prospecting and exploration are Industrial Minerals, Precious Metals, Dimension Stone, Nuclear Fuel Minerals, Base and Rare Metals and Semi – Precious stones.

EPL No.10110 lies in Namib – Naukluft Park. Thus, the regulations stipulated in the National Policy on Prospecting and Mining in Protected Areas (2018) in relation to the intended exploration area is highly recommended.

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 EIA undertaken and an ECC obtained. Exploration activities are listed among activities that may not occur without an ECC. Therefore, no individuals or organizations may carry out exploration activities without an ECC awarded.

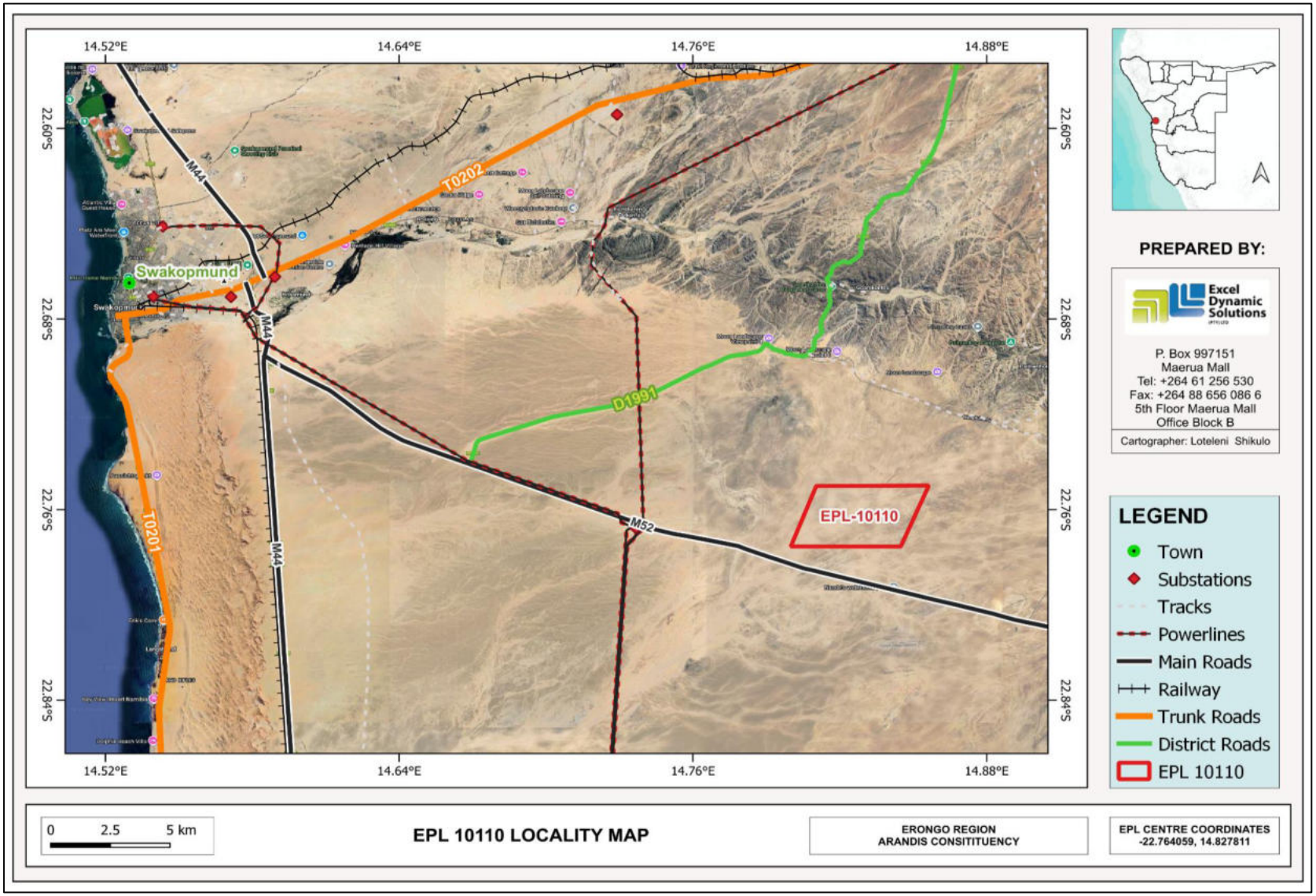

Figure 1: Locality map of EPL no. 10110

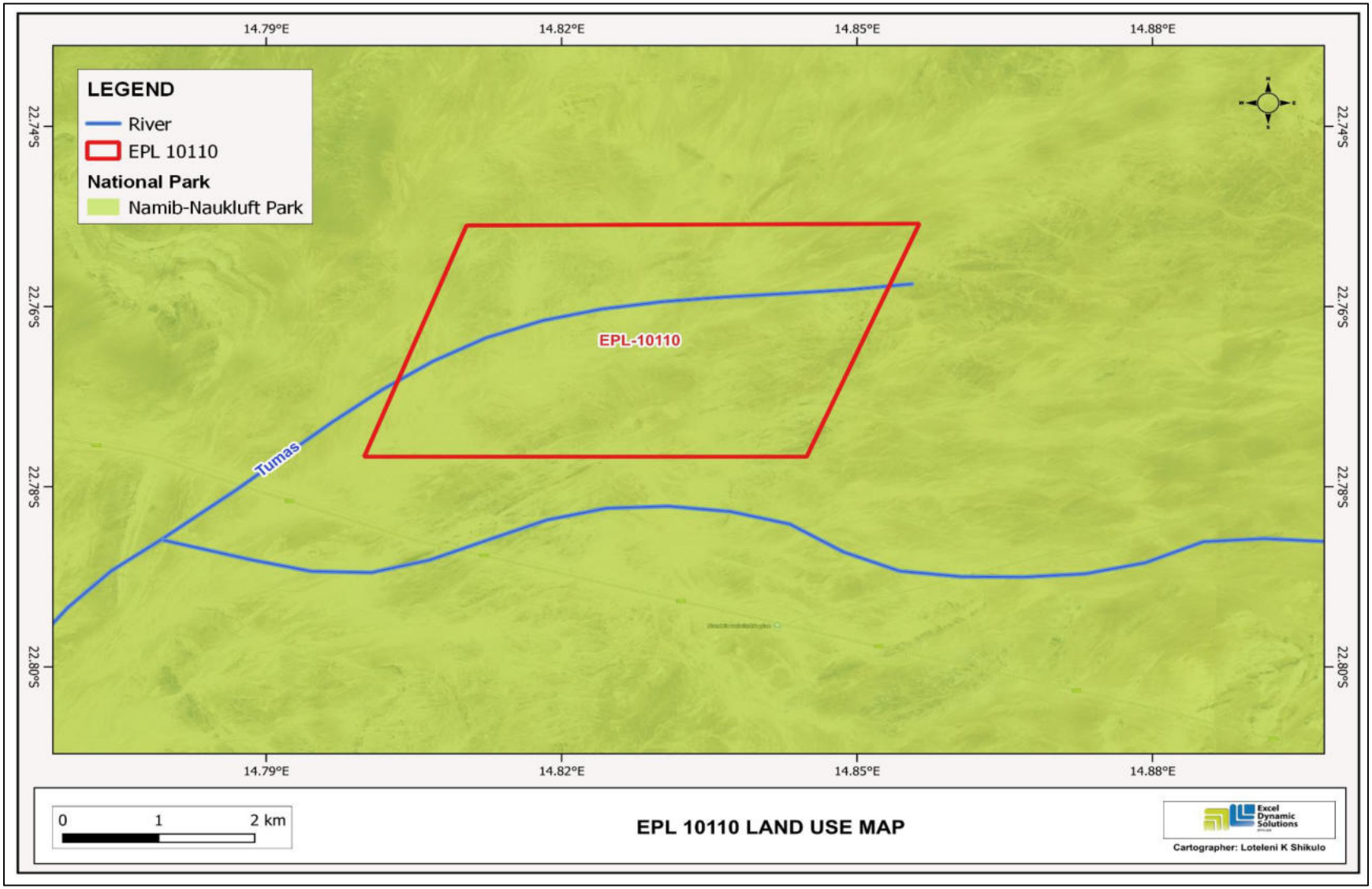

Figure 2: Land use map of EPL No. 10110

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

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

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

The EIA project is headed by Ms. Aili Iipinge, an experienced Environmental Assessment Practitioner (EAP). The consultation and reporting were conducted by Ms. Aili Iipinge and Ms. Milika Dineinge respectively. Ms. Dineinge and Ms.Iipinge's CVs are presented in **Appendix C.**

1.3 Motivation for the Proposed Project

The mining sector yields foreign exchange and accounts for a significant portion of the Namibian Gross Domestic Product (GDP). This sector is one of the largest contributors to the Namibian economy as it contributes to the improvement of the local livelihoods through the provision of temporary job opportunities and by maintaining local business through purchasing done at the local and the nearby town (Nyambe and Amunkete, 2009). Additionally, exploration activities have a great potential to enhance and contribute to the development of other sectors, and its activities eventually contribute to generation of taxes that fund social infrastructural development locally, regionally and nationally. Additionally, the mining industry produces a trained workforce and small businesses that can serve communities and may initiate related businesses. Exploration fosters several associated activities such as manufacturing of exploration and mining equipment, provision of engineering and environmental services. The mining sector forms a vital part of some of Namibia's development plans - Vision 2030, National Development Plan 5 (NDP5), and

Harambee Prosperity Plans (HPPs) I and II. Mining is essential to the development goals of Namibia in contributing to meeting the ever-increasing global demand for minerals, and for national prosperity. Successful exploration on EPL No. 10110 would lead to the mining of the target minerals, which would contribute towards achieving the goals of the national development plans and it will also contribute to the improved living conditions of the residents around the EPL.

1.4 Motivation for Exploration activities for EPL 10110 in Protected Area: Namib – Naukluft Park

The EPL 10110 lies within the Namib – Naukluft Park which is one of the largest national parks in Namibia. Taking into account that the EPL No. 10110 lies within the protected area, the National Policy stipulated on Prospecting and exploration in Protected Areas is highly recommended. Rehabilitation will be highly recommended as required under the exploration and Prospecting in Protected Areas and National Monuments (1999).

EPL No.10110 is in close vicinity with an active Exclusive Prospecting License (EPL) No. 3669 that is owned by Nova Energy (Namibia) (Pty) Ltd (100%). EPL No. 3669 false within the Namib – Naukluft Park. Existing mineral exploration and mining activities in the area indicate that sustainable mineral exploration could be feasible, provided that the proposed management measures and action plans are properly implemented and closely monitored on site.

Table 1 Presents different characteristics of Protected areas as stipulated in the National Policy on Prospecting and mining in Protected Areas (2018) in relation to the area (EPL No. 10110).

The Consultant understands that the policy is also aimed at establishing “no go areas” where exploration will not be permitted due to high conservation and/or aesthetic and tourism value, based upon the best available information.

Table 1: Characteristics of Protected Areas

Characteristic	**Case with EPL 10110 (YES/NO/UNKNOWN)**	**Consultant comment**
Biodiversity Priority Areas	YES	In the Namib – Naukluft Park
Archaeological rock tools	UNKNOWN	None
High Value Tourism Areas	UNKNOWN	None

Known Breeding Areas of Certain Species, Including Marine Species	NO	Inland exploration project
Important Wetland Areas	NO	Dryland
Areas with Existing Economic Activities That Would Be Compromised by Prospecting and/or Mining	UNKNOWN	Active mining activities known in the vicinity of the exploration EPL 10110
Areas with The Potential to Be Developed into Economically Viable Tourist or Other Compatible Operations	UNKNOWN	None

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

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

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

1.6 Namib Ecology Integrity

The ecological integrity and diversity of fauna and flora of the Western Namib is well addressed in the Strategic Environmental Management Plan (SEMP) developed in 2009 as a result of the Strategic Environmental and Socio-Economic Assessment of the Uranium industry "rush". The annual SEMP report (2014) indicated that the integrity and diversity of the Western Namib biodiversity is not compromised by the exploration and mining activities. The report went further to explain that ecological integrity means that ecological processes are maintained, key habitats

are protected, rare and endangered and endemic species are not threatened. The SEMP limits are defined through Environmental Quality Objectives and aim to;

- Improve Namibia´s and the Erongo region's sustainable socio-economic development and outlook without undermining the growth potential of other sectors
- Promote local employment and integration of society;
- Ensure that key infrastructure is adequate and well maintained, thus enabling economic development, public convenience and safety;
- Ensure that the integrity of all aquifers remains consistent with the existing natural and operational conditions (baseline). This requires that both the quantity and quality of groundwater are not adversely affected by prospecting and mining activities;
- Ensure workers and the public do not suffer significant increased health risks from the exploration and mining activities;
- Safeguard the natural beauty of the desert and ensure its sense of place are not compromised unduly by the exploration and mining activities;
- Identify ways of avoiding conflicts between the tourism industry and prospecting/mining, so that both industries can coexist in the Western Namib;
- Protect the ecological integrity and diversity of fauna and flora of the Central Namib. All efforts are taken to avoid impacts to the Namib and where this is not possible, disturbed areas are rehabilitated and restored to function after mining/development;
- Maintain and enhance Namibia's international image because of environmentally, socially and financially responsible mining operations;

Ensure that exploration and mining and all related infrastructure developments will have the least possible negative impact on archaeological and paleontological heritage resource.

2 PROJECT DESCRIPTION: PROPOSED EXPLORATION ACTIVITY

Prospecting and exploration for minerals are the first components of any potential mining project. These are carried out to acquire the necessary data required for further decision making and investment options. These activities are expected to last for about three (3) years. The exploration process includes three phases, namely, **prospecting, exploration, and the decommissioning of works.**

2.1 Prospecting Phase (Non- Invasive Techniques)

2.1.1 Desktop Study

This mainly entails a desktop review of historical geological work done on the EPL, including regional mapping of the targeted district, acquisition of existing geophysical and geochemical data sets, familiarisation with past studies of the project area and creating relationships with landowners and local authorities for land access.

Geophysical surveys

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

2.1.2 Lithology geochemical surveys

Rock and soil samples shall be collected and taken for trace element analysis at analytical chemistry laboratories to determine the existence, the grade (concentration) and the regional extent of mineralization on the EPL. Additionally, trenches or pits may be dug depending on the commodity (in a controlled environment e.g., fencing off and labeling activity sites), using either manual techniques (jack hammers) or excavators to further investigate the mineral potential.

Soil sampling entails digging of small, about 20 cm deep pits along survey lines, where 1kg of sample material is extracted and sieved for finer grain-size to collect about 50g of very fine soil from it, representing the entire sample. As necessary, and to ensure adequate risk mitigation, all major excavations will be closed immediately after obtaining the samples needed, or the sites will be secured until the trenches or pits are closed. The landowner and other relevant stakeholders will be engaged to obtain authorization where necessary.

2.2 Exploration Phase (Invasive Techniques)

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

exploration activities are aimed at delineating the mineral deposits and determining whether the deposits are economically feasible mining resources.

No explosives will be used during the exploration phase.

2.2.1 Detailed Exploration (Drilling)

If the analysis by an analytical laboratory yields positive results, drilling targets will be defined, drilled and subsurface. Samples will again be collected for further analysis. This determines the depth of the potential mineralization. If necessary, new access tracks to the drill sites will be created and drill pads at which to set up the rig will be cleared. Two widely used drilling options may be adopted - the Reverse Circulation (RC) drilling method and/or the Diamond (Core) drilling method. The RC drilling method uses a pneumatic hammer, which drives a rotating tungsten-steel bit. RC Drilling produces an uncontaminated large volume sample, which comprises rock chips. It is relatively quicker and cheaper when compared to other techniques like Diamond Drilling. However, diamond drilling may also be considered for this exploration programme, for better geological control and to perform processing trials.

A typical RC drilling team is made up of 4-5 people (rig operator and assistants), a drilling rig carrying a compressor, a support truck with the drill pipes, 2-3 4x4 vehicles and a water bowser. All geological samples and drill cores will be stored temporarily at the driller's field camp. This camp may also be used as a place to park, maintain field vehicles, and the provision of storage facilities for fuel and lubricants.

Other aspects of the proposed exploration operations include:

2.3 Site accessibility

- The EPL is accessible via the *M52 main* road (see figure 1). Project-related vehicles will make use of existing roads to access the EPL. The Proponent may need to do some upgrades on the site access road to ensure that it fit to accommodate project-related vehicles, such as heavy trucks.
- All sites particularly the basecamp and drill sites shall be accessed through existing tracks as far as possible. However, given the topography of the project site, it is likely that new, but few tracks will be created to ensure easy access to drill sites and project specific target areas. Overall, all vehicles must use existing road tracks, and all new access routes to the drill sites should be identified and agreed upon with the relevant stakeholders.

2.3.1 Material and Equipment

The requirements of the exploration program in terms of vehicles and equipment include: 4X4 vehicles, a drilling rig, a drill pipe truck, water tanks, a diesel tank, a power generator, and a tented camp to accommodate the crew. Equipment and vehicles will be stored at a designated area near the accommodation site or a storage site established within the EPL area.

2.3.2 Services and Infrastructure

- **Water:** Water for the exploration operations on the EPL will be obtained from the nearest existing boreholes, or the proponent will drill boreholes for water within the EPL, upon obtaining necessary permits and signed agreements with the landowners in the area. Estimated monthly water consumptions are about 2 400 liters. This includes water for domestic usage, dust control (if necessary), drilling, as well as washing of equipment.
- **Power supply:** Power required during the operation phase will be provided from diesel-generators. About 3000 litres of diesel might be used daily.
- **Fuel (Diesel for generators and other equipment):** Approximately 1200 L of Diesel will be used for machinery, equipment and power generator. The fuel required for exploration equipment will be stored in a tank mounted on a mobile trailer. Drip trays will be readily available 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 a bunded diesel bowser on site, and in jerry cans placed on plastic sheeting to avoid unnecessary contamination of soils.

2.3.3 Waste Management

The site will be equipped with secured waste bins for each type of waste (i.e., domestic, hazardous, and recyclable). Depending on the amount generated, waste will be sorted and collected as regularly as possible 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**: Appropriate portable ablution facilities will be provided, and the sewage waste will be disposed of according to the approved disposal or treatment methods of the facility manufacturer.
- **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 timeously and contained correctly before polluting the site.

Waste produced on-site can also be categorized as mineral or non-mineral waste:

- ***Mineral Waste*:** Consists of solid products of exploration and mineral concentration to acquire the targeted minerals. Mineral waste will potentially be produced throughout the exploration phase. This waste will be stripped and dumped in allocated areas as stipulated in the EMP.
- ***Non-mineral Waste*:** Consists primarily of auxiliary materials that will support the exploration phase. This includes but is not limited to items such as empty containers, plastic, etc., and other domestic waste. This waste will be collected, sorted, and taken to the dumpsite as regularly as necessary.

2.3.4 Safety and Security

- **Storage Site**: Temporary storage areas for exploration material, equipment, and machinery will be required at the campsite and/or exploration sites. Security will be supplied on a 24-hour basis at the delegated sites for storage. A temporary support fence surrounding the storage site will be constructed to ensure people and domestic animals are not put at risk.
- **Fire management:** Basic firefighting equipment, i.e., fire extinguishers, will be readily available in vehicles, at the working sites and at the camping site. The exploration crew is required to have the contact details of the nearest fire station at hand in case of a larger scale of fires at site, in particular “veld” or bush fires, which can spread rapidly over large areas.
- **Health and Safety**: Adequate and appropriate Personal Protective Equipment (PPE) will be provided by the Proponent to every project personnel while working at site. A first aid kit will be readily available on site and at the camping area to attend to potential injuries.

2.3.5 Accommodation

The exploration crew / project personnel that will be about 5 to 10, will be accommodated in a camp site, which will consist of tents, caravans and/or make-shift buildings and temporary or permanent ablution facilities. The campsite will be set up near the exploration sites on the EPL. If the accommodation camp is to be set up on a farm, all necessary arrangements will be made with the landowner(s). Alternatively, the personnels may also be accommodated in Swakopmund. Exploration activities will take place during the daytime only and staff will commute between the exploration site(s) and the campsite.

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 that the project activities cease in an environmentally friendly manner and the sites are rehabilitated.

3 PROJECT ALTERNATIVES

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

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

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

3.1 Types of Alternatives Considered

3.1.1 The "No-go" Alternative

The “no action” alternative implies that the status quo remains. 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 would remain unchanged.

This no-go option is considered and a comparative assessment of the environmental and socio-economic impacts of the “no action” alternative, is undertaken to establish what benefits might be

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

- Loss of foreign direct investment.
- About seven (7) temporary job opportunities for community members will not be realized.
- No realization of local business supports through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, accommodation and catering services etc.
- Loss of potential income to the local and national government through land lease fees, license fees, and various tax structures.
- No 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 may not necessarily be considered a viable option for this project, although, in the case where parts of the project site are considered environmentally sensitive and/or protected, one or several sections of the site may be identified as no-go zones.

3.1.2 Exploration Location

The prospecting/exploration location is dependent on the geological setting (regional and local), the economic geology, and the exploration and mining history of the EPL area. Therefore, finding an alternative location for the planned exploration activities is not possible. This means that the mineralization of the target commodities is area-specific, and exploration targets are primarily determined by the geology (host rocks) and the tectonic environment of the site (an ore-forming mechanism). The tenement has sufficient surface area for future related facilities, should an economic mineral deposit be defined.

Furthermore, the national mineral resources’ potential locations are also mapped and categorized by the Ministry of Industry, Mines and Energy (MIME), on Exclusive Prospecting Licenses (EPLs), mining licenses (MLs), claims, mineral deposit retention licenses, reconnaissance licenses, and exclusive reconnaissance licenses. Available information on EPL no. 10110 (**see figure 3**), and

other licenses are available on the Namibia MIME Cadastre Map Portal at https://maps.landfolio.com/Namibia/.

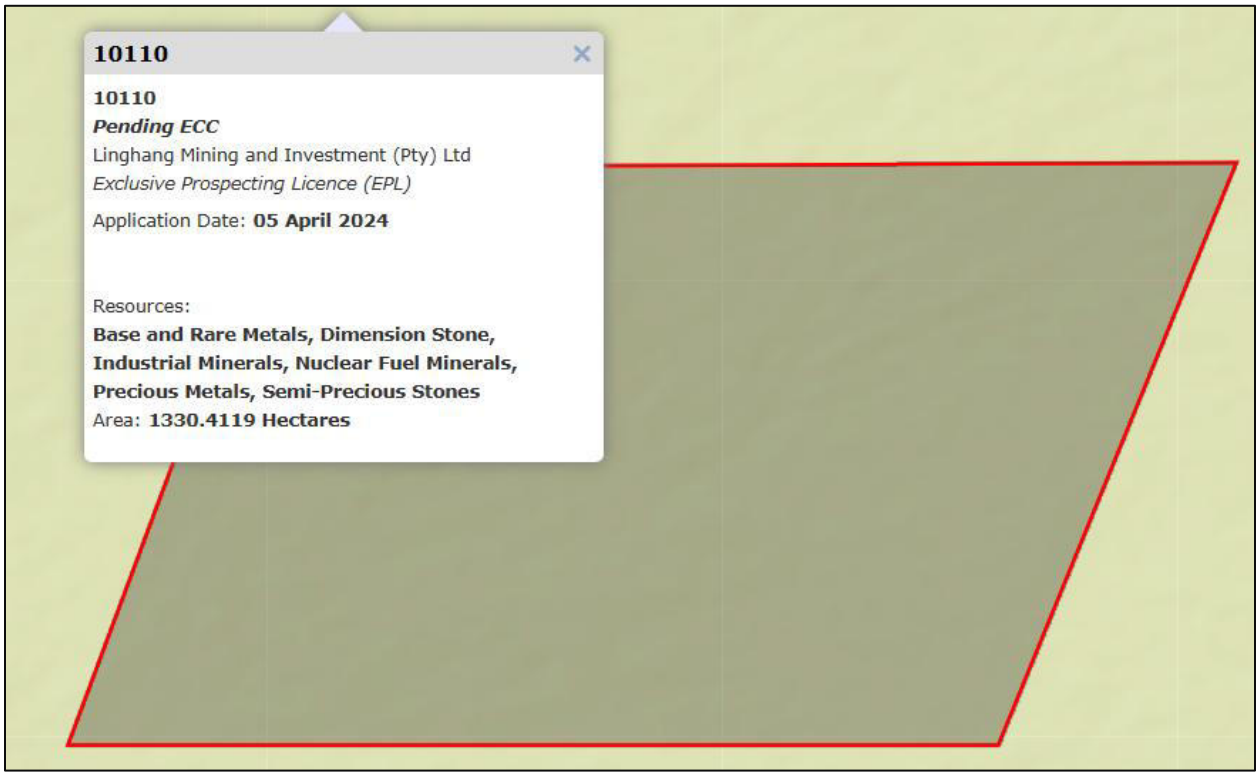

Figure 3: Location of EPL 10110 (National Mining Cadastre)

3.1.3 Exploration Methods

Invasive and non-invasive exploration techniques are expected to be used for exploration works. If an economically viable discovery is made, the project will proceed to the mining phase upon approval of a mining ECC and issuance of a mining license. If any other alternative viable exploration methods are found to achieve the purpose more effectively and/or efficiently without aggravating any environmental measures put in place, they can be implemented. **Table 2** shows the exploration methods that will be employed during the exploration phas

Table 2: Alternatives (Exploration Methods)

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

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

Invasive Exploration Method (Alternatives Considered)	Process	Advantages
	-There is no contact between the walls and cuttings taken at the bottom. -The penetration rate is fast (Technidrill, 2020)	and effervescence are easily accomplished (Earth Science Australia, 2020). It is for these reasons that RC will be the most preferred method and is mainly used. However, RC drilling would be combined with Diamond drilling where necessary for more reliable data collection and analysis. Diamond drilling would be more applicable where deeper holes are required than is possible using RC drilling. In-fill drilling would also be applied to support an update to a higher classification of the Mineral Resources estimate.
Infill drilling	The progress of an exploration project mostly depends on the result of the primary boreholes. Therefore, primary exploration boreholes must intersect high-grade mineralization zones with considerable thickness. On the other hand, the infill boreholes are designed based on obtained results from the primary boreholes (Fatehi, *et al.,* 2017). Therefore, infill drilling is intended to support an update to a higher classification of the Mineral Resource estimate. The metallurgical test-work results will improve understanding of blending designs in the exploration schedules for the product offtake specifications (Canyon Resources, 2021).	

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

Invasive Exploration Method (Alternatives Considered)	Process	Advantages
	-Time-consuming and more effort is required to obtain the drill core. -Low initial investment, but generally more expensive to meters drilled because of the limitation of the speed.	

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

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

4 LEGAL FRAMEWORK: LEGISLATION, POLICIES, AND GUIDELINES

Prospecting and exploration activities have legal implications associated with certain applicable legal standards. A summary of applicable and relevant international policies and Namibian legislation, policies, and guidelines for the proposed development is given in this section (**Table 3**). This summary serves to inform the project Proponent, Interested and Affected Parties, and the decision-makers at the DEAF, of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled to establish the proposed prospecting and exploration activities.

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

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

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

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

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

Other legal obligations that are relevant to the proposed activities of EPL No. 10110 and related activities are presented in **Table 3.**

Table 3: Applicable Legal Standards, Policies and Guidelines

Legislation / Policy / Guideline: Custodian	**Relevant Provisions**	**Implications for this project**
The Constitution of the Republic of Namibia, 1990 as amended: **Government of the Republic of Namibia**	The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include: "…the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia…" Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the: "…Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State."	By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability. Ecological sustainability will be main priority for the proposed development.
Minerals (Prospecting and Mining) Act (No. 33 of 1992): **Ministry of Industry, Mines and Energy (MIME)**	Section 52 requires mineral license holders **to enter into a written agreement with affected landowners before exercising rights conferred upon the license holder.** Section 52(1) clarifies that a mineral licence holder may not exercise his/her rights in any town or village, on or in a proclaimed road, land utilised for cultivation, within 100m of any water	The Proponent should enter into a written agreement with landowners before carrying out exploration on their land. For the commercial farms, the Proponent should engage

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
	resource (borehole, dam, spring, drinking trough etc.) and boreholes, or no operations in municipal areas, etc.), which should individually be checked to ensure compliance. Section 54 requires written notice to be submitted to the Mining Commissioner if the holder of a mineral license intends to abandon the mineral license area. Section 68 stipulates that an application for an exclusive prospecting license (EPL) shall contain the particulars of the condition of, and any existing damage to, the environment in the area to which the application relates and an estimate of the effect which the proposed prospecting operations may have on the environment and the measures to be taken to prevent or minimize any such effect. Section 91 requires that rehabilitation measures should be included in an application for a mineral license.	the Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR). The Proponent should further engage the communal farmers for land use consent. An assessment of the impact on the receiving environment should be carried out. 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. The Proponent may not carry out exploration activities within the areas limited by Section 52 (1) of this Act.
Nature Conservation Amendment Act, No. 3 of 2017: **Ministry of Environment,**	National Parks are established and gazetted in accordance with the Nature Conservation Ordinance, 1975 (4 of 1975), as amended. The Ordinance provides a legal framework with regards to the permission of entering a state protected area, as well as requirements for individuals damaging objects (geological,	The Proponent will be required to enhance the conservation of biodiversity and the maintenance of the

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
Forestry and Tourism (MEFT)	ethnological, archaeological and historical) within a protected area. Though the Ordinance does not specifically refer to mining as an activity within a protected area (PA) or recreational area (RA), it does restrict access to PA's and prohibits certain acts therein as well as the purposes for which permission to enter game parks and nature reserves may be granted.	ecological integrity Project Site area. The Proponent will also be required to comply with the existing and planned local operational management plans, regulations and guidelines.
The Parks and Wildlife Management Bill of 2008**: Ministry of Environment, Forestry and Tourism (MEFT)**	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas, to conserve biodiversity and to contribute to national development.	
Mine Health & Safety Regulations, 10th Draft**: Ministry of Health and Social Services (MHSS)**	Makes provision for the health and safety of persons employed or otherwise present in mineral licenses areas. 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 relevant regulations with respect to their employees.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)**: Ministry of Industry, Mines and Energy (MIME)**	Regulation 3(2)(b) states that "No person shall possess [sic] or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area"	The Proponent should obtain the necessary authorisation from the MIME for the storage of fuel on-site.

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
The Regional Councils Act (No. 22 of 1992)**: Ministry of Urban and Rural Development (MURD)**	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 perspective, 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 IAPs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Erongo Regional Council (ERC); therefore, they should be consulted.
Water Act 54 of 1956**: Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR)**	The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: It prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duty of care to prevent pollution (S3 (k)). The Act provides for control and protection of groundwater (S66 (1), (d (ii)). It also regulates liability for clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).	The protection (quality and quantity/abstraction) of water resources should be a priority. The permits and license required thereto should be obtained from MAFWLR's relevant Departments (these permits include Borehole Drilling Permits, Groundwater Abstraction & Use Permits, and when required, the Wastewater / Effluent Discharge Permits).
Water Resources Management Act (No 11 of 2013)**: Ministry of Agriculture, Forestry, Water**	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: Custodian	Relevant Provisions	Implications for this project
and Land Reform (MAFWLR)	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 (S68).	
National Heritage Act No. 27 of 2004**: The Ministry of Education, Innovation, Youth, Sports, Arts, and Culture (MEIYSAC)**	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 this Acts' requirements. The necessary management measures and related permitting requirements must be taken. This to be done by consulting with the National Heritage Council (NHC) of Namibia. The management measures should be incorporated into the Draft EMP.
The National Monuments Act (No. 28 of 1969)**: The Ministry of Education, Innovation, Youth, Sports, Arts, and Culture (MEIYSAC)**	The Act enables the proclamation of national monuments and protects archaeological sites.	
Soil Conservation Act (No 76 of 1969)**: Ministry of Agriculture, Forestry, Water**	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: Custodian	**Relevant Provisions**	**Implications for this project**
and Land Reform (MAFWLR)		
Forestry Act (Act No. 12 of 2001**: Ministry of Environment, Forestry and Tourism (MEFT)**	The Act provides for the management and use of forests and forest products. Section 22. (1) provides: "Unless otherwise authorised by this Act, or by a licence issued under subsection (3), no person shall on any land which is not part of a surveyed erven of a local authority area as defined in section 1 of the Local Authorities Act, 1992 (Act No. 23 of 1992) cut, destroy or remove - (a) vegetation which is on a sand dune or drifting sand or on a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully; or (b) any living tree, bush or shrub growing within 100 m of a river, stream or watercourse."	The proponent will apply for the relevant permit under this Act if it becomes necessary.
Public Health Act (No. 36 of 1919)**: Ministry of Health and Social Services (MHSS)**	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)**: Ministry of Health and Social Services (MHSS)**	Details various requirements regarding health and safety of labourers.	

Legislation / Policy / Guideline: Custodian	**Relevant Provisions**	**Implications for this project**
Public and Environmental Health Act No. 1 of 2015**: Ministry of Health and Social Services (MHSS)**	The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.	The Proponent should ensure that the project infrastructure, vehicles, equipment, and machinery are designed and operated in a way that is safe, or not injurious or dangerous to public health and that the noise and dust emissions which could be considered a nuisance remain at acceptable levels. Public and environmental health should be preserved and remain uncompromised.
Atmospheric Pollution Prevention Ordinance (1976)**: Ministry of Health and Social Services (MHSS)**	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.	The proposed project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality. Mitigation measures should be put in place and implemented on site.
Hazardous Substance Ordinance, No. 14 of 1974**: Ministry of Health and Social Services (MHSS)**	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	The Proponent should handle and manage the storage and use of hazardous substances on site so that they do not

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
		harm or compromise the site environment
Road Traffic and Transport Act, No. 22 of 1999**: Ministry of Works and Transport (Roads Authority of Namibia)**	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 necessary permits must be applied for.
Labour Act (No. 6 of 1992)**: Ministry of Labour, Industrial Relations and Employment Creation (MLIREC)**	Ministry of Labour, Industrial Relations and Employment Creation is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act No. 6 of 1992.	The Proponent should ensure that the prospecting and exploration activities do not compromise the safety and welfare of workers.

4.2 International Policies, Principles, Standards, Treaties and Conventions

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

Table 4: International Policies, and Principles

Statute	Provisions	Project Implications
Equator Principles	A financial industry benchmark for determining, assessing, and managing environmental and social risk in projects	These principles are an attempt to: 'encourage the development of socially

Statute	Provisions	Project Implications
	(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. Principle 1: Review and Categorization Principle 2: Environmental and Social Assessment Principle 3: Applicable Environmental and Social Standards Principle 4: Environmental and Social Management System and Equator Principles Action Plan Principle 5: Stakeholder Engagement Principle 6: Grievance Mechanism Principle 7: Independent Review Principle 8: Covenants Principle 9: Independent Monitoring and Reporting Principle 10: Reporting and Transparency	responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based upliftment and empowering interactions.'
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	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

Statute	Provisions	Project Implications
	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. 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. Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts Performance Standard 2: Labour and Working Conditions Performance Standard 3: Resource Efficient and Pollution Prevention and Management Performance Standard 4: Community Health and Safety Performance Standard 5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources Performance Standard 7: Indigenous Peoples/Sub-Saharan African Historically Undeserved Traditional Local Communities	of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the Client (Borrower) in relation to project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the Performance Standards to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives.

Statute	Provisions	Project Implications
	Performance Standard 8: Cultural Heritage Performance Standard 9: Financial Intermediaries (FIs) Performance Standard 10: Stakeholder Engagement and Information A full description of the IFC Standards can be obtained from 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. 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. Promote the protection of ecosystems, natural habitats, and the maintenance of viable populations of species in natural surroundings.	Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimised.

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

Relevant international Treaties and Protocols ratified by the Namibian Government

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

5 ENVIRONMENTAL BASELINE

The proposed project 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 what was before and what would be after project. This also helps the EAP with identifying the sensitive environmental features that may need to be protected through the recommendation and effective implementation of mitigation measures. The summary of selected biophysical and social baseline information pertaining to the EPL No. 10110 area is given below. The baseline information presented has been sourced from different reports of studies conducted within Erongo region, within the Arandis constituency as well as those in the Arandis area. Additional information has then been obtained by the Environmental Consultant (EAP) upon site visit conducted on 19th August 2025.

5.1 Climate

The climate of an area may influence the functionality of the exploration activities on the proposed site. It is crucial to understand the climatic condition of the proposed area site for planning purposes.

The area in and around the EPL is located in an arid area. In general, rainfall in the Erongo region decreases towards the west (Mendelsohn et., 2022). On a yearly basis, the months with the most rainfall received are January, February, March, April, May and December. The remaining months

receive little to no rainfall annually. The average daily minimum temperature of Swakopmund is 14°C, whereas, the average daily maximum temperature is 27°C. These temperatures alongside the months in which they are occurring are depicted in **figure 4**. The cold nights are most present during the months of May, June, July and August, while the hot days are prevailing in the months of March, April and September. Weather elements such as cloud cover, sunshine and precipitation are depicted in **figure 5**. The data in **figure 5** indicate that sunny weather prevails in and around the EPL for about half of the year.

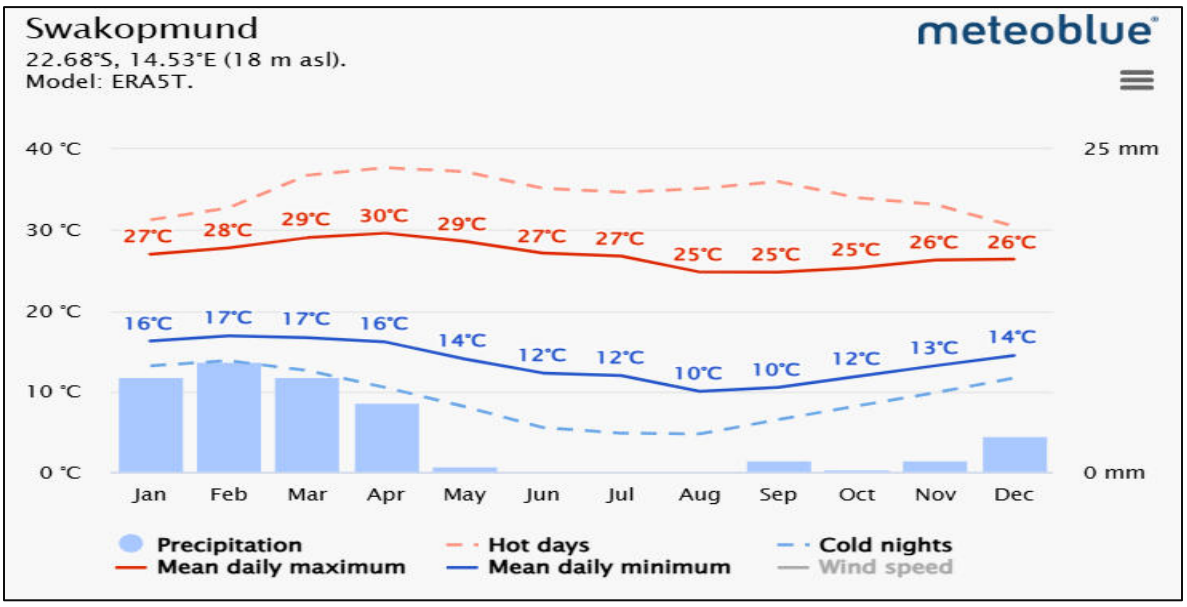

Figure 4: Annual climatic data about the area surrounding EPL No. 10110 (Source: Meteoblue, 2025)

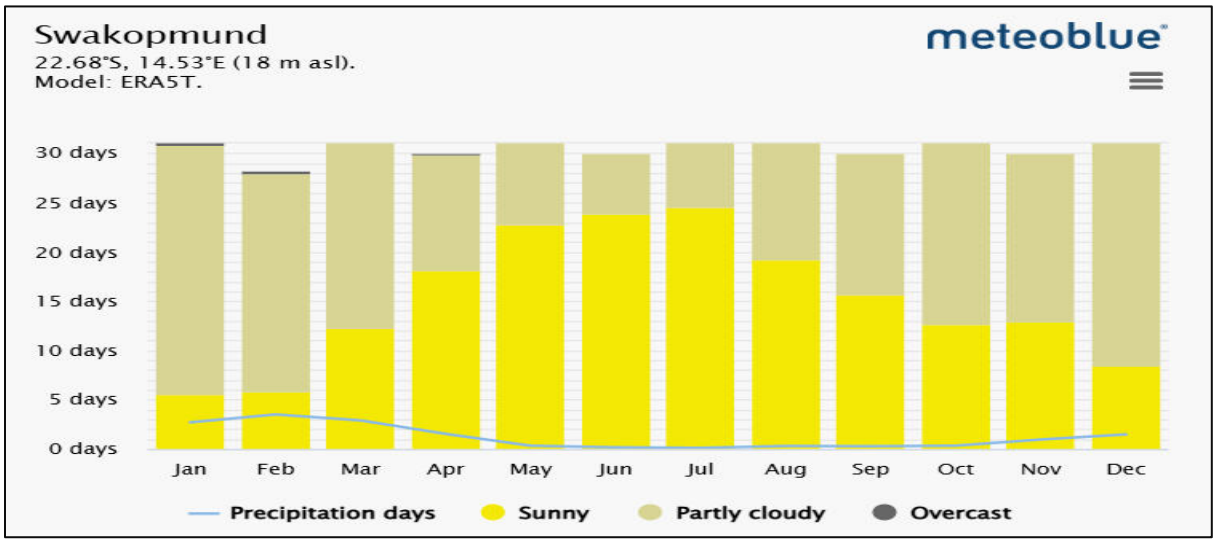

Figure 5: Climatic conditions of the area surrounding EPL No. 10110 (Source: Meteoblue, 2025)

Although wind blows from all sides, it mainly blows from the south - west, West-south-west, south – south – west and from the west (see **figure 6**). Throughout the year, the most common wind speeds range between 10–20 km/h and 20-30 km/h, occurring in each month (refer to **Figure 7**). The strongest wind speeds, between 40–50 km/h, are observed for 4.4 days during the months of April, May, June, July, and August.

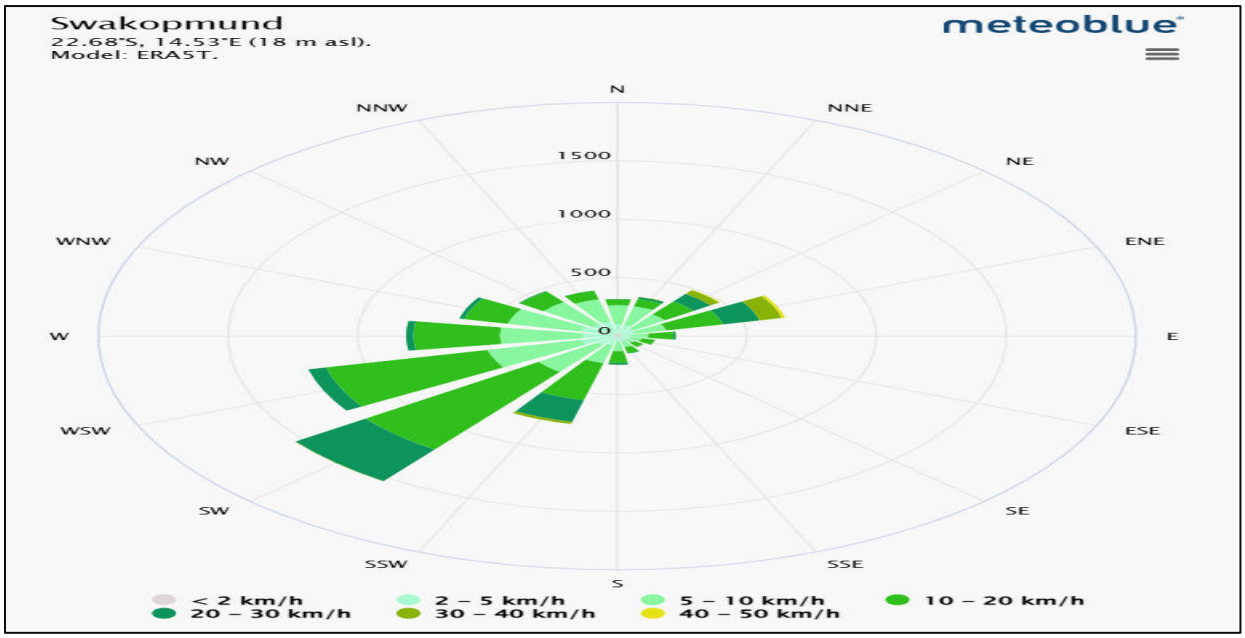

Figure 6: Windrose of EPL No. 10110 and the neighboring area (Source: Meteoblue, 2025)

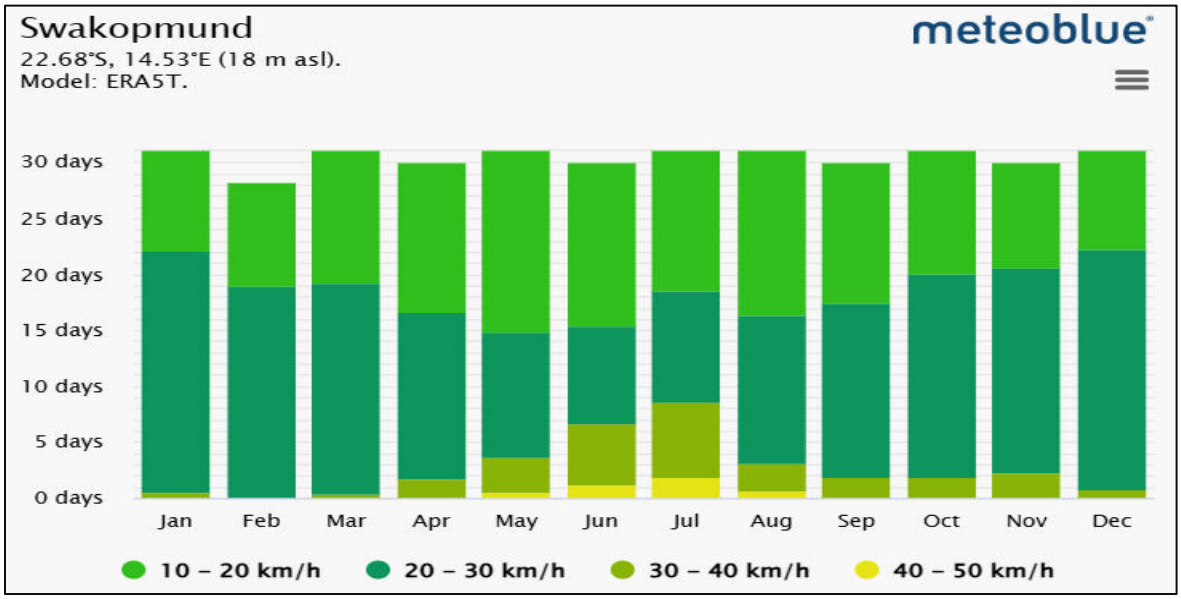

Figure 7: Windspeed on and around EPL no. 10110 (Source: Meteoblue, 2025)

5.2 Topography

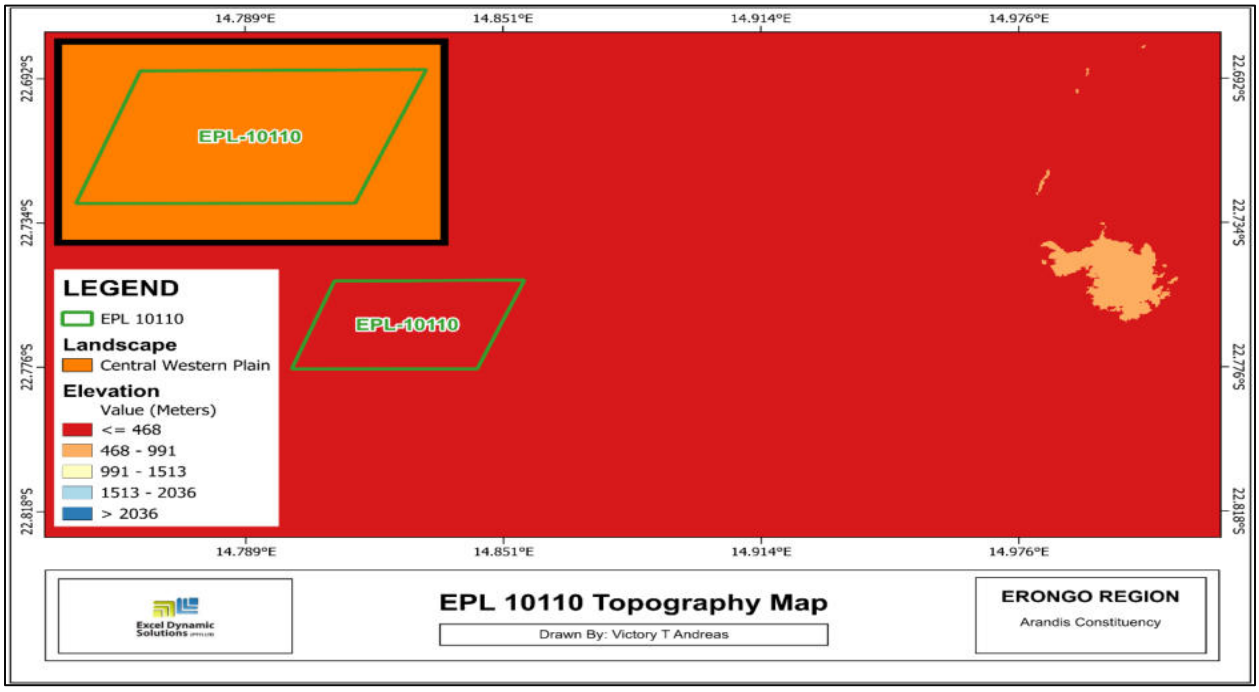

Figure 8: The topography of the area surrounding the EPL No. 10110

As indicated in **figure 8**, the EPL lies in the central-western plain. This plain is dotted with numerous inselbergs, primarily consisting of small granite hills (Mendelsohn et al., 2022). The overall overview of the EPL is however flat and hilly (**figure 9)**.

Figure 9: Overview of the EPL

5.3 Soils

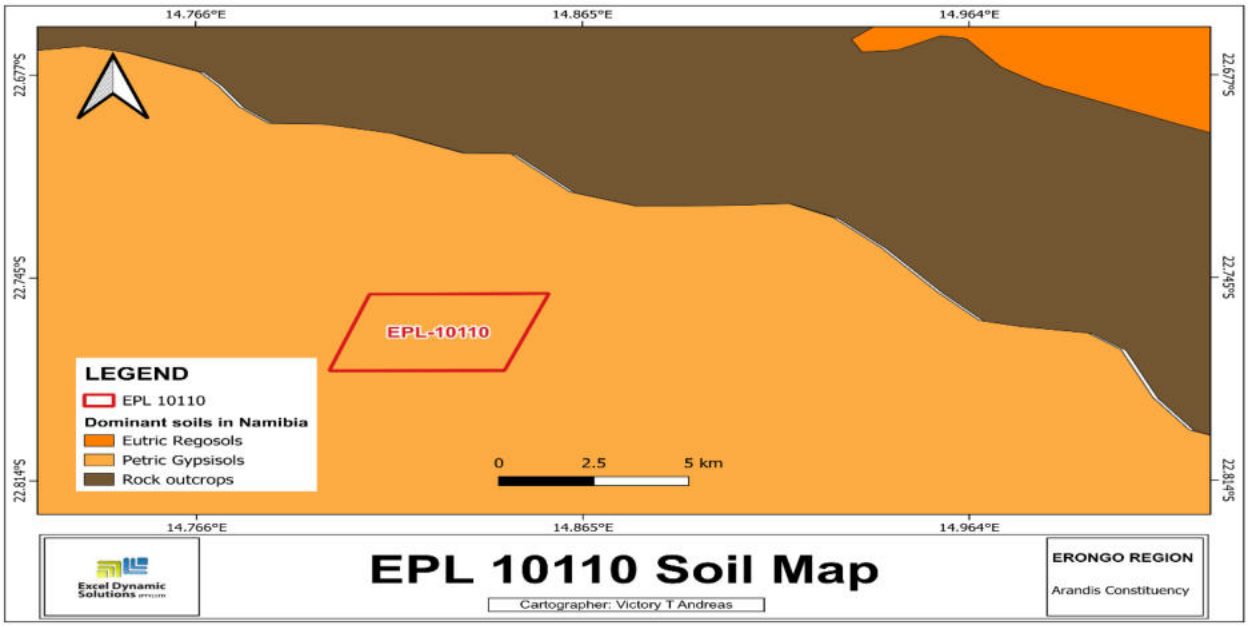

Figure 10: Soil type at the area surrounding EPL No. 10110

The dominating soil type in and around the EPL is the Petric Gypsisols, while the neighbouring soil type are Rock outcrops (see **figure 10**). Gypsisols form in environments where both sulphate and calcium are present, enabling the formation of Gypsum, a soft mineral composed of calcium sulphate, and where evaporation rates significantly exceed precipitation (Mendelsohn et al.,

2022). Rock outcrops form when Erosion or uplift strips away the regolith, revealing the etched features as rock outcrops and landforms such as inselbergs or tors (Twidale, 2002). A detailed image of the soil type in and around the EPL is depicted in **figure 11**.

Figure 11: the typical soil type found within the EPL No.10110

5.4 Geology

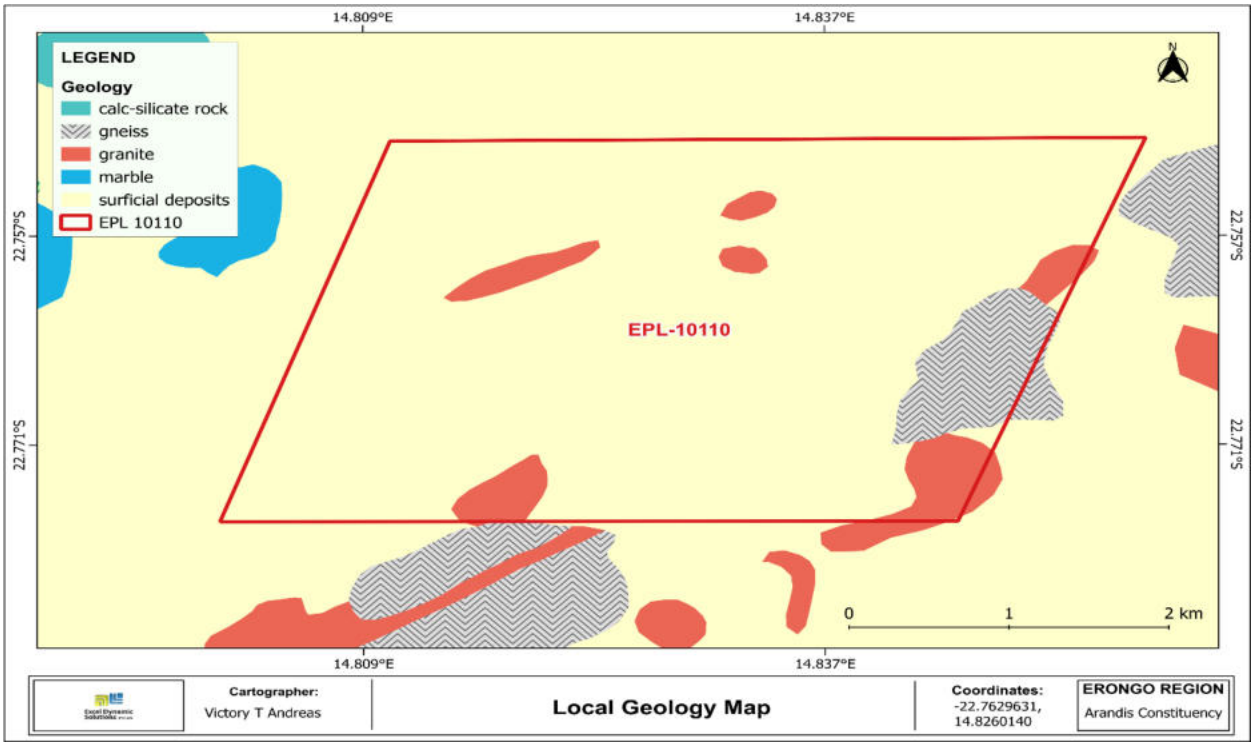

Figure 12: Local Geological map of EPL No.10110

The EPL area is underlain predominantly by lithologies of the Abbabis Metamorphic Complex, which outcrop in the eastern side of the EPL. These lithologies comprises of augen gneiss, granite gneiss, biotite-sillimanite gneiss, pegmatite, aplite, and quartz-biotite schist (see **figure 12**). These units are variably deformed and intruded by felsic phases. In the central and western sections of the license, there are outcrops of homogenous and foliated red granites. In addition to the basement rocks, the area is largely covered by unconsolidated Quaternary deposits, including sand, gravel, scree, and calcrete.

5.5 Hydrology and water resources

In terms of groundwater vulnerability, the majority of the EPL falls within a zone of extremely low vulnerability (see **figure 13**). In relation to rock bodies, the EPL's mostly consists of rock bodies with little groundwater potential (very low and limited potential), while minor areas consist of rock bodies with little groundwater potential (generally low water potential/ locally moderate potential) (see **figure 13**). A non – perennial river (Tumas) runs across the EPL in the south – western direction.

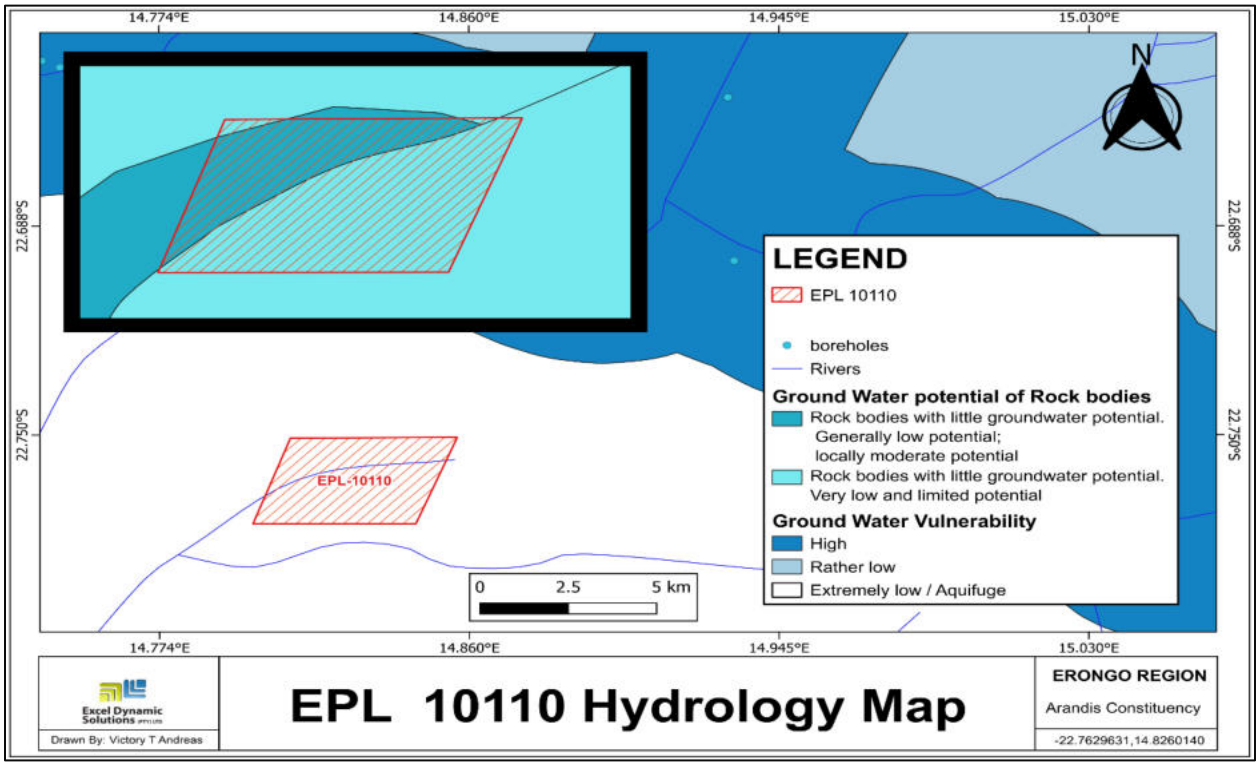

Figure 13: The Hydrological map of the area surrounding the EPL No. 10110

5.6 Flora and Fauna

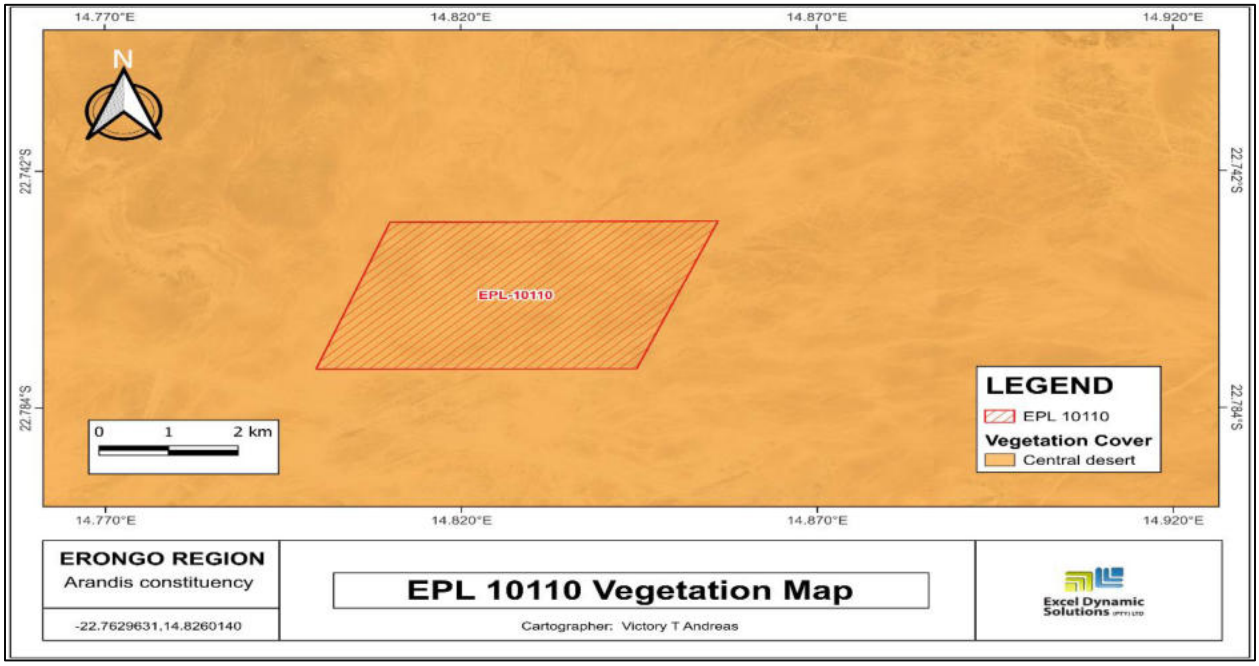

Figure 14: The type of vegetation surrounding the EPL No. 10110

The EPL lies within the Namib Desert Biome, which is the third largest biome in Namibia. The EPL lies in the central desert vegetation cover (see **figure 14**) and is dominated by Sparse shrubs and grasses (Mendelsohn et al., 2022). The EPL consists of the following vegetation species; the *Kalanchoe lanceolata, Zygophyllum stapffi, Welwitschia mirabilis and the Arthraerua leubnitziae* (see **figure 15**). These species are commonly known as Kasheshe, Dollar bush, Welwitschia and the Kalahari Saltbush accordingly. It is crucial to note that the *Welwitschia mirabilis is* one of the protected vegetation species in Namibia.

Figure 15: Some of the vegetation Species observed on site

The site visit was conducted during the day and there was no wildlife observed. This however, does not mean that there was no wildlife in the EPL area, but it could be explained by the fact that wildlife was hiding, out of sight and away from human presence.

5.7 Heritage and Archaeology

Archaeological sites in Namibia are protected under the National Heritage Act of 2004 (No. 27 of 2004). The Erongo Region is highly endowed with archaeological and cultural heritage sites. In most parts, the Stone Age, archaeology is prevalent in the larger geographical area. However, no systematic research has been carried out around the proposed project site area to determine the archaeological and heritage potential of the landscape.

5.8 Socio – Economic condition of EPL

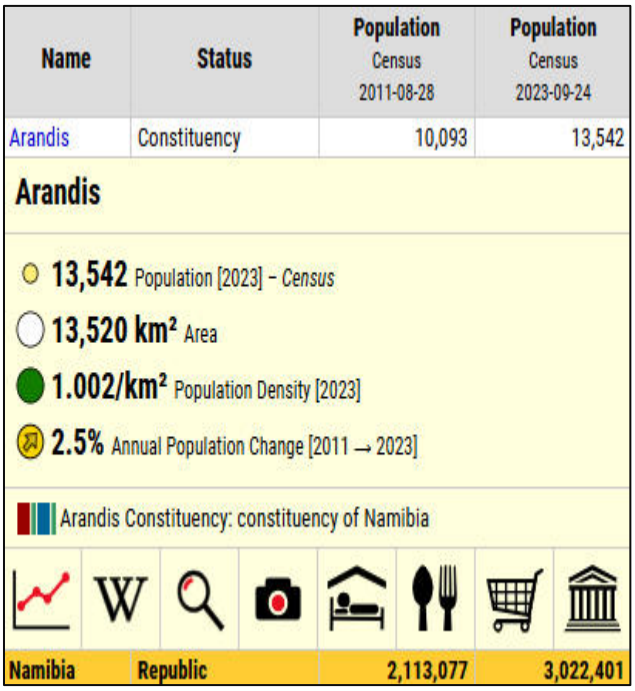

Figure 16: The Socio-economic status of EPL no. 10110 (source: city population, 2025)

The Erongo Region covers an area of 63,586 km², which comprises 7.7% of Namibia's total area of about 823,680 km². The Erongo Region stretches from the Central Plateau westwards across the Central-Western Plains and Escarpment to the Central Namibian coast, roughly over a distance between 200 and 350 km. Northwards, this region stretches from the Ugab River in the north to the Kuiseb River in the south over up to 300 km. On the west, it is flanked by the Atlantic Ocean (Erongo Regional Council, 2025). The Erongo region is home to 240 206 people (Namibia

Statistics Agency [NSA], 2024). In depth demographic data about the Arandis constituency that are home to EPL 10110 are depicted in **figure 16**. The household number of the Arandis constituency is 4153 households (NSA, 2024).

Regionally, the economy of the Erongo Region depends on mining, fishing, agriculture, and tourism. Mining and quarrying contribute about 8,8% to national GDP, 51% to foreign exchange earnings, of which diamonds, ores and minerals are the most important (Erongo Regional Council, 2025). According to Makhubela (2024), mining is the most trusted and stable contributor to economic progressing Arandis. The main sources of income in the Erongo region are salaries and wages (68.7%), old age pension (7.7%), farming (0.7%) and Business (non- farming) (7.5%) (NSA, 2024).

5.9 Land use in and around the EPL

There are no industrial or commercial establishments within the EPL. There is however, evidence of previous exploration related activities, a capped borehole and an uncapped borehole was observed inside the EPL (see **figure 17 a & b**).

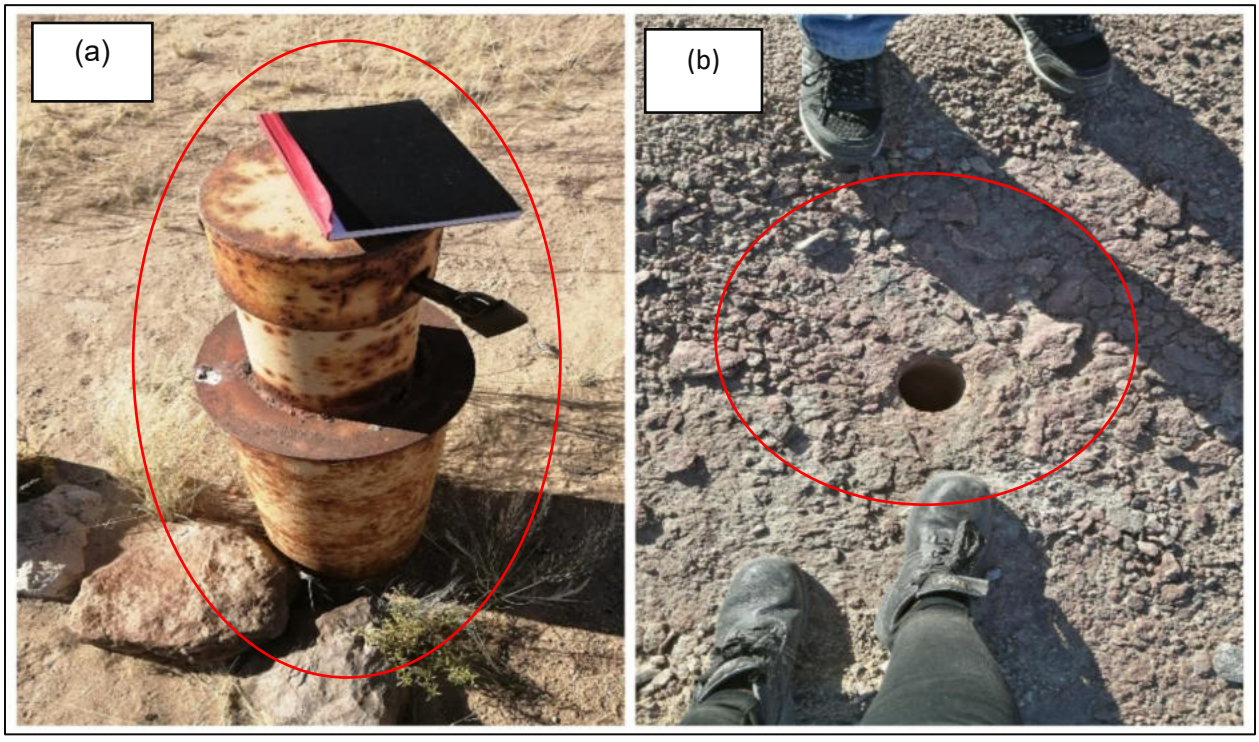

Figure 17: Proof of previous exploration in EPL no. 10110

6 PUBLIC CONSULTATION PROCESS

Public consultation forms an important component of an Environmental Impact Assessment (EIA) process and provides potential I & APs with an opportunity to comment on and raise any issues relevant to the project for consideration as part of the assessment process. This consultation has been done in accordance with both the EMA and its EIA Regulations.

The public consultation process assists the EAP in identifying all potential impacts and to find out to what extent further investigations are needed. Furthermore, this consultation can also aid in the process of identifying possible mitigation measures.

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

Relevant applicable national, regional, local authorities, and other interested members of the public were contacted directly. Whereas some were registered as I & APs upon their request. Newspaper adverts of the proposed project were placed in two widely read national newspapers, namely, the *New Era* and *The Namibian* on 2 and 9 September 2025 providing a brief overview of the proposed activity and its location, and inviting the public to register as Interested and Affected Parties (I&APs) and share their comments or concerns.

The project advertisement / announcement ran for two consecutive weeks inviting members of the public to register as I & APs and submit their comments. The summary of pre-identified and registered I&APs is listed in **table 5** below.

Table 5: Summary of Interested and Affected Parties (I&Ps)

National (Ministries and State Owned Enterprises)
Ministry of Agriculture, Fisheries, Water and Land Reform
Ministry of Environment, Forestry and Tourism (Department of Environmental Affairs and Forestry)
Regional & Local
Erongo Regional Council (ORC) Arandis Constituency Office
General Public
Interested and Affected members of the public (Farmers and residents)

6.2 Communication with I & APs

Regulation sections 21 to 24 of the EIA Regulations details steps to be taken during a public consultation process and these have been used in guiding this process. Communication with I & APs about the proposed development was facilitated through the following means and in this order:

- A BID containing brief information about the proposed facility was compiled and sent out to all pre-identified affected parties and upon request to all new registered Interested and Affected parties.
- Notices regarding the Project's Environmental Assessment were published in *New Era* and *The Namibian* on 2 and 9 September 2025 providing a brief overview of the proposed activity and its location, and inviting the public to register as Interested and Affected Parties (I&APs) and share their comments or concerns.
- Site notices regarding the stakeholder engagement meeting were placed on the notice board at the Swakopmund MEFT (see **figures 18**).
- A public consultation meeting was held on 19th of August 2025 at 14:30 with MEFT officials raised their concerns and comments regarding the proposed project**.**

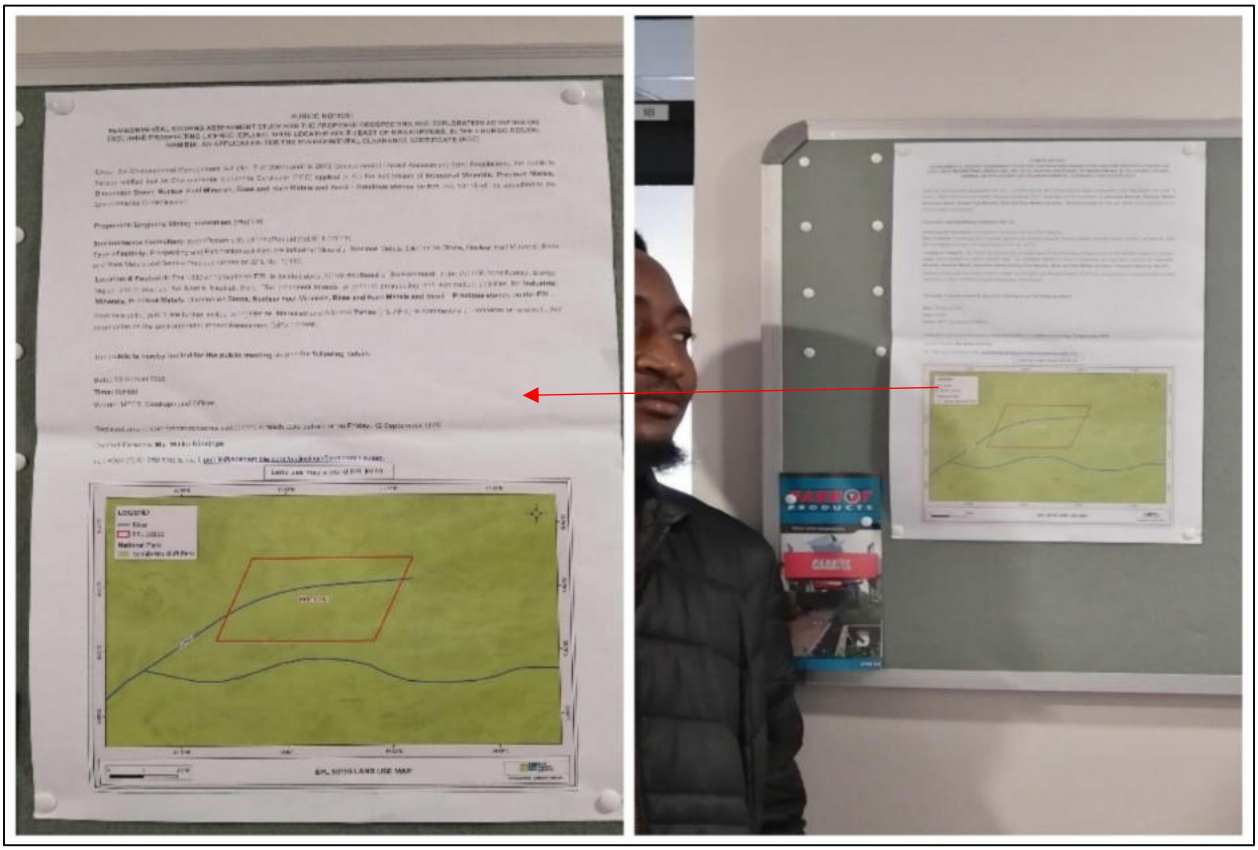

Figure 18: A site notice placed at the MEFT Swakopmund office

6.3 Public Feedback

The public consultation consisted of an official from the MEFT office in Swakopmund and the team from Excel Dynamic Solutions (Pty) Ltd.

The Draft EIA report together with all its appendices will be circulated to all I&APs for review for a period not less than 7 days. Should there be any comments, these will be documented in a *Comments and Response Trail Document* and incorporated into the Final Report that will then be submitted to the Department of Environmental Affairs (DEA) for evaluation and consideration of an ECC.

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:

- Employment creation and skills transfer
- Investment opportunities/infrastructure-related development benefits
- Increase in local, regional and economic development
- Improved support for local businesses through the procurement of locally available goodsand services.

Negative impacts:

- Disturbance to grazing land
- Land degradation and Biodiversity Loss
- Generation of dust
- Impact on water resources
- Pollution of soil & water resources
- Waste Generation
- Occupational health & safety risks
- Noise & Vibrations
- Disturbance to archaeological & heritage resources
- Impacts on local roads
- Social Nuisance: local property intrusion & disturbance
- Impacts associated with closure and decommissioning of exploration works

7.2 Impact Assessment Methodology

The Environmental Assessment process primarily ensures that potential impacts that may occur from project activity are identified and addressed with environmentally cautious approaches and legal compliance. The impact assessment method used for this project is in accordance with

Namibia's Environmental Management Act (No. 7 of 2007) and its Regulations of 2012, as well as the International Finance Corporation (IFC) Performance Standards.

The identified impacts were assessed in terms of scale/extent (spatial scale), duration (temporal scale), magnitude (severity) and probability (likelihood of occurring), as presented in **Table 6**, **Table 7**, **Table 8** and **Table 9**, 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 6** shows rating of impact in terms of spatial scale.

Table 6: Extent / 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 7** shows the rating of impact in terms of duration.

Table 7: 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 8** shows the rating of impact in terms of intensity, magnitude or severity.

Table 8: 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 illness / total loss of	Substantial deterioration, death, illness or injury, loss of habitat / diversity or resource,	Moderate deterioration, discomfort, partial loss of habitat / biodiversity or resource,	Low deterioration, slight noticeable alteration in habitat and biodiversity.	Minor deterioration, nuisance or irritation, minor change in species / habitat /

Type of criteria	**Negative**				
	H- **(10)**	**M/H-** **(8)**	**M-** **(6)**	**M/L-** **(4)**	**L-** **(2)**
	habitat, total alteration of ecological processes, extinction of rare species	severe alteration or disturbance of important processes	moderate alteration	Little loss in species numbers	diversity or resource, no or very little quality deterioration.

7.2.4 Probability of occurrence

Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment. **Table 9** shows impact rating in terms of probability of occurrence.

Table 9: Probability of occurrence 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 6**, **Table 7**, **Table 8** and **Table 9**) 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 10**).

Significance rating scale

Table 10: 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

Significance	*Environmental Significance Points*	*Colour Code*
High (negative)	-60<	H

Positive (+) – Beneficial impact

Negative (-) – Deleterious/ adverse+ Impact

Neutral – Impacts are neither beneficial nor adverse

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

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

The risk/impact assessment is driven by three factors:

Source: The cause or source of the contamination.

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

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

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

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

7.3 Assessment of Potential Negative Impacts

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

7.3.1 Disturbance to the grazing land

The EPL overlies a communal farm, in which the farmer practice livestock farming. The disturbances of grazing land will negatively affect the availability of grazing, limiting the available flora. Exploration activities such as site clearing, trenching, and drilling can lead to the disturbance of this grazing and arable land.

The effect of exploration work on the land (when done over a wider spatial extent), if not mitigated, may hinder grazing and arable land. Under the status quo, the impact can consider to be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a lower significance. The impact is assessed in **Table 11** below.

Table 11: Assessment of impacts of exploration on grazing land

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M/H: -4	M/H: -4	M/L: -4	H: 5	M: -60
Post mitigation	L/M: -2	L/M: -2	L: -2	M: 3	L: -18

7.3.2 Land Degradation and Loss of Biodiversity

Fauna: The trenching, pitting and drilling activities carried out during exploration would result in land degradation, leading to habitat loss for a diversity of fauna ranging from microorganisms to larger animals.

The movement of the exploration workforce and operation of project equipment as well as heavy vehicles within and around the EPL would disturb the lifestyle of livestock and wildlife present on the farms. Additionally, the proposed activities might invite the risk of potential illegal hunting of wildlife and livestock. This illegal hunting may result in the depletion of fauna species in the area. Another crucial aspect is that if the exploration sites are not rehabilitated, they could pose a high risk of injuries to animals by falling into holes and pits. This may cause the loss of livestock or wildlife.

Flora: The prospecting activities might result in some loss of vegetation including the ***Welwitschia*** **mirabilis.** This will be due to the direct impact of clearing for exploration access routes and associated infrastructure. Moreover, the dust emissions from drilling may also negatively affect the surrounding vegetation through the fall of dust, if excessive. This could interfere with the plants' ability to carry out photosynthesis, thereby slowing their growth. However, given the abundance of the shrubs and site-specific areas of exploration on the EPL, the impact will be localized, therefore manageable.

Under these current conditions, the impact can be of a **high significance rating**. However, with the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating. The impact is assessed in **table 12** below.

Table 12: Assessment of impacts of exploration on biodiversity

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M/H: -4	H: -5	M: -6	H: 5	H: -75
Post mitigation	L/M: -2	L/M: -2	L: -2	M: 3	L: -18

7.3.3 Generation of Dust (Air Quality)

Dust emanating from site access routes when transporting exploration equipment and supplies to and from site may compromise the air quality in the in and around the area. Besides that, heavy vehicular movements would potentially create dust. Additionally, activities carried out as part of the exploration works such as drilling would contribute to the dust levels in the air. Given the current situation, the generation of dust impact is rated as medium significance. Nevertheless, this impact will be reduced to a low significance rating by properly implementing mitigation measures. The impact is assessed in **table 13** below.

Table 13: Assessment of Impacts of exploration on air quality

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: -3	M: -3	M/L: -4	M/H: 4	M: -40
Post mitigation	L/M: - 2	L/M: - 2	L:- 2	L: - 2	L:- 12

7.3.4 Water Resources Use

Prospecting activities affect the water resources through the pollution of the quality of water, physical disturbances of the existing boreholes in the area as well as through over – abstraction of water on some occasions.

The exploration activities may pollute the available water resources (boreholes) through the intrusion of saltwater into the possibly existing freshwater boreholes. Another critical factor to note is that the EPL falls within an area with extremely low groundwater vulnerability. Regardless, the exploration activities, especially the drilling part, could result in damage to the neighboring borehole structures, and then reduce the efficiency of these boreholes. Additionally, the abstraction of more water than can be replenished from low groundwater potential areas would negatively affect the local communities that depend on the same low potential groundwater resources in this arid area.

The impact of the project activities on the resources would be dependent on the water volumes required by each project activity. Exploration activities might use a lot of water, mainly for drilling. However, this depends on the type of drilling methods employed and the type of mineral being explored for. Moreover, the exact amounts of water required for proposed operations would be dependent on the duration of the exploration works and number of exploration boreholes required to make reliable interpretation on the commodities explored for. The exploration period is temporally limited, therefore, the impact will only last for the duration of the exploration activities and ceases upon completion.

Without the implementation of any mitigation measures, the impact can be rated as **moderate**, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in **table 14** below.

Table 14: Assessment of impacts of exploration on water resources

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: - 4	M/H: - 4	M: - 6	M/H: - 4	M: - 56
Post mitigation	L/M: - 2	L/M :- 2	L: - 2	M:- 3	L: - 18

7.3.5 Soil and Water Resources Pollution

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

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

Pre-implementation of any mitigation measures, the impact significance is medium and upon implementation, the significance will be reduced to low. The impact is assessed in **table 15** below.

Table 15: Assessment of impacts of exploration on soils and water (pollution)

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

7.3.6 Waste Generation

During the prospecting and exploration phase, domestic and general waste will be produced on site. If the generated waste is not disposed of in a responsible way, land pollution may occur on and around the EPL. Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, through spills and leakages. Therefore, the exploration programme needs appropriate waste management on site. To prevent land and underground pollution, 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. However, after the implementation of the mitigation measures, the impact will be reduced to low significance. An assessment of this impact is given in **table 16** below.

Table 16: Assessment of impacts of exploration on waste generation

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

7.3.7 Occupational Health and Safety Risks

Project personnel (workers) involved in the exploration activities may be exposed to health and safety risks. These may result from 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 is 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 project workers or to animals.

The use of heavy equipment, especially during drilling and the presence of hydrocarbons on sites may result in accidental fire outbreaks, which could pose a safety risk to the project workers, equipment and vehicles. It may also lead to widespread veld fires if an outbreak is not contained and if machinery and equipment are not properly stored, the safety risk may be a concern for project workers and residents.

The impact is probable and has a medium significance rating. However, with adequate mitigation measures, the impact rating will be reduced to low. This impact is assessed in **Table 17** below.

Table 17: Assessment of impacts of exploration on health & safety

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: – 3	M/H:- 4	M/H: - 8	M/H: - 4	M: – 60
Post mitigation	L/M: - 2	L/M: - 2	M/L: - 4	L/M:- 2	L: - 16

7.3.8 Noise and vibrations

Prospecting and exploration work may be a nuisance to surrounding communities due to the noise produced by the activities (especially drilling). Excess noise and vibrations can be a health risk to workers on site. Another important factor to note is that 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, mitigation measures should be implemented. This impact is assessed in **table 18** below.

Table 18: Assessment of the impacts of noise and vibrations

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: - 3	M: – 3	M/H: - 4	M:- 3	M: – 30
Post mitigation	L :- 1	L: - 1	L: - 2	L/M: -2	L: - 8

7.3.9 Disturbance to Archaeological and Heritage resources

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, and coordinates taken to establish “No-Go-Areas”, due to their sensitivity; and must be 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 establishment of buffer zones.

This impact can be rated as medium significance if there are no mitigation measures in place. Upon successful implementation of the necessary measures, the impact significance will be reduced to a lower rating. The impact is assessed in **table 19**.

Table 19: Assessment of impacts of exploration on archaeology & heritage resources

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M/H: -4	M:- 3	M: - 6	M/H: - 4	M: – 52

Post mitigation	L/M: - 2	L: - 1	L: - 4	L/M: - 2	L: - 14

7.3.10 Impact on Local Roads/Routes

Exploration projects are usually associated with movements of heavy trucks and equipment or machinery that use local roads. Heavy vehicles travelling on local roads exert pressure on the roads and may make the roads difficult to use. This will be a concern if maintenance and care if not taken during the exploration phase. The impact would be short-term (during exploration only) and therefore, manageable.

Without any management and mitigation measures, the impact can be rated as medium and will be reduced to low rating after the implementation of the mitigation measures. An assessment of this impact is presented in **table 20**.

Table 20: Assessment of impacts of exploration on local roads

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

7.3.11 Social Nuisance: Local Property intrusion and Disturbance/Damage

The presence of some outsiders (the workers) may result into social displeasure to the local community. This could be a particular issue if they access or harm private property. The private properties of the locals may include houses, fences, vegetation, livestock and wildlife, or any properties of economic or cultural value to the farm/land owners or land users. Unpermitted and unauthorized entry to private property may cause clashes between the affected property (land) owners and the Proponent.

The impact is rated as of medium significance. However, upon mitigation (post-mitigation), the significance changes to low rating. The impact is assessed and presented in the **table 21.**

Table 21: Assessment of social impacts of exploration

Mitigation Status	Extent	Duration	Intensity	Probability	Significance

Pre mitigation	M: - 3	M/H: - 4	L/M: - 4	M: – 3	M: – 33
Post mitigation	L:- 2	L/M: - 2	L: - 2	L/M: -2	L: - 12

7.3.12 Impacts associated with closure and decommissioning of exploration works

After the closure of the mine, the pit (if any) will need to be properly fenced off to prevent injuries of livestock, wildlife and people. Additionally, the site will need to be evacuated to allow the restoration of the environment. If not evacuated after the closure of the mine, then there will be a high possibility of environmental damage. Without the implementation of the mitigation measures, this impact is rated as of medium significance. After the implementation of the mitigation measures, this significance rating can be reduced to a low rating. The impact is assessed and presented in **table 22** below.

Table 22: Assessment of closure and decommissioning of the exploration works

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M: - 3	M/H: - 4	M/H: - 8	M/H: – 4	M: – 60
Post mitigation	L:- 1	L/M: - 2	M/L: -4	L/M: -2	L: - 14

8 RECOMMENDATIONS AND CONCLUSION

8.1 Recommendations

The potential positive and negative impacts of the proposed exploration activities on EPL 10110 were identified, assessed and appropriate management and mitigation measures were provided for implementation by the Proponent, their contractors and project related employees.

Mitigation measures to the identified impacts have been provided in the EMP, in order for the Proponent to avoid and/or minimize their significance of impacts on the environmental and social components. Most of the potential impacts were found to be of medium rating significance, while **land degradation and loss of biodiversity** was identified to be of **high** significance rating. However, with effective implementation of the recommended management and mitigation measures, the ratings in the general significance of negative impacts is expected to change from Medium to low and from high 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). Equally important, the monitoring of implementation will not only be done to maintain low rating, **but also to ensure that all potential impacts identified in this study, and other impacts that might arise during implementation are properly identified in time and addressed right away.**

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

It is, therefore, recommended that in the case of **ECC issuance for this project**, the proposed prospecting and exploration activities may be granted an ECC, provided that:

- **All the management and mitigation measures provided in the EMP are effectively and progressively implemented.**
- **All required permits, licenses and approvals for the proposed activities should be obtained as required.**
- **The Proponent and all project workers and contractors must comply with the legal requirements governing the project and ensure that all required permits and or approvals are obtained and renewed as stipulated by the issuing authorities.**
- **Site areas where exploration activities have ceased are rehabilitated, as far as practicable, to their pre-exploration state.**

8.2 Conclusion

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

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