Excel Dynamic Solutions (Pty) Ltd

Environmental Scoping Assessment (ESA) Report for the Proposed Exploration Activities on Exclusive Prospecting License (EPL) No. 8581 near Okombahe Settlement in the Erongo Region, Namibia.

ENVIRONMENTAL ASSESSMENT REPORT: DRAFT

Application No.: 00676

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EXECUTIVE SUMMARY

HD Mining CC (*The Proponent*), has applied to the Ministry of Mines and Energy (MME) for the Exclusive Prospecting License (EPL) No. 8581 on the 2nd of September 2021. However, the approval of the EPL to the proponent requires the EPL to be granted an Environmental Clearance Certificate (ECC) for proposed prospecting works. EPL-8581 covers a surface area of 14 767.3699 hectares (ha). The EPL is in the Erongo Region.

The EPL covers (overlie) Farm Okombahe Reserve No. 139, Okarundu Sud No. 138, Okarundu Nord west No. 118, Okarundu Nord No. 121, and Kawab No. 117. The targeted commodities for the EPL are Base & Rare Metals, Dimension Stone, Industrial Minerals, and Precious Metals.

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

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

Brief Project Description

Planned Activities: Proposed Exploration Methods

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

1. **Non-invasive Technique:**
    - **Desktop Study: Geological mapping**: This mainly entails a desktop review of geological maps and ground observations. This includes the review of geological maps of the area and on-site ground traverses and observations and an update where relevant, of the information obtained during previous geological studies of the area and aero-geophysics survey.
    - **Lithology geochemical surveys**: Rock and soil samples shall be collected and taken for trace element analysis to be conducted by analytical chemistry laboratories to determine if enough target commodities are present. Also, trenches or pits may be dug depending on the commodity (in a controlled environment e.g., fencing off and labelling activity sites) adopting a manual or excavator to further investigate the mineral potential. Soil sampling consists of small pits being dug where 1kg samples can be extracted and sieved to collect 50g of material. As necessary, and to ensure adequate risk mitigations, all major excavations will both be opened and closed immediately after obtaining the needed samples or the sites will be secured until the trenches or pits are closed. At all times, the farm owners and other relevant stakeholders will be engaged to obtain authorization where necessary.

    - **Geophysical surveys:** This will entail data collection of the substrata (in most cases service of an aero-geophysical contractor will be soured), by air or ground, through sensors such as radar, magnetic and electromagnetic to detect any mineralization in the area to ascertain the mineralization. Ground geophysical surveys shall be conducted, where necessary using vehicle-mounted sensors or handheld by staff members, while in the case of air surveys the sensors will be mounted to an aircraft, which then flies over the target area.

2. Invasive Technique:

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

Public Consultation

Public Consultation Activities

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

- A Background Information Document (BID) containing brief information about the proposed facility was compiled and email to relevant Authoritative Ministries, and upon request to all new registered Interested and Affected parties (I&APs).
- Project Environmental Assessment notices were published in The Namibian and New Era Newspapers (08 August 2022 and 15 August 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 landowners on the 05 September 2022 at Okombahe Traditional Authority Offices at 09h00.

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

Potential Impacts identified

The following potential negative impacts are anticipated:

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

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

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

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

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

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

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

Recommendations

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

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

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- These include permits and licenses for land use access agreements to explore and ensuring compliance with these specific legal requirements.
- The Proponent and all their project workers or contractors comply with the legal requirements governing their project and its associated activities and ensure that project

permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.

- Site areas where exploration activities have ceased are rehabilitated, as far as practicable, to their pre-exploration state.
- Environmental Compliance monitoring reports should be compiