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Environmental Scoping Assessment (ESA) for The Proposed Exploration on Exclusive Prospecting License (EPL) No. 8492 at Okongwe settlement in the Erongo Region, Namibia.

ECC Application Reference No: APP- 00684

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EXECUTIVE SUMMARY

Ms. Margreth Scholastica Utete De Jesus (hereinafter referred to as The Proponent) has applied to the Ministry of Mines and Energy (MME) for the Exclusive Prospecting License (EPL) No. 8492 on 17 November 2020. However, the approval and granting of the EPL requires an Environmental Clearance Certificate, before any proposed prospecting and exploration works may occur.

EPL 8492 is at Okongwe Settlement (Figure 1) and covers an area of 12983.9011ha in size. The EPL falls fully within the Otjihorongo reserve.

The target commodities for prospecting and exploration are Base and Rare Metals, Dimension stones, Industrial Minerals, and Precious Metals.

Prospecting and exploration-related activities are among the listed activities that may not be undertaken without an Environmental Clearance Certificate (ECC) under the Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations. Subsequently, to ensure that the proposed activity is compliant with the national environmental legislation, the project Proponent, appointed an independent environmental consultant, Excel Dynamic Solutions (Pty) Ltd to undertake the required Environmental Assessment (EA) process and apply for the ECC on their behalf.

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

Brief Project Description

Planned Activities: Proposed Exploration Methods

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

1. **Desktop Study: Geological mapping (Non-invasive Technique**): This mainly entails a desktop review of geological area maps and ground observations. This includes the review of geological maps of the area and on-site ground traverses and observations and an update where relevant of the information obtained during previous geological studies of the area.
2. **Lithology geochemical surveys**: Rock samples shall be collected and taken for trace element analysis to be conducted by analytical chemistry laboratories to determine if enough Base & Rare Metals, Dimension Stones, Industrial Minerals, Precious Metals, and Semi-Precious Stones are present. Also, trenches or pits may be dug depending on the commodity (in a controlled environment e.g., fencing off and labelling activity sites) adopting a manual or excavator to further investigate the mineral potential. These consist of small pits (±20cm X 20cm X 30cm) that will be dug where 1kg samples can be extracted and sieved to collect 50g of material. As necessary, and to ensure adequate risk mitigation, all excavations will either be opened and closed immediately after obtaining the needed samples or the sites fenced off until the trenches or pits are closed. At all times, the landowner and relevant stakeholders will be engaged to obtain authorisation where necessary.
3. **Geophysical surveys:** This will entail data collection of the substrata (in most cases service of an aero-geophysical contractor will be soured), by air or ground, through sensors such as radar, magnetic, and electromagnetic to detect any mineralization in the area and are conducted to ascertain the mineralisation. Ground geophysical surveys shall be conducted, where necessary using vehicle-mounted sensors or handheld by staff members, while in the case of air surveys, the sensors will be mounted to an aircraft, which then flies over the target area.

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

Public Consultation

Public Consultation Activities

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

- A Background Information Document (BID) containing brief information about the proposed project was compiled and delivered upon request to all new registered Interested and Affected parties (I&APs).
- Project Environmental Assessment notices were published in The Republican and the Namibian Sun newspapers (16 December 2022 and 23 December 2022) briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns.

- A consultation meeting was scheduled and held with the affected community members on the 28th of January 2023 at Okongwe settlement.
- The issues and concerns raised were noted and used to form the basis for the ESA Report and EMP.

Potential Impacts identified

The following potential negative impacts are anticipated:

- **Positive impacts**: Socio-economic development through employment creation (primary, secondary, and tertiary employment) and skills transfer; Opens up other investment opportunities and infrastructure-related development benefits; Produces a trained workforce and small businesses that can serve communities and may initiate related businesses; Boosts the local economic growth and regional economic development and; Increased support for local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- **Negative impacts**: Potential disturbance of existing pastoral systems; Physical land/soil disturbance; Impact on local biodiversity (fauna and flora); Habitat disturbance and potential illegal wildlife in the area; Potential impact on water resources and soils particularly due to pollution; Air quality issue: potential dust generated from the project; Potential occupational health and safety risks, Vehicular traffic safety and impact on services infrastructures such as local roads, Vibrations, and noise associated with drilling activities may be a nuisance to locals; Environmental pollution (solid waste and wastewater), Archaeological and heritage impact and Potential social nuisance and conflicts (theft, damage to properties, etc.).

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

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

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

The public was consulted as required by the EMA and its 2012 EIA Regulations (Sections 21 to 24). This was done via the two newspapers (New Era and The Namibian Sun) used for this environmental assessment. A face-to-face consultation meeting was held with the directly affected community members at Okongwe under a tree which is the meeting point of the community, whereby they raised comments and concerns on the proposed project activities.

The issues and concerns raised by the registered I&APs formed the basis for this report and the Draft EMP. The issues were addressed and incorporated into this report whereby mitigation measures have been provided thereof to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of -medium- rating significance. The effective implementation of the recommended management and mitigation measures will particularly see a reduction in the significance of adverse impacts that cannot be avoided completely (from high/medium rating to low). To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or their Environmental Control Officer (ECO) is highly recommended. The monitoring of this implementation will not only be done to maintain the impacts' rating or maintain a low rating but to also ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away too.

It is crucial for the Proponent and their contractors as well as to effectively implementation of the recommended management and mitigation measures to protect both the biophysical and social environment throughout the project duration. All these would be done with the aim of promoting environmental sustainability while ensuring a smooth and harmonious existence and purpose of the project activities in the community and environment at large.

Recommendations

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

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

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

Disclaimer

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

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

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LIST OF ABBREVIATIONS

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

KEY TERMS

Terms	Definition
Alternative	A possible course of action, in place of another 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 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.

Terms	Definition
Environmental Management Plan	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled, and monitored.
Exclusive Prospecting Licence	Is a license that confers exclusive mineral prospecting rights over the land of up to 1000 km^2 in size for an initial period of three years, renewable twice for a maximum of two years at a time
Interested and Affected Party (I&AP)	In relation to the assessment of a listed activity includes - (a) any person, group of persons, or organization interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity. Mitigate - practical measures to reduce adverse impacts. Proponent – as defined in the Environmental Management Act, a person who proposes to undertake a listed activity. Significant impact - means an impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.
Fauna and Flora	All the animals and plants found in an 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).
Proponent	Organization (private or public sector) or individual intending to implement a development proposal.

Terms	Definition
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 the site and surroundings, and prepare a plan for public involvement. The results of scoping are frequently used to prepare a Terms of Reference for the specialized input into full EIA.
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

Ms. Margreth Scholastica Utete De Jesus (hereinafter referred to as The Proponent) has applied to the Ministry of Mines and Energy (MME) for the Exclusive Prospecting License (EPL) No. 8492 on 17 November 2020. The approval and granting of the EPL requires an Environmental Clearance Certificate, before any proposed prospecting and exploration works may occur.

EPL 8492 is at Okongwe Settlement (**Figure 1**) and covers an area of 12983.9011 ha. The EPL falls fully within the Otjohorongo Reserve.

The target commodities for prospecting and exploration are Base and Rare Metals, Dimension Stones, Industrial Minerals, and Precious Metals.

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

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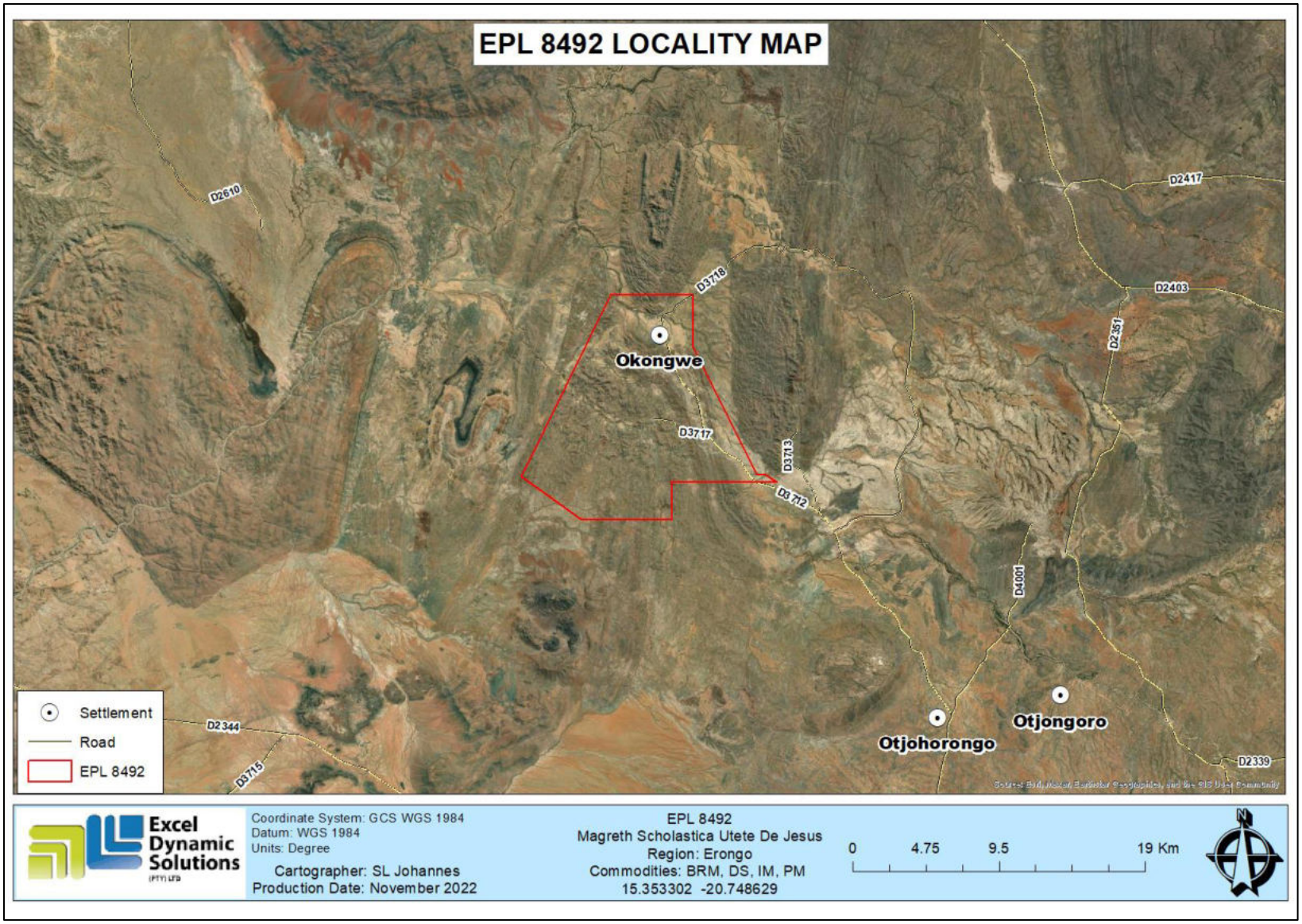

Figure 1: Locality map of EPL 849

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

Excel Dynamic Solutions (Pty) (EDS) have been appointed by the Proponent to undertake an environmental assessment (EA), and thereafter, apply for an ECC for exploration works on the EPL 8492. There were no formal Terms of Reference (ToR) provided to EDS by the Proponent. The consultant, instead, relied on the requirements of the Environmental Management Act (No. 7 of 2007) (EMA) and its Environmental Impact Assessment (EIA) Regulations (GN. No. 30 of 2012) to conduct the study.

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

The EIA project is headed by Mr. Nerson Tjelos, a qualified and experienced Geoscientist and experienced EAP. Consultation and reporting were done by Mr. Stefanus Johannes and reviewed by Ms. Rose Mtuleni. The CV of Mr. Tjelos is presented in **Appendix C.**

1.3 Motivation for the Proposed Project

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

Successful exploration on EPL No. 8492 would lead to the mining of targeted commodities, which could contribute towards achieving the goals of the national development plans.

2 PROJECT DESCRIPTION: PROPOSED PROSPECTING, EXPLORATION ACTIVITIES

Prospecting and exploration of minerals are the first components of any potential mining project. These are done to acquire the necessary data required for further decision-making and investment options. These activities are anticipated to last for about three years. The exploration process includes three phases - prospecting, exploration, and the decommissioning of works.

2.1 Prospecting Phase

During the prospecting and exploration phase, reviewing existing reports and composite stratigraphic, lithological-geochemical maps of the targeted areas is vital to identifying prospective lithostratigraphic packages. In addition to the literature review, fieldwork (lithological (soil/rock) mapping and sampling) will be conducted to verify desktop work. Up to this point, no physical disturbance is required. Prospecting during the advanced exploration phase will require the Proponent to assess the EPL area through detailed geological mapping, geophysical and geochemical surveys, supported where necessary by geophysical surveys, to define targets for test pitting, trenching, and drilling.

2.1.1 Desktop Study: Geological mapping

This mainly entails a desktop review of geological area maps and ground observations. This includes the review of geological maps of the area, on-site ground traverses and observations, and an update, where relevant, of the information obtained during previous geological studies of the area.

2.1.2 Geophysical surveys

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

2.1.3 Lithology geochemical surveys

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

Soil sampling involves small pits being dug where 1kg of samples can be extracted and sieved to collect about 50g of material. As necessary, and to ensure adequate risk mitigation, all major excavations will be opened and closed immediately after obtaining the needed samples, or the sites will be secured until the trenches or pits are closed. The landowner and other relevant stakeholders will be engaged to obtain authorization where necessary.

2.2 Exploration (Drilling, Sampling, and Analysis) Phase

The selection of the potential mineralization model and exploration targets will be based on the local geology, 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 (Invasive Technique)

Should analyses by an analytical laboratory yield positive results, holes are drilled, and drill samples are collected for further analysis. This will determine the depth of the potential mineralization. If necessary new access tracks to the drill sites will be created and drill pads will be cleared in which to set the rig. Two widely used drilling options may be adopted, these are Reverse Circulation (RC) drilling and/or diamond-core drilling. RC drilling uses a pneumatic hammer, which drives a rotating tungsten-steel bit. The technique produces an uncontaminated large-volume sample, which is comprised of rock chips. It is relatively quicker and cheaper when compared to other techniques like Diamond Drilling. However, diamond drilling may also be considered for this exploration programme, during advanced stages of exploration if large amounts of sample material may be required for analysis and to perform processing trials.

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

Other aspects of the exploration operations include:

2.2.2 Accessibility to Site

The EPL is accessible via the district road D3712 north of Otjohorongo Settlement (see figure 1). The Proponent may need to do some upgrades on the site access road to ensure that it is fit to accommodate project-related vehicles, such as heavy trucks.

2.2.3 Material and Equipment

The input required for the exploration program in terms of vehicles and equipment includes 4X4 vehicles, a truck, water tanks, drill rigs, drilling machines, and a power generator. Equipment and vehicles will be stored at a designated area near the accommodation site or a storage site established within the EPL.

2.2.4 Services and Infrastructure

Water: Water for the exploration operations on the EPL will be obtained from the nearest existing boreholes around Okongwe, or the proponent will drill boreholes upon obtaining necessary permits and signing agreements with the landowners or relative authorities. Estimated monthly water consumptions are at 4000 litres, but will not exceed 80 000 litres, which includes water for drinking, sanitation, cooking, dust control, drilling, as well as washing of equipment.

Power supply: Power required during the operation phase will be provided by the diesel generators. About 2000 litres of diesel will be used per day, and a bunded diesel bowser which will be on site will be filled as regularly as necessary.

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

2.2.5 Waste Management

The site will be equipped with secured waste bins for each type of waste (i.e., domestic, hazardous, and recyclable). Depending on the amount generated, waste will be sorted and

collected weekly or monthly and taken to the nearest certified landfill site. An agreement will need to be reached with different waste management facility operators/owners and authorization or permits will be obtained prior to utilizing these facilities, in the case of the production of any hazardous waste.

Sanitation and human waste: Portable ablution facilities will be used and the sewage will be disposed of, according to the approved disposal or treatment methods of the manufacturer and the waste products.

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

2.2.6 Health and safety

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

2.2.7 Safety and Security

Storage Site: Temporary storage areas for exploration material, equipment, and machinery will be required at the campsite and/or exploration sites. Security will be supplied on a 24-hour basis at the delegated sites for storage. A temporary support fence surrounding the storage site will be constructed to ensure people and domestic animals are not put at risk.

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

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

2.2.8 Accommodation

The exploration crew will be accommodated in a campsite will be set up for the exploration crew near the exploration sites. If the accommodation camp is to be set up on a farm, necessary arrangements will be made with the farm owner/s. Exploration activities will take place during the day only and staff will commute to the exploration site(s) from their place of accommodation.

2.3 Decommissioning and Rehabilitation Phase

Once the exploration activities on the EPL come to an end, the Proponent will need to put site rehabilitation measures in place. Decommissioning and rehabilitation are primarily reinforced through a decommissioning and rehabilitation plan, which consists of safety, health, environmental, and contingency aspects. An unfavorable economic situation or unconvincing exploration results might force the Proponent to cease the exploration program before the predicted closure.

3 PROJECT ALTERNATIVES

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

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

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

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

3.1 Types of Alternatives Considered

3.1.1 The "No-go" Alternative

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

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

- Loss of foreign direct investment.
- The proposed 16-18 temporary job opportunities for community members will not come to realization.
- No realization of local businesses' support through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Loss of potential income to the local and national government through land lease fees, license lease fees, and various tax structures.

- Improved geological understanding of the site area regarding the targeted commodities.
- Socio-economic benefits such as skills acquisition for local community members would be not realized.

Considering the above losses, the “no-action/go” alternative was not considered a viable option for this project.

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

Furthermore, the national mineral resources’ potential locations are also mapped and categorized by the Ministry of Mines and Energy in exclusive prospecting licenses, mining licenses and claims, mineral deposit retention licenses, reconnaissance licenses, and exclusive reconnaissance licenses. Available information on EPL 8492 **(Figure 2)** and other licenses are available on the Namibia Mining Cadastral Map here https://maps.landfolio.com/Namibia/

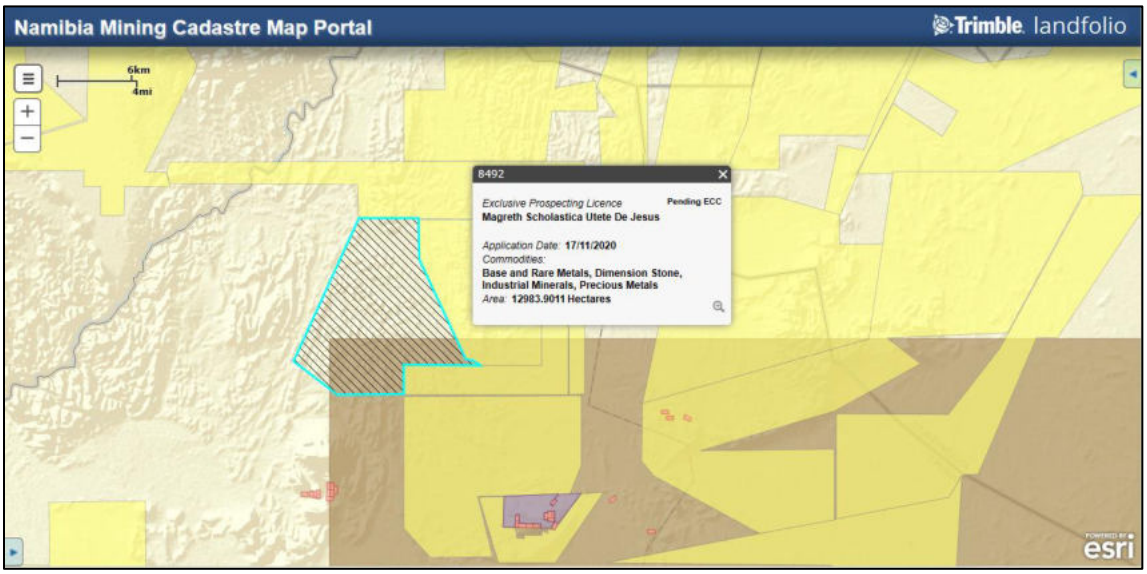

Figure 2: The location of EPL 8492 on the National Mining Cadastre

3.1.3 Exploration Methods

Both invasive and non-invasive exploration activities are expected to take place. The combination of prospecting methods (non-invasive techniques) has no alternatives therefore, these will be implemented as presented. This section rather focuses on the invasive technique (drilling). According to Earth Science Australia (2020), drilling is the culmination of the mineral exploration process where the third dimension of a prospect, the subsurface geometry, is defined. Drilling provides most of the information for the final evaluation of a prospect and will ultimately determine if the prospect is mineable.

Commonly in mineral exploration drilling, two methods are utilized. These are reverse circulation (RC) drilling and Diamond (Core) drilling, depending on the type of mineral sought after.

Table 1 below presents the commonly used drilling methods in mineral exploration.

Table 1: Pitting, and trenching as well as comparison of reverse circulation and diamond drilling methods

Invasive exploration Method (Alternatives Considered)	**Short Description**	**Justification for the selected option**
Pitting and trenching	-Pits and trenches, or to use the old Cornish mining term, costeans 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. An ideal example of this would be a buried heavy mineral placer. -The main advantage of pitting over a pattern-drill programme on	- 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 is a characteristic feature

	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).	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).
Reverse Circulation (RC)	-Crushed rock is collected in the form of cuttings samples called back within stems contrast to conventional drilling that puts the air inside the stems and 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 is fundamentally different from diamond core drilling, both in	-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 is in the rate of penetration and cost per foot. RVC 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

	terms of equipment and sampling. One major difference is that RVC drilling creates small rock chips instead of solid core. Furthermore, according to Technidrill (2020), the RC method: -Allows full recovery of samples continuously -Quick installation -There is no contact between the walls and cuttings taken at the bottom. -The penetration rate is fast (Techndrill, 2020)	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 and effervescence are easily accomplished (Earth Science Australia, 2020). It is for these reasons that RC will be the most preferred method and mainly used. However, the RC drilling would be combined with Diamond drilling where necessary for more reliable data collection and analysis. Diamond drilling would more applicable where deeper
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).	
Diamond (Core)	-Diamond core drilling uses a diamond bit, which rotates at the	

drilling	end of 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 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. -While the drill cuttings obtained with RC drilling can be analysed to provide a limited amount of information, the scope of these tests is limited, 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.	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 Resource estimate.

	-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.	

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 1**). This summary serves to inform the project Proponent, Interested and Affected Parties, and the decision-makers at the DEAF of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled to establish the proposed prospecting and exploration activities.

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

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

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

- 3.1 The construction of facilities for any process or activities which requires a license, the 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. 8492 and related activities are presented in **Table 2.**

Table 2: Applicable local, national and international standards, policies and guidelines governing the proposed prospecting and exploration activities

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

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Nature Conservation Amendment Act, No. 3 of 2017	National Parks are established and gazetted in accordance with the Nature Conservation Ordinance, 1975 (4 of 1975), as amended. The Ordinance provides a legal framework with regard to the permission of entering a state-protected area, as well as requirements for individuals damaging objects (geological, ethnological, archaeological, and historical) within a protected area. Though the Ordinance does not specifically refer to mining as an activity within a protected area (PA) or recreational area (RA), it does restrict access to PA's and prohibits certain acts therein as well as the purposes for which permission to enter game parks and nature reserves may be granted.	The Proponent will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity of protected areas and other State lands.
The Parks and Wildlife Management Bill of 2008	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas, to conserve biodiversity and contribute to national development.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Minerals (Prospecting and Mining) Act (No. 33 of 1992)	Section 52 requires mineral license holders to enter into a written agreement with affected landowners before exercising rights conferred upon the license holder. Section 52(1) mineral license 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 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 a 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 proposed steps to be taken to prevent or minimize any such effect.	The Proponent should enter into a written agreement with landowners before exploring their land. The Proponent should assess the impact on the receiving environment. 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.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	Section 91 requires that rehabilitation measures should be included in an application for a mineral license.	
Mine Health & Safety Regulations, 10th Draft	Makes provision for the health and safety of persons employed or otherwise present in the mineral licenses area. These deal with among other matters; clothing and devices; design, use, operation, supervision, and control of machinery; fencing and guards; and safety measures during repairs and maintenance.	The Proponent should comply with all these regulations with respect to their employees.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that "No person shall possess [sic] or store any fuel except under the authority of a license or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area"	The Proponent should obtain the necessary authorisation from the MME for the storage of fuel on-site.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
The Regional Councils Act (No. 22 of 1992)	This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning point of view, their duties include, as described in section 28 "to undertake the planning of the development of the region for which it has been established with a view to physical, social and economic characteristics, urbanisation patterns, natural resources, economic development potential, infrastructure, land utilisation pattern and sensitivity of the natural environment.	The relevant Regional Councils are I&APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Erongo Regional Council; therefore, they should be consulted.
Water Act 54 of 1956	The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force: Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duly of care to prevent pollution (S3 (k)). Provides for control and protection of groundwater (S66 (1), (d (ii)). Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).	The protection (both quality and quantity/abstraction) of water resources should be a priority.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Water Resources Management Act (No 11 of 2013)	The Act provides for the management, protection, development, use, and conservation of water resources; and provides for the regulation and monitoring of water services and provides for incidental matters. The objects of this Act are to: Ensure that the water resources of Namibia are managed, developed, used, conserved, and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).	
National Heritage Act No. 27 of 2004	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	The Proponent should ensure compliance with these Acts requirements. The necessary management measures and related permitting requirements must be taken. This is done by consulting with the National Heritage Council of Namibia.
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Soil Conservation Act (No 76 of 1969)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement, and conservation of soil, vegetation, and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.
Forestry Act (Act No. 12 of 2001	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 to stabilise 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)	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding the health and safety of labourers.	
Atmospheric Pollution Prevention Ordinance (1976)	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.	The proposed project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality. Mitigation measures should be put in place and implemented on-site.
Hazardous Substance Ordinance, No. 14 of 1974	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal, and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	The Proponent should handle and manage the storage and use of hazardous substances on site so that they do not harm or compromise the site environment

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Road Traffic and Transport Act, No. 22 of 1999	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto. Should the Proponent wish to undertake activities involving road transportation or access to existing roads, the relevant permits will be required.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for.
Labour Act (No. 6 of 1992)	Ministry of Labour, Industrial Relations and Employment Creation is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety, and enhanced labour market services for the benefit of all Namibians. This ministry ensures the effective implementation of the Labour Act No. 6 of 1992.	The Proponent should ensure that the prospecting and exploration activities do not compromise the safety and welfare of workers.

4.2 International Policies, Principles, Standards, Treaties and Conventions

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

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

Statute	Provisions	Project Implications
Equator Principles	A financial industry benchmark for determining, assessing, and managing environmental and social risk in projects (August 2013). The Equator Principles have been developed in conjunction with the International Finance Corporation (IFC), to establish an International Standard with which companies must comply 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	These principles are an attempt to: '…encourage the development of socially responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based upliftment and empowering interactions.'

Statute	Provisions	Project Implications
	Principle 10: Reporting and Transparency	
The International Finance Corporation (IFC) Performance Standards	The International Finance Corporation's (IFC) Sustainability Framework articulates the Corporation's strategic commitment to sustainable development and is an integral part of IFC's approach to risk management. The Sustainability Framework comprises IFC's Policy and Performance Standards on Environmental and Social Sustainability, and IFC's Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability. 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	The Performance Standards are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the Client (Borrower) in 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

Statute	Provisions	Project Implications
	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 Underserved Traditional Local Communities **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	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
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's objective is to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and environmental sustainability United Nations 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
Stockholm Declaration on the Human Environment, Stockholm (1972)	It recognizes the need for: “a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.	Protection of natural resources and prevention of any form of pollution.

Relevant international Treaties and Protocols ratified by the Namibian Government

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

5 ENVIRONMENTAL BASELINE

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

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

Biophysical Environment

5.1 Climate

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

In the EPL area, rainfall is expected between December to March. January experiences the highest rainfall at an average of 128 mm, and little or no rainfall is expected between May and September. The project area experiences high temperatures in October at an average of 24.7 ^{0}C and low temperatures at an average of 15.6 ^{0}C in July

Strong winds around the vicinity of the project area are experienced during July at an average speed of 2.6 m/s and weak winds is experienced during September, at an average speed of 0.3 m/s

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	23.5 °C (74.3) °F	22.8 °C (73) °F	21.9 °C (71.5) °F	20.7 °C (69.2) °F	18.6 °C (65.5) °F	15.7 °C (60.3) °F	15.6 °C (60.1) °F	18.7 °C (65.6) °F	22.4 °C (72.3) °F	24.7 °C (76.5) °F	24.5 °C (76.1) °F	24.2 °C (75.5) °F
Min. Temperature °C (°F)	17.6 °C (63.7) °F	17.3 °C (63.1) °F	16.8 °C (62.3) °F	15.1 °C (59.1) °F	12.3 °C (54.1) °F	9.1 °C (48.4) °F	8.9 °C (47.9) °F	11 °C (51.7) °F	14.3 °C (57.7) °F	17 °C (62.6) °F	17.1 °C (62.8) °F	17.3 °C (63.2) °F
Max. Temperature °C (°F)	29.9 °C (85.9) °F	28.9 °C (84) °F	27.8 °C (82.1) °F	26.9 °C (80.4) °F	25.6 °C (78) °F	23.4 °C (74.1) °F	23.4 °C (74) °F	26.9 °C (80.5) °F	30.8 °C (87.4) °F	32.6 °C (90.6) °F	32 °C (89.6) °F	31.3 °C (88.3) °F
Precipitation / Rainfall mm (in)	128 (5)	118 (4)	90 (3)	31 (1)	2 (0)	0 (0)	0 (0)	0 (0)	5 (0)	20 (0)	45 (1)	84 (3)
Humidity(%)	49%	54%	56%	47%	34%	30%	27%	20%	16%	20%	29%	37%
Rainy days (d)	11	10	10	5	0	0	0	0	1	3	6	8
avg. Sun hours (hours)	10.6	9.9	9.4	9.7	10.0	9.8	9.9	10.3	10.8	11.2	11.5	11.4

Figure 3: Shows the climate condition around the project area (source: climate-data, 2022)

5.2 Topography

EPL 8492 is located within the Central-Western Plain. The plain is largely formed by erosion cutting back into higher ground and carving out the catchment areas of several major rivers. The Khan, Omaruru, Swakop and Ugab rivers are the most prominent of these. Much of the area lies between 547m and 951m above sea level, and consists of metamorphic rocks that were forced up out of the sea during the formation of the Gondwana continent some 550 million years ago, (Mendelsohn, 2003)**. Figures 4** below show the landscape map, Elevation Model.

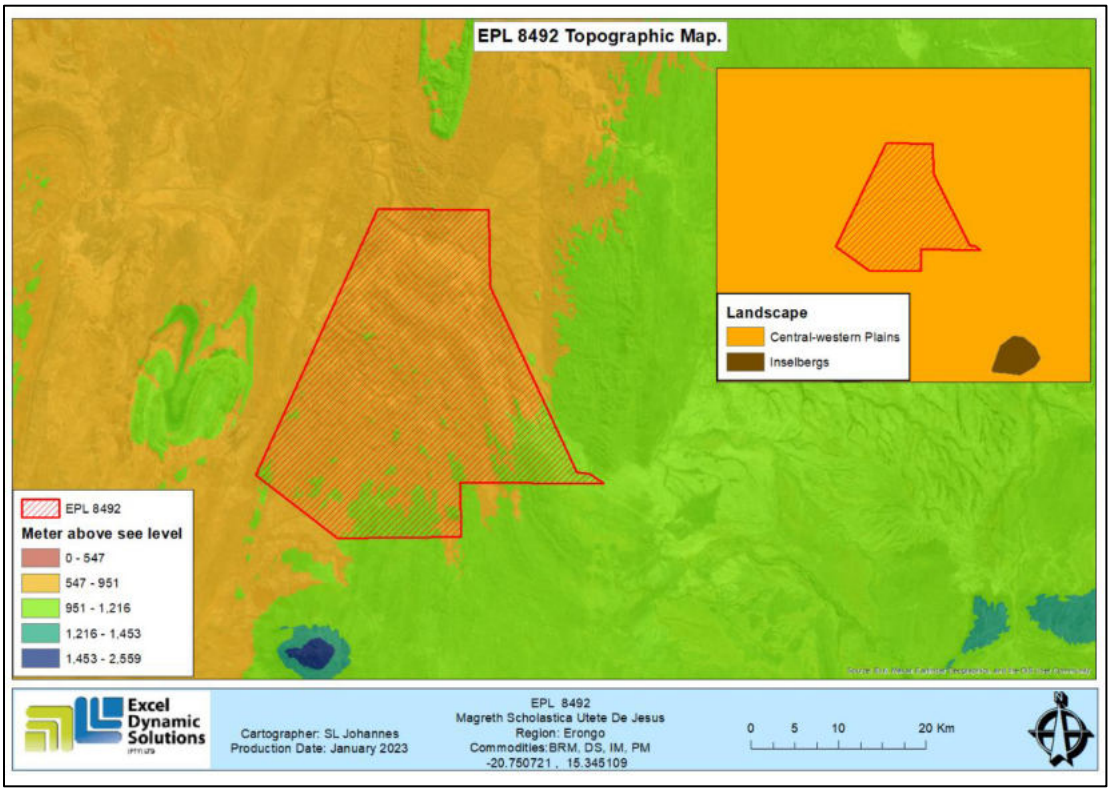

Figure 4: Shows the topographic map for the project area

5.3 Geology

The EPL lies within the Damaran Supergroup. Around the EPL there are mixtures of Mica Schist, minor quartzite, graphitic schist and marble, tracks known as migmatitic terranes, crystalline moderately to high metamorphosed rocks of unknown origin with or without intrusions. This classification is inherently prone to variable interpretation, as other compilers which might distinguish some packages by their metamorphic or gneissic protoliths, and the associated age ranges may be more variable (Giller, 2003). **Figure 5** below shows the general geology map for the project.

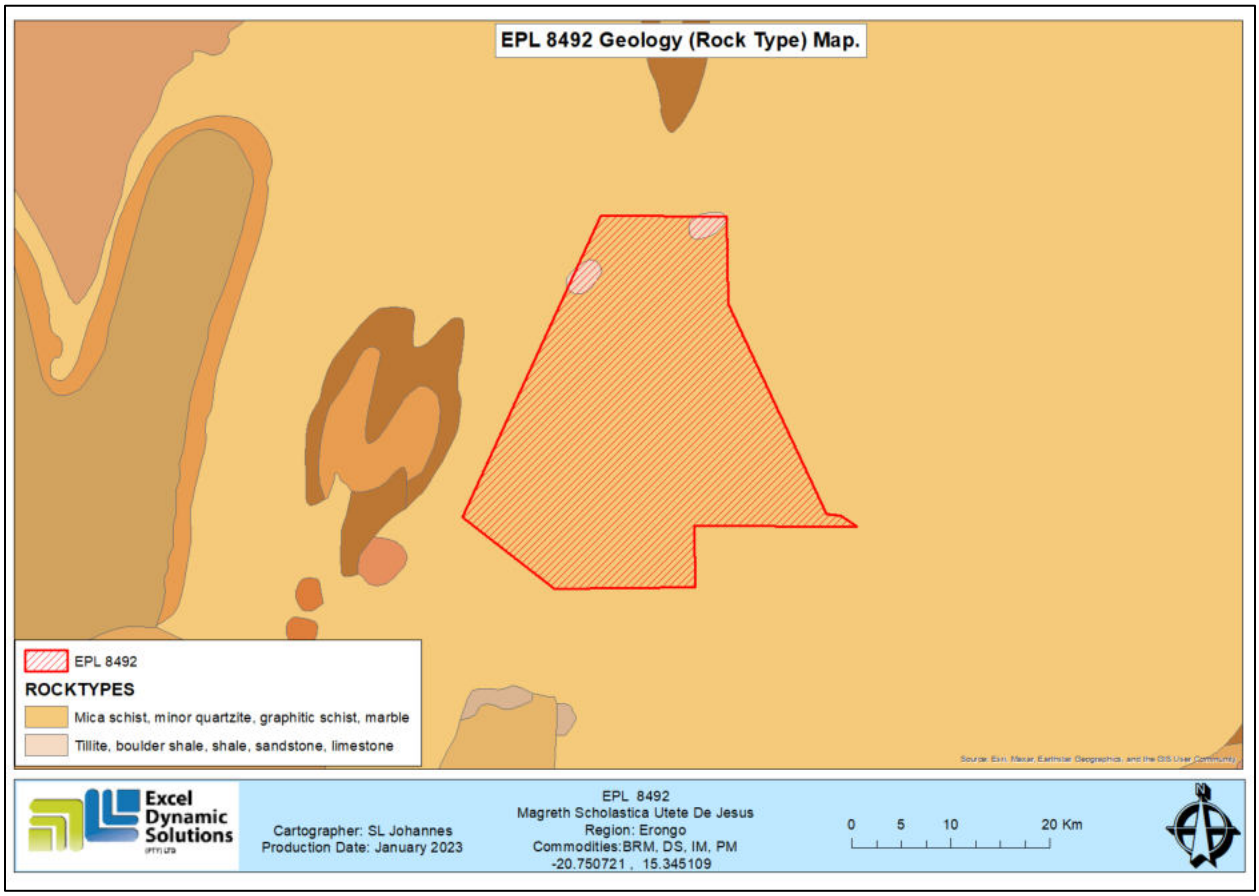

Figure 5: The geology of the EPL

Figure 6: Common rock structure around the EPL.

5.4 Soil

The EPL is covered by two soil types, namely: Lithic Leptosols. Lithic Leptosols typically form in actively eroding landscape, especially in the hilly or undulating areas that cover much of the EPL. These course-textured soils are characterized by their limited depth caused by the presence of a continuous hard–rock, highly calcareous, or cemented layer within 30 cm of the surface. The Lithic Leptosols are the shallowest soil to be found in Namibia and they often contain much gravel, (Mendelsohn, 2003**). Figure 7** below shows the soil types found within the EPL area

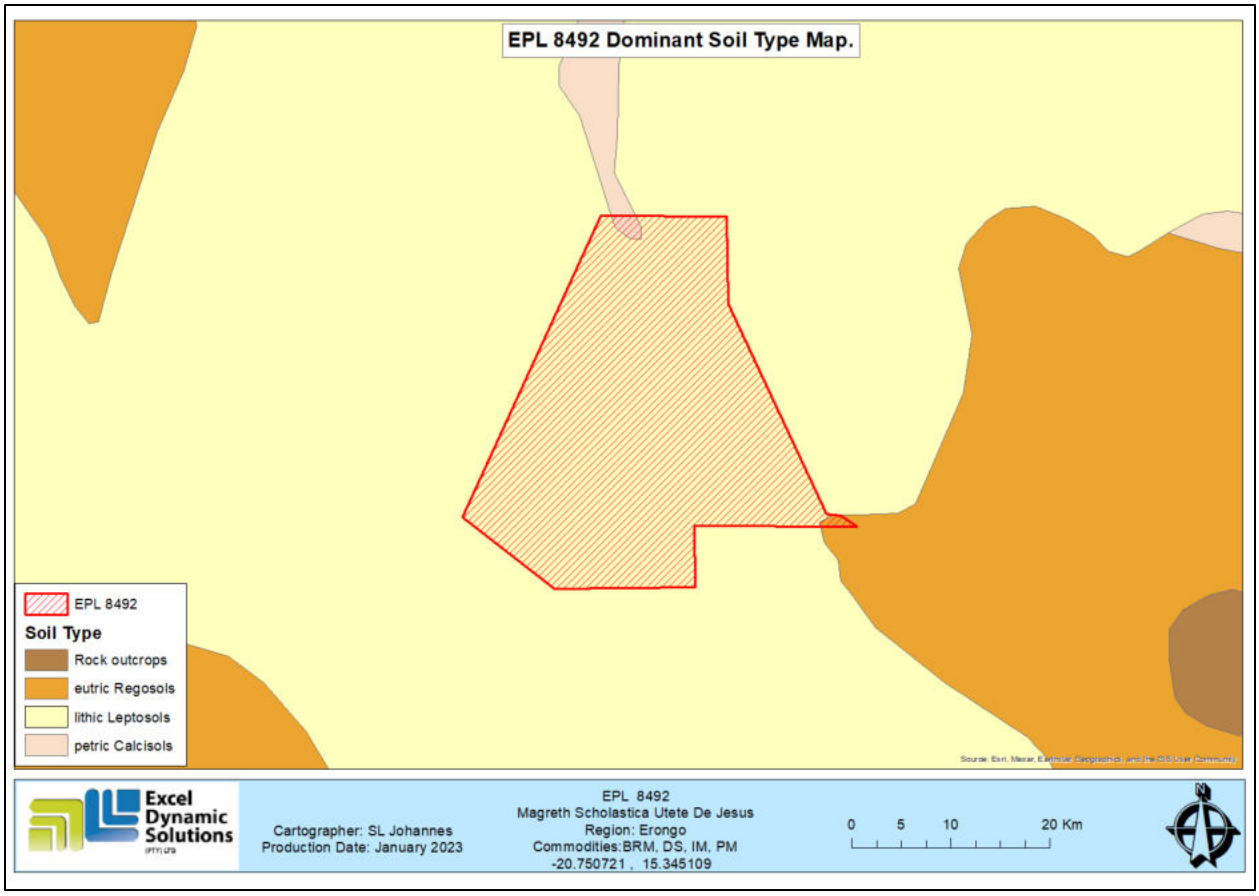

Figure 7: The soils map of the EPL.

Figure 8: Soil texture.

5.5 Groundwater and Groundwater pollution

In terms of rivers (surface water/ hydrology), the Okasoko River runs across the EPL. With regards to groundwater (hydrogeology), the EPL is mainly covered by rock bodies with little groundwater potential. The little potential is attributed to the type of rock units underlying the EPL and their non-fractured/faulted nature limit the storage, transmission, and flow of groundwater. Therefore, the rocks are not good aquifers. **Figure 9** shows the hydrology map of the EPL area

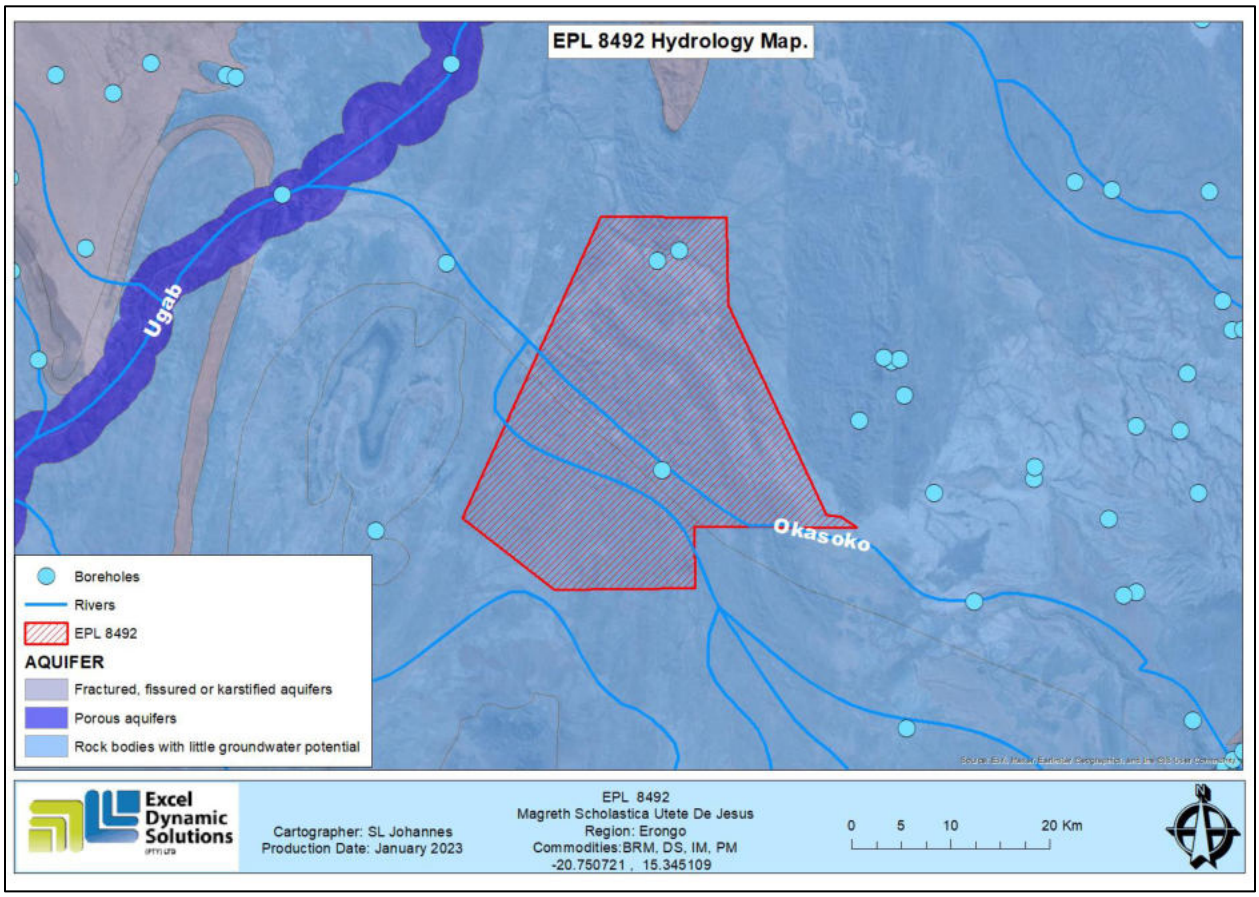

Figure 9: Shows the hydrology map for the EPL

The EPL lies in an area of a moderate level of sensitivity to groundwater drought. **Figure 10** shows the groundwater drought map for the project.

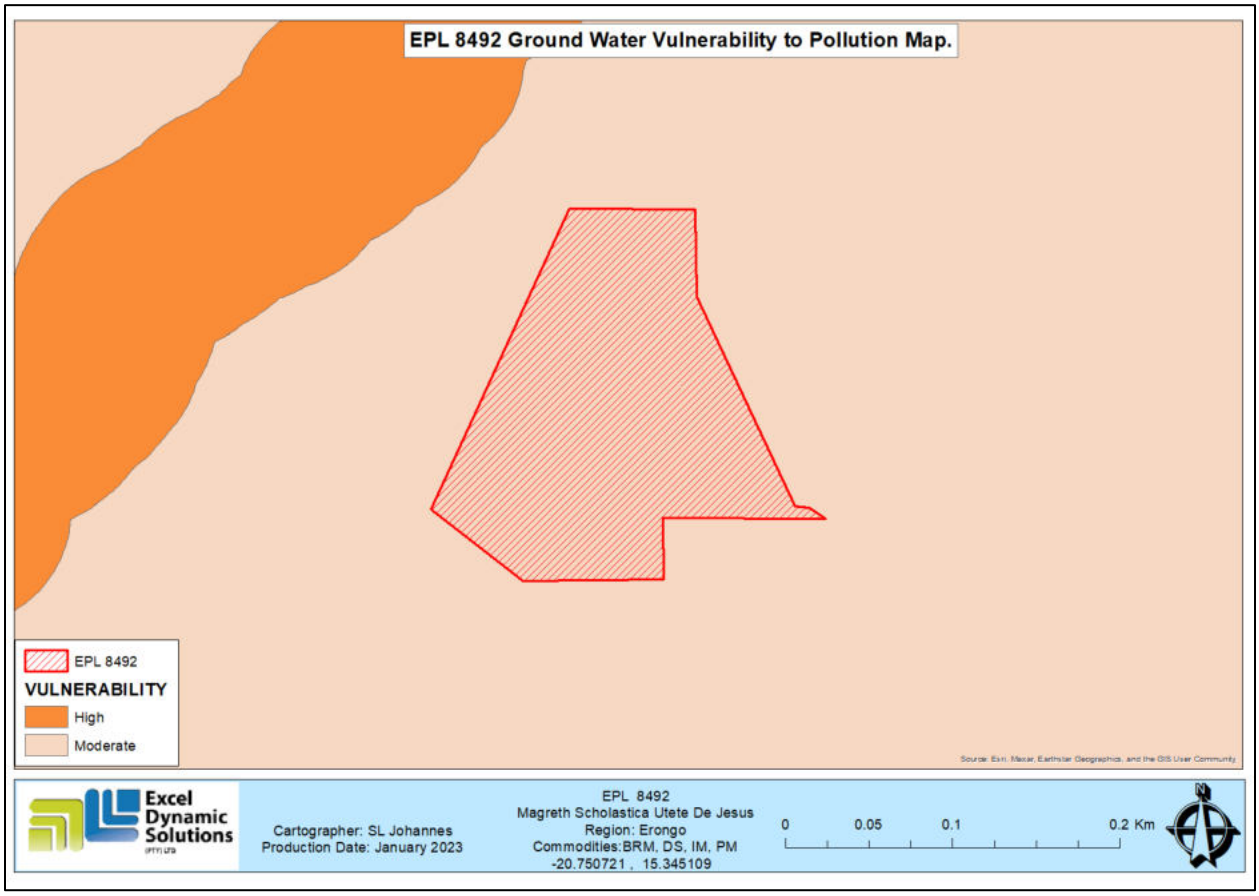

Figure 10: Shows the groundwater vulnerability map for the EPL

5.6 Flora and Fauna

5.6.1 Flora

The EPL area is sparse shrubland covered by the Acacia Reficiens commonly known as the red thorn. This thorn is a v-shaped shrub with reddish bark when in younger growth. Their thorns are paired, either both hooked, both straight, or one hooked and the other straight. Leaves with 1 – 4 pinna pairs and 5 – 11 leaflets pairs, no hairs on margins. Flowers in creamy white balls. Fruits tend to be a flat, linear- oblong, reddish-brown pod, slightly pointed at the tips (Mannheimer, 2005). **Figure 11** below shows the map.

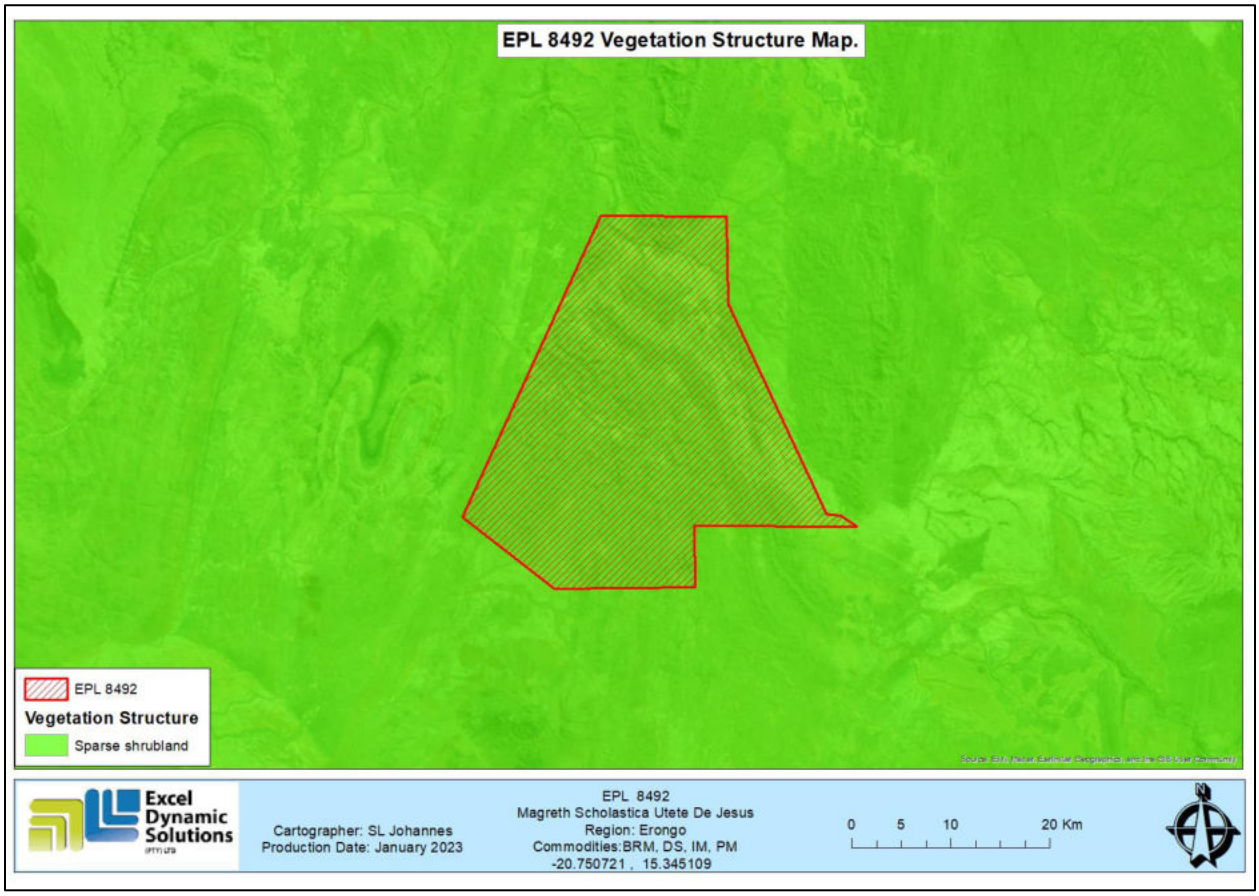

Figure 11: Vegetation Cover map for EPL 8492

5.6.2 Fauna

The following animals (**Table 4**) can be expected to be found in the vicinity of the project area.

Table 4 : Animals species found within and around the EPL with their concern.

Animals	Concern
Springbok	Least Concern
Hyena	Endangered
Leopard	Endangered
Greater Kudu	Least Concern
Reptiles	None
Oryx	Least Concern
Livestock	None
Common warthog	Least concern
Baboon	Least concern
Giraffe	Least concern
Black-backed jackal	Least concern
Gemsbok	Least concern
Brown hyaena	Endangered
Ground squirrel	Least concern
Impala	Least concern
Cheetah	Vulnerable
Leopard	Endangered
Tortoise	Critically endangered
Mongoose	Least concern
Ostrich	Least concern
Elephant	Least concern
Antelope	Near Threatened

Figure 12: leopard spotted tortoise observed on site

5.7 Archaeology and Heritage

Archaeological remains in Namibia are protected under the National Heritage Act (27 of 2004) which makes provision for archaeological impact assessment of proposed projects like these. Modern humans and their ancestors have lived in Namibia for more than one million years (Kinahan 2011), and there are fossil remains of lineal hominin ancestors as early as the Miocene Epoch (Conroy *et al.* 1992). Namibia has a relatively complete sequence covering the mid-Pleistocene to the Recent Holocene period, represented by thousands of archaeological sites mainly concentrated in the central highlands, escarpment, and the Namib Desert.

The Erongo Region is one of the regions in the country endowed with several archaeological sites that are of national and international significance. There are about 37 declared sites within the region. The subject land where the EPL is located has several rock art sites known close to the EPL. The sites are within the Otjhorongo reserve ,there are sites with National significance and others with local significance however all the known sites are protected from any work that happens close the sites. Within the subject land there was no rock art site observed.

Site visit:

A detailed inspection of the site was carried out on 29th January 2023, mostly the site surveys were undertaken on foot in these farms, this exercise involved direct observation with archaeological or cultural sites, positions were fixed by hand-held GPS *etrex 32,* documented and plotted on topographic maps. All archaeological sites are assessed as to their significance and vulnerability, using two independent parallel scales devised for archaeological assessment in Namibia. In general, no trace of any significant archaeological or historical remains of national significance, and as relevant to the National Heritage Act 27 of 2004, were found in the surveyed area. However, at the localized level, the recorded sites/artifacts/ or features that are of low significance are illustrated herein in figures and presented in **Table 5** below. These were located in different areas within the EPL 8086 boundaries.

Findings of the Archaeological and Heritage sites on EPL 8492– Description of Sites Table 5

Location	Description of the findings	Heritage Significance	Grading
S 20º 40' 49.36'' E 15º 22' 47.23''	**Surface lithic scatter:** there were some stone artefacts recorded within the EPL footprint area (Figure 13)	low	2
S 20º 41' 35.92'' E 15º 23' 13.19''	**Stones placed together:** some stones were placed together to mark a point however not sure if it was an old grave or not.	Moderate	3

Figure 13: Surface lithic scatter observed and recorded.

Figure 14: A rusted tin recorded within EPL 8492

Figure 15: Rocks put to gather to mark a point. (EPL 8492)

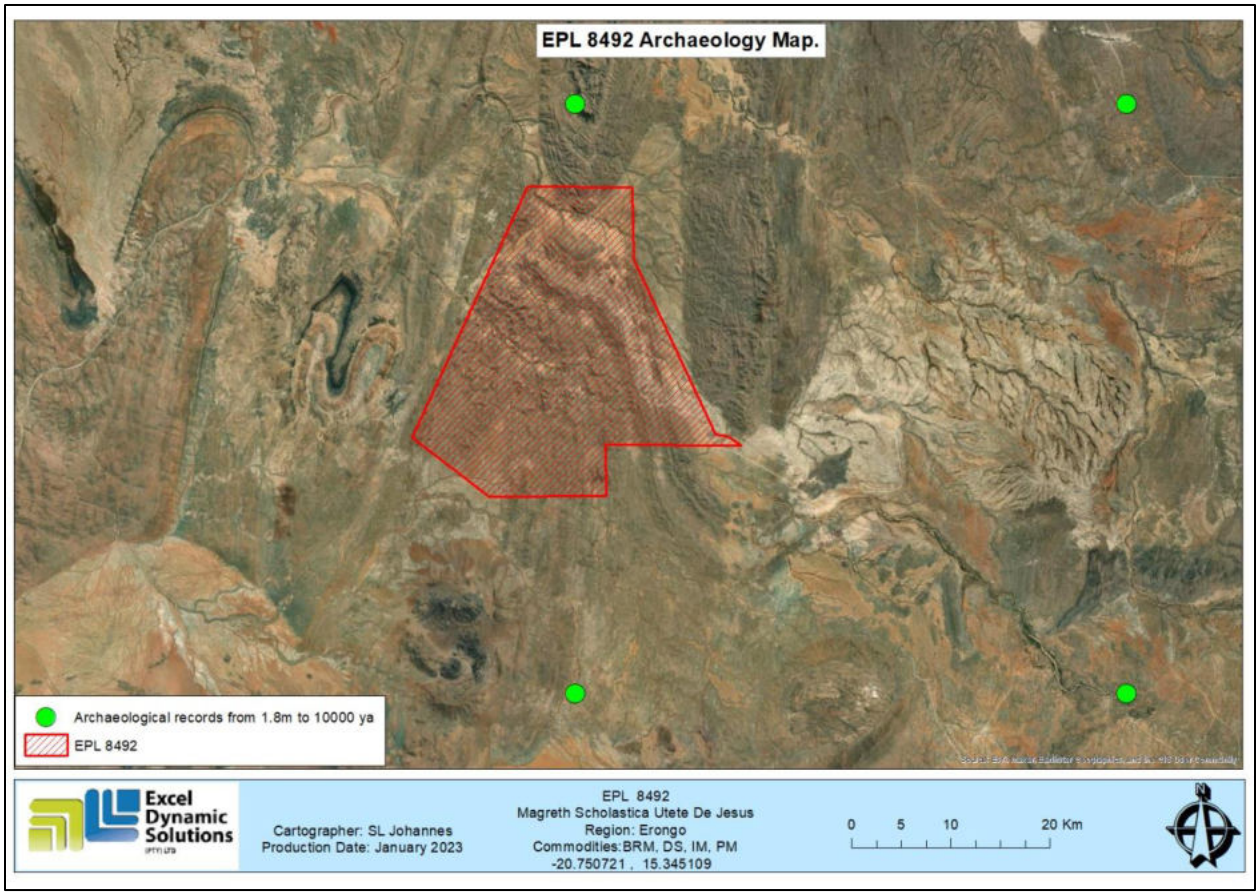

Figure 16 National Archaeology database map

5.8 Surrounding Land Uses

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

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

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

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

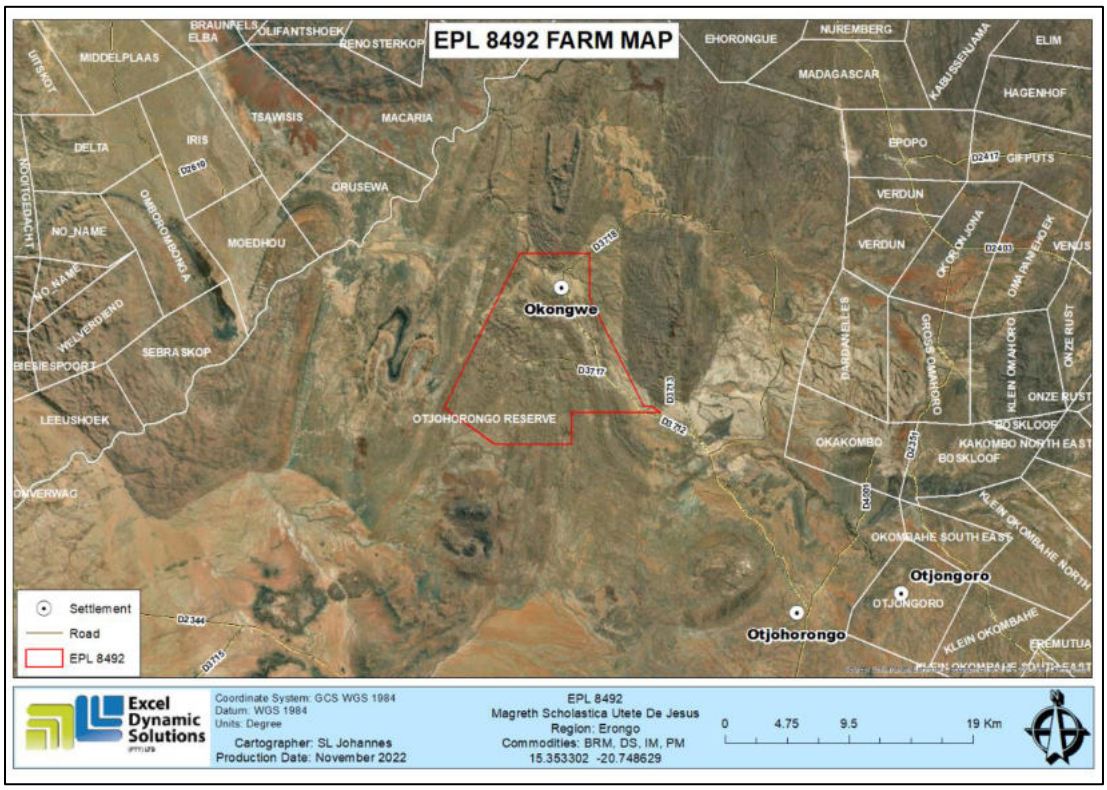

Figure 17: Land Use Map (EPL 8492)

5.9 Socio-economic Status of Okongwe, Erongo Region

Okongwe is a settlement in Damaraland, Namibia, some 55km southeast of Khorixas, in the Erongo Region. Notable nearby settlements include Omatjete and Otjohorongo. The land is administered by the Regional Council, as it is communal land.

Demography

The Erongo Region has a population of 150 809 people, accounting for a 7.1% of the country's total population. The average population density of 2.4 persons/km². Out of the total population, 79 823 were men and 70 986 were women (Namibia Statistics Agency, 2011).

Constituency Population

The Okongwe Settlement falls under the Daures Constituency and according to the 2011 National Housing and Population Census, the population of the Constituency was recorded at 11 350 out of which 5 309 were men and 6 041 were women (Namibia Statistics Agency, 2011).

Local Economic Activities

According to the Erongo Regional Council (2022), the economy of the Erongo Region mainly depends on mining, fishing, agriculture, and tourism. The Region's whole eastern part and certain western parts are characterized by livestock farming on commercial farms in the districts of Karibib, Usakos, and Omaruru, and in the communal areas (Erongo Regional Council, 2022). According to the Namibia Statistics Agency (2011), the main source of income in households in the Erongo Region comes from farming (3%), wages and salaries (73%), cash remittance (5%), business and non-farming (9%) and pension (8%).

Farming

The common farming activity within and around Okongwe, Omatjete, and Otjohorongo areas is communal by small-scale farming (livestock farming) with goats, cattle, sheep and horses, and donkeys. These, especially cattle, sheep, and goats provide the main source of both food and through sales, income for the communities. Livestock farming depends heavily on the rainy season; hence, most farmers usually suffer losses of herds of cattle during prolonged drought periods. Furthermore, commercial crop farming is practiced in isolated areas such as on the banks of ephemeral rivers such as the Omaruru River.

Fishing

According to the Erongo Regional Council (2021), the fishing industry is the third largest economic sector contributed about 6.6% to the Gross Domestic Product (GDP). It is also the largest employer at the coast. The industry at Walvis Bay, and Lüderitz in the Karas Region, employs about 14,000 workers, of which about 43% work on vessels at sea while 57% are involved in onshore processing. Namibia's fishing industry is the country's second biggest export earner of foreign currency after mining. A total of 90% of the national output is exported.

Mining Activities

ineral exploration and mining operations are moderately held activities in the Erongo Region. Exploration activities are common in the Erongo Region and provide livelihood to many of the Region's residents. The mining Sector in the Region has been characterized by the establishment

and expansion of several Uranium mines over the past decade due to an increased demand for this energy source. The Erongo Region also accommodates the mining of commodities such as gold, marble, granite, salt, and semi-precious stones (Erongo Regional Council, 2022).

Mining is practiced at both small-scale (on mining claims owned by communities), medium, and large-scale level, depending on the commodities of interest as well as available technical and financial resources. According to the Centre for Geoscience Research (2015), towns nearby Okongwe settlement, such as Otjohorongo have great potential for granite exploration due to the inselberg topography. There are also already other exploration and mining activities of granite taking place in the area.

Conservancies and Tourism

The Erongo Region is home to two national parks, a seal reserve, four communal conservancies and several private game reserves or farms. There are community-based organizations local people manage and utilize the wildlife and tourism resources in their areas, thereby deriving direct and indirect mutual benefits. The conservancies facilitate employment creation, revenue, in-kind benefits, capacity building and other benefits. With regards to tourism, the Erongo Region offers some of the most spectacular and popular tourist destinations as well as a variety eco-wildlife, cultural and adventure tourism opportunities. The common tourism activities especially in the Okongwe settlement area include game seeing in the community reserves such as the Otjohorongo Community Reserve which is in Omaruru District.

Some commercial farms in the Erongo Region and farms further to Otjohorongo and Omatjete serve as hunting and guest establishments, while some have been converted into game farms or reserves for regional and international tourists. Due to these activities, these commercial farms provide employment to a substantial number of people in the areas (Erongo Regional Council, 2021).

Services Infrastructure

The Okongwe settlement is in a rural setup, but it has the most basic services for the people. The Omatjete Village is found in the Erongo Region that is connected to the rest of the country by the B1 tarred road as well as some good-graded gravel road links, health centres, educational institutions, shops (in towns and settlements) and hospitality facilities, etc. There are private hostels at Ovihitua, Ozondati, Okongwe, Otjohorongo, and Omatjete Settlement primary schools in the Daures Constituency. Some of these services are well-placed around nearby areas.

Okongwe settlement has a Rural Health Centre. The Health Centre includes two houses and was constructed to allow for future expansion.

Water Supply

Common water sources in the areas of Okongwe, Omatjete, and Otjohorongo include boreholes drilled on construction and mining sites. Electricity and water heating are supplied through solar installations on contracts.

Electricity

There is a power line and it supplies electricity to the Omatjete, Otjohorongo villages and surrounding areas. The power distribution line along the DR3712 road supplies the existing Ekungungu mining operations. The power line is from Okongwe to Otjohorongo.

Roads

There are district roads, such as D3712 from Omatjete to the north through Otjohorongo to Okongwe or D2344 from the south and then via local access (gravel) roads to road C35.

6 PUBLIC CONSULTATION PROCESS

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

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

Relevant and applicable national, regional, and local authorities, local leaders, and other interested members of the public were identified. Pre-identified I&APs were contacted directly, while other parties who contacted the Consultant after project advertisement notices in the newspapers, were registered as I&APs upon their request. Newspaper advertisements of the proposed exploration activities were placed in two widely read national newspapers in the region (The Republican and The Namibian Sun). 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 6** below and the complete list of I&APs is provided in **Appendix D**.

Table 6: Summary of Interested and Affected Parties (I&APs)

National (Ministries and State-Owned Enterprises)
Ministry of Environment, Forestry, and Tourism
Ministry of Mines and Energy
Ministry of Health and Social Services
Regional, Local, and Traditional Authorities
Erongo Regional Council
Otjohorongo reserve
General Public
Landowners /Interested members of the public

6.2 Communication with I&APs

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

- A Background Information Document (BID) containing brief information about the proposed facility was compiled **(Appendix E)** and delivered upon request to all new registered Interested and Affected Parties (I&APs).
- Project Environmental Assessment notices were published in New Era and The Namibian Sun Newspaper (16 December and 23 December 2023) (**Appendix F)**, briefly explaining the activity and its locality and inviting members of the public to register as I&APs.
- A consultation meeting was scheduled and held with the I&APs on the 23 January 2023 at Okongwe under a meeting point tree shown in **Figure 18.**

Figure 18: Meeting at Okongwe settlement.

Figure 19: Site notice(s) at the meeting area, local shop, and the Okongwe clinic.

6.3 Feedback from Interested and Affected Parties

Issues raised by I&APs during the consultation meeting have been recorded and incorporated in the ESA Report and EMP. The summary of these key issues are presented in **Table 7** below. The full record of issues raised and responses by EDS are attached under **Appendix H**.

Table 7: Summary of main issues and comments received during the public meeting

Issues	Concern
Draining of Underground Water	Groundwater is starting to be an issue as groundwater levels keep dropping, and community members fear exploration activities may deplete their water resources, especially those downstream.
Un-rehabilitated areas	Previous mineral exploration companies have left uncovered or un-rehabilitated holes on their sites
Road	Previous mineral exploration companies have left the roads damaged and not fit for some of the vehicles to use.
Raising number of exploration activities in the area.	The community fears loss of grazing and residential land due to exploration activities increasing in Erongo Region.
Economic Growth	The community urges for local employment and business support rather than from foreign regions.

7 IMPACT IDENTIFICATION, ASSESSMENT, AND MITIGATION MEASURES

7.1 Impact Identification

Exploration developments/activities are usually associated with some 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 project activities. The potential positive and negative impacts that have been identified from the prospecting activities are listed as follows:

Positive:

- Socio-economic development through employment creation (primary, secondary, and tertiary employment) and skills transfer,
- Open other investment opportunities and infrastructure-related development benefits,
- Produce a trained workforce and small businesses that can service communities and may initiate related businesses,
- Boosting local economic growth and regional economic development,
- Increased support for local businesses through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.

Negative:

- Potential disturbance of grazing land areas,
- Physical land/soil disturbance,
- Impact on local biodiversity (fauna and flora) and habitat disturbance and potential illegal wildlife hunting (poaching) in the area,
- Potential impact on water resources and soils particularly due to pollution,
- Air quality issue: potential dust generated from the project,
- Potential occupational health and safety risks,
- Vehicular traffic safety and impact on services infrastructure such as local roads,
- Vibrations and noise associated with drilling activities may be a nuisance to locals,

- Environmental pollution (solid waste and wastewater),
- Archaeological and heritage resources impact,
- Potential social nuisance and conflicts (theft, damage to properties, etc).

7.2 Impact Assessment Methodology

The Environmental Assessment process primarily ensures that potential impacts that may occur from project activity are identified and addressed with environmentally cautious approaches and legal compliance. The impact assessment method used for this project is 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 8, Table 9, Table 10,** and **Table 11**, respectively.

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

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

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

7.2.1 Extent (spatial scale)

The extent is an indication of the physical and spatial scale of the impact. **Table 8** shows rating of impact in terms of extent of spatial scale.

Table 8: Extent or spatial impact rating

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

7.2.2 Duration

Duration refers to the timeframe over which the impact is expected to occur, measured in relation to the lifetime of the project. **Table 9** shows the rating of impact in terms of duration.

Table 9: 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 10** shows the rating of impact in terms of intensity, magnitude, or severity.

Table 10: 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	Substantial deterioration, death, illness or injury, loss of habitat /	Moderate deterioration, discomfort, partial loss of habitat /	Low deterioration, slight noticeable alteration in	Minor deterioration, nuisance or irritation, minor change in

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

7.2.4 Probability of occurrence

Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment. **Table 11** shows impact rating in terms of probability of occurrence.

Table 11: Probability of occurrence impact rating

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

7.2.5 Significance

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

Once the above factors (**Table 8, Table 9, Table 10,** and **Table 11**) 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 12**).

Table 12: Significance rating scale

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

Positive (+) – Beneficial impact

Negative (-) – Deleterious/ Adverse Impact

Neutral – Impacts are neither beneficial nor adverse

For an impact with a significance rating of high (-ve), mitigation measures are recommended to reduce the impact to a medium (-ve) or low (-ve) significance rating, provided that the impact with a medium significance rating can be sufficiently controlled with the recommended mitigation measures. To maintain a low or medium significance rating, monitoring is recommended for a period 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, ecosystem, property, or a controlled water source. If contamination is to cause harm or impact, it must reach a receptor.

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

This assessment focuses on the three project phases namely, prospecting, exploration, and decommissioning. The potential negative impacts stemming from the proposed activities of the EPL are described, and assessed and mitigation measures are 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 (Adverse) Impacts

The significant negative impacts potentially associated with the proposed prospecting and exploration of Base and Rare Metals, Industrial Minerals, Precious Metals, and Semi-Precious Stones are assessed below:

7.3.1 Disturbance to the grazing areas

The EPL is overlying commercial farms that practice livestock and game farming, the invasive exploration activities such as site clearing, trenching, and drilling can potentially lead to the disturbance of grazing land available to the livestock and wildlife. The landowners greatly depend on farming for subsistence and commercial purposes; therefore, their livelihood may be impacted by any eventual losses.

The effect of exploration work on the land (when done over a wider spatial extent), if not mitigated, may hinder animal husbandry in the area and its surrounding. The project area might experience loss of its pastoral system over time, which minimizes the number of animals on the farms and overall farming activity in the area and lead to loss of livelihoods. Under the status, the impact can be of a low significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a lower significance. The impact is assessed in **Table 13** below.

Table 13: Assessment of the impacts of exploration on grazing areas

Mitigation Status	Extent	Duration	Intensity	Probability	Significance

Pre mitigation	M: -3	M: -3	M/L: -4	M/H: 4	M: -40
Post mitigation	L/M: -2	L/M: -2	L/M: -4	L/M: 2	L: -16

Mitigations and recommendations to lower the possibility of disturbance and loss of the Pastoral system:

- Any unnecessary removal or destruction of grazing land, due to exploration activities must be avoided
- Vegetation found on the site, but not in the targeted exploration areas must not be removed but left to preserve biodiversity and grazing land.
- Workers must refrain from driving off-road and creating unnecessary tracks that may contribute to the loss of grazing land.
- Environmental awareness on the importance of the preservation of grazing land for local livestock should be provided to the workers.

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 flora and fauna ranging from microorganisms to large animals and trees. Endemic species are most at risk, since even the slightest disruption in their habitat can result in extinction.

The presence and movement of the exploration workforce and operation of project equipment and heavy vehicles would disturb livestock and wildlife present farms. The proposed activities may also carry the risk of the potential illegal hunting of local wildlife. This could lead to a reduction of specific faunal species, which may limit tourism (sightseeing and safari) activity in the area.

Additionally, if the exploration sites are not rehabilitated, they could pose a high risk of injuries to animals by falling into holes and pits.

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

Under the status, the impact can be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating. The impact is assessed in **Table 14** below.

Table 14: Assessment of the impacts of exploration on biodiversity

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

Mitigations and recommendations to minimize the loss of biodiversity:

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

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

7.3.3 Generation of Dust (Air Quality)

Dust emanating from site access roads when transporting exploration equipment and supply to and from the site may compromise the air quality in the area. Vehicular movements from heavy vehicles such as trucks would potentially create dust, even though it is anticipated to be low. The hot and dry environment, loose and sandy nature of the substrate and low vegetation cover causes ambient fugitive dust levels. Additionally, activities carried out as part of the exploration works such as drilling would contribute to the dust levels in the air. The medium significance of this impact can be reduced to a low significance rating by properly implementing mitigation measures. The impact is assessed in **Table 15** below.

Table 15: Assessment of the 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 - 1	L - 1	L- 2	L - 1	L - 4

Mitigations and recommendations to minimize dust:

- Exploration vehicles must not drive at a speed of more than 40 km/h to avoid dust generation around the area.
- The Proponent must ensure that the exploration schedule is limited to the given number of days of the week, and not every day. This will keep the vehicle-related dust level minimal in the area.
- A reasonable amount of water should be used on gravel roads, using regular water sprays on gravel routes and near exploration sites to suppress the dust that may be emanating from certain exploration areas on the EPL, in cases of excessive generation of dust.

7.3.4 Water Resources Use

Water resources is impacted by project developments/activities in two ways - through pollution (water quality) or over-abstraction (water quantity) or at times both.

The abstraction of more water than can be replenished from low groundwater potential areas would negatively affect the local communities (communal and commercial farmers and livestock) that depend on the same low potential groundwater resource (aquifer).

The impact of the project activities on the resources would be dependent on the water volumes required by each project activity. Exploration activities use a lot of water, mainly for drilling. However, this depends on the type of drilling methods employed (diamond drilling is more water-consuming compared to drilling methods such as reverse circulation for instance) and the type of mineral being explored for.

The drilling method to be employed for this project's exploration activities is Reverse Circulation. The required water for exploration is about 4,000 litres per month. This water will be used for drilling purposes, as well as cooling and washing of equipment, drinking, and other domestic purposes. Given the low to medium groundwater potential of some project site areas, the Proponent may consider carting some of the water volumes from outside the area and stored in industry-standard water reservoirs/tanks on site. The exact amounts of water required for proposed operations would be dependent on the duration of the exploration works and the number of exploration boreholes required to make a reliable interpretation of the commodities explored. The exploration period is temporally limited, therefore, the impact will only last for the duration of the exploration activities, and ceases upon their completion.

Without the implementation of any mitigation measures, the impact can be rated as medium, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in **Table 16** below.

Table 16: Assessment of the project impact on water resource use and availability

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

Mitigations and recommendations to manage water use:

- Drinking water abstracted from boreholes or supplied by carting should be used efficiently, and recycling and re-using of water on certain site activities should be encouraged, where necessary and possible.

- The Proponent should consider carting water for drilling from elsewhere if the existing boreholes are not sustainable. Agreements of water supply should be made between the farmer / landowner and the Proponent.
- Water reuse/recycling methods must be implemented as far as practicable, e.g. the water used to cool off exploration equipment may be captured and used for the cleaning of project equipment, if possible.
- Water storage tanks must be inspected daily to ensure that there is no leakage.
- Water conservation awareness and saving measures training should be provided to all the project workers in both phases so that they understand the importance of conserving water and therefore be held accountable.

7.3.5 Soil and Water Resources Pollution

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

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

Pre-mitigation measure implementation, the impact significance is low to moderate and upon implementation, the significance will be reduced to low. The impact is assessed in **Table 17** below.

Table 17: Assessment of the project impact on soils and water resources (pollution)

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

Mitigations and recommendations to manage soil and water pollution:

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

  - Identification of oil storage and use locations on site and allocate drip trays and polluted soil removal tools suitable for that specific surface (soil or hard rock cover) on the sites.
  - Maintain equipment and fuel storage tanks to ensure that they are in good condition thus preventing leaks and spills.
  - The oil storage and use locations should be visually inspected for container or tank conditions and spills.
- All project employees must be sensitized to the impacts of soil pollution and advised to follow appropriate fuel delivery and handling procedures.
- The Proponent should develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible.
- Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training and mentor new workers as they get hired.
- Project machines and equipment must be equipped with drip trays to contain possible oil spills when operated on-site.
- Polluted soil must be removed immediately and put in a designated waste-type container for later disposal.
- Drip trays must be readily available and monitored to ensure that accidental fuel spills along the tank trailer path/route around the exploration sites are cleaned on time (soon after the spill has happened).
- Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility.
- Washing of equipment contaminated hydrocarbons, as well as the washing and servicing of vehicles, should take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources.
- Toilet waste must be emptied before reaching capacity and transported to a wastewater treatment facility.

7.3.6 Waste Generation

During the prospecting and exploration phase, domestic and general waste is produced on site. If the generated waste is not disposed of in a responsible way, land pollution may occur on the EPL or around the site. The EPL is in an area of moderate sensitivity to pollution. Improper handling, storage, and disposal of hydrocarbon products and hazardous materials at the site may

lead to soil and groundwater contamination, in case of spills and leakages. Therefore, the exploration programme needs to have appropriate waste management for the site. To prevent these issues, biodegradable and non-biodegradable wastes must be stored in separate containers and collected regularly for disposal at a recognized landfill/dump site. Any hazardous waste that may have an impact on the animals, vegetation, water resources, and the general environment should be handled cautiously. Without any mitigation measures, the general impact of waste generation has a medium significance. The impact will reduce to low significance, upon implementing the mitigation measures. The assessment of this impact is given in **Table 18**.

Table 18: Assessment of waste generation impact

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

Mitigations and recommendations to waste management:

- Workers must be sensitized to dispose of waste in a responsible manner
- No littering is permitted on site.
- After each daily work, the Proponent should ensure that there is no waste left on the sites.
- All domestic and general operational waste produced daily should be contained onsite until such that time it will be transported to designated waste sites.
- No waste may be buried or burned on site or anywhere else.
- The exploration site should be equipped with separate waste bins for hazardous and general/domestic waste.
- Sewage waste must be stored and disposed of as per the facilities' manufacturer's instructions.
- Oil spills must be taken care of by removing and treating soils affected by the spill.
- A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.
- Careful storage and handling of hydrocarbons on site is essential.

- Potential contaminants such as hydrocarbons and wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater.
- An emergency plan should be available for major/minor spills at the site during operation activities (with consideration of air, groundwater, soil, and surface water) and during the transportation of the product(s) to the sites.

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

The use of heavy equipment, especially during drilling, and the presence of hydrocarbons on sites may result in accidental fire outbreaks. This could pose a safety risk to the project personnel and equipment and vehicles too.

If machinery and equipment are not properly stored and packed, the safety risk may be a concern for project workers and local 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 19** below and mitigation measures are provided.

Table 19: Assessment of the impacts of exploration on health and safety

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

Mitigations and recommendations to minimize health and safety issues:

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

- The Proponent must commit to and make provisions for medical check-ups for all the workers at site to monitor the impact of project-related activities on the workers.
- As part of their induction, the project workers must be provided with awareness training on the risks of mishandling equipment and materials on-site as well as health and safety risk associated with their respective jobs.
- When working on-site, employees must be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, and hard hats.
- Heavy vehicles, equipment, and fuel storage site should be properly secured, and appropriate warning signage placed where visible.
- Drilled boreholes that will no longer be in use or to be used later after being drilled must be properly marked for visibility and capped/closed off.
- Ensure that after completion of exploration holes and trenches, drill cuttings are put back into the hole and the holes filled and levelled, and trenches backfilled respectively.
- An emergency preparedness plan must be compiled, and all personnel appropriately trained.
- Workers must not be allowed to consume any intoxicants prior to and during working hours, and must not be allowed on site when under the influence of any intoxicants as this may lead to mishandling of equipment which results in injuries and other health and safety risks.
- The site areas that are considered temporary risks should be equipped with cautionary signs.

7.3.8 Vehicular Traffic Use and Safety

District road D3712 is the main transportation route for all vehicular movement in the area and provides access to the EPL. Traffic volume will, therefore, increase on these district roads during exploration as the project would need delivery of supplies and services on site.

Depending on the project needs, trucks, and medium and small vehicles will frequent the area to and from exploration sites on the EPL. This would potentially increase slow-moving heavy vehicular traffic along these roads, and add additional pressure on the roads. However, transportation of materials and equipment is expected to occur on a limited schedule and only for the duration of the project. Therefore, the risk is anticipated to be short-term, not frequent, and therefore of medium significance. Pre-mitigation, the impact can be rated medium and with the

implementation of mitigation measures, the significance will be low as assessed in **Table 20** below.

Table 20: Assessment of the impacts of exploration on road use (vehicular traffic)

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

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

- Transportation of exploration materials, equipment, and machinery must be limited, to reduce pressure on local roads.
- Heavy truck loads must comply with the maximum allowed speed limit for respective vehicles while transporting materials and equipment/machinery on public and access road.
- The potential carting of water to the site must be done minimally, in containers that can supply and store water for relatively long periods, in order to reduce the number of water-carting trucks on the road.
- Drivers of all project vehicles must be in possession of valid and appropriate driving licenses and adhere to the road safety rules.
- Drivers must drive slowly (40km/hour or less) and be on the lookout for livestock and wildlife as well as residents/travelers.
- The Proponent must ensure that the site access roads are well equipped with temporary road signs to cater to vehicles travelling to and from the site throughout the project cycle.
- Project vehicles must be in a roadworthy condition and serviced regularly to avoid accidents owing to mechanical faults.
- Vehicle drivers must only make use of designated site access roads provided, and as agreed.
- Vehicle drivers are not allowed to operate vehicles while under the influence of alcohol.
- No heavy trucks or project-related vehicles must be parked outside the project site boundary or demarcated areas for such purpose.

- To control traffic movement on site, deliveries from and to the site must be carefully scheduled. This would ideally be during weekdays and between the hours of 8 am and 5 pm.
- The site access road(s) may be upgraded to an acceptable standard to be able to accommodate project-related vehicles as well as farm vehicles.

7.3.9 Noise and vibrations

Prospecting and exploration works (especially drilling) may be a nuisance to surrounding communities due to the noise produced by the activity. Excess noise and vibrations can be a health risk to workers on site. The exploration equipment used for drilling on site is of medium size and the noise level is bound to be limited to the site only, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium s significance. To change the impact significance from the pre-mitigation significance to a low rating, mitigation measures should be implemented. This impact is assessed in **Table 21** below.

Table 21: Assessment of the impacts of noise and vibrations from exploration

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

Mitigations and recommendations to minimize noise:

- Noise from operation vehicles and equipment on site should be kept at acceptable levels.
- The exploration operational times should be set such that no exploration activity is carried out during the night or very early in the morning.
- Exploration hours must be restricted to between 08h00 and 17h00, or at the hours agreed upon by the Proponent and land owners, to avoid noise and vibrations generated by exploration equipment and the movement of vehicles at unfavorable hours.
- When operating the drilling machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.

7.3.10 Disturbance to Archaeological and Heritage Resources

The proposed prospecting and exploration area contain some archaeological significance, therefore, the project indicates that some sections within the boundaries of the proposed project site area are highly sensitive and archaeologically significant in terms of heritage resources that

characterizes the need for a detailed investigation of any other existing archaeological/cultural materials in the areas, and they should be protected either by fencing them off or demarcation for preservation purposes or excluded from any development i.e., no exploration activities should be conducted near these recorded areas through the establishment of 500 m to 1.5 km buffer zones.

Therefore, this impact can be rated as medium significance if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be reduced to a lower rating. The impact is assessed in **Table 22**.

Table 22: Assessment of the impacts of exploration on archaeological & heritage resources

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

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

- On-site workers and contractor crews must be sensitized to exercise and recognize “chance finds heritage” in the course of their work.
- During the prospecting and exploration works, it is important to take note and recognize any significant material being unearthed and make the correct judgment on which actions are to be taken.
- The footprint of the impact of the activities on site must be kept to a minimum, in order to limit the possibility of encountering chance finds within the EPL boundaries. A buffer of 500 meters must be kept on all the archaeological/cultural sites observed within the project site and broader area throughout their stay (duration of their presence) in the area.
- A landscape approach of the site management must consider culture and heritage features in the overall planning of exploration infrastructures within and beyond the license boundaries.
- The Proponent and Contractors must adhere to the provisions of Section 55 of the National Heritage Act in the event significant heritage and cultural features are discovered while conducting exploration works.
- Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project Archaeological Management Plan (AMP)/EMP should be complied.

- An archaeologist or Heritage specialist should be on standby/call to monitor all significant earth-moving activities that may be implemented as part of the proposed project activities, in any areas identified as archaeologically sensitive.
- The site should be monitored for subsurface archaeological materials by a qualified archaeologist, during an excavation near archaeologically sensitive areas.
- Show overall commitment and compliance by adopting a "minimalistic or zero damage approach".
- There must be controlled movement of the contractor, exploration crews, equipment, and all parties involved in the exploration activities, to limit the creation of informal pathways, gully erosion, and disturbance to surface and sub-surface artifacts such as stone tools and other buried materials, etc.

7.3.11 Impact on Local Roads

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

Without any management and or mitigation measures, the impact can be rated as medium and to reduce this rating to low, the measures will need to be effectively implemented. The assessment of this impact is presented in **Table 23**.

Table 23: Assessment of exploration on local services (roads and water)

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

Mitigations and recommendations to minimize the impact on local services:

- Heavy trucks transporting materials and services to the site must be kept on a limited schedule, to avoid daily travel to the site, except in cases of emergencies.
- The Proponent must consider frequent maintenance of local roads on the farms to ensure that the roads are in a good condition for local road users.

7.3.12 Social Nuisance: Local Property intrusion and Vandalism

The presence of some non-resident workers may lead to social annoyance to the local community. This could particularly be a concern if they enter or damage local 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/landowners or users of the land. The damage or disturbance to properties may not only be private but local public properties. The unpermitted and unauthorized entry to private property may cause crashes between the affected property (land) owners and the Proponent.

The impact is rated as of medium significance. However, upon mitigation (post-mitigation), the significance will change from a medium to a low rating. The impact is assessed below **(Table 24)**.

Table 24: Assessment of the social impact of community property damage or disturbance

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

Mitigations and recommendations to minimize the issue of intrusion or vandalism of private property:

- Intrusion and vandalism of private property is strictly prohibited.
- Any workers or site employees found guilty of intruding on private property should be dealt with as per their employer' (Proponent)'s code of employment conduct.
- The project workers should be advised to respect the community and local private property, values, and norms.
- No worker should be allowed to wander or loiter on private property without permission.
- Project workers are not allowed to kill or in any way disturb local livestock and wildlife on farms.
- The cutting down or damaging of vegetation belonging to the affected farmers or neighbouring farms is strictly prohibited.

7.4 Cumulative Impacts Associated with Proposed Exploration

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

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

- **The Impacts on road infrastructure:** The proposed exploration activity contributes cumulatively to various activities such as farming activities and travelling associated with tourism and local daily routines. The contribution of the proposed project to this cumulative impact is however not considered significant, given the short duration, and spatial extent of the intended mineral exploration activities.
- **The use of water:** The impact on water consumption of this project will not be significant, mitigation measures to reduce water consumption during exploration are essential.

7.5 Mitigations and Recommendations for Rehabilitation

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

- Backfilling of trenches and or pits in such a way that subsoil is replaced first, and topsoil replaced last.
- Closing off and capping of all exploration drilling boreholes. The boreholes should not only be filled with sand alone, as the wind may scour the sand and re-establish the holes.
- Carrying away all waste generated from the site.
- Transporting all machinery and equipment as well as vehicles to designated offsite storage facilities.

8 RECOMMENDATIONS AND CONCLUSION

8.1 Recommendations

The potential positive and negative impacts of the proposed exploration activities on EPL No. 8492 were identified, and assessed and appropriate management and mitigation measures (to negative impacts) were made thereof for implementation by the Proponent, their contractors, and project-related employees.

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

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

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

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses, and approvals for the proposed activities should be obtained as required. These include permits and licenses for land use access agreements to explore and ensure compliance with these specific legal requirements.
- The Proponent and all 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, in order 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 and harmonious existence and purpose of the project activities in the community and environment at large. It is also to ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed accordingly. Lastly, should the ECC be issued, the Proponent will be expected to be compliant with the ECC conditions as well as legal requirements governing mineral exploration and related activities.

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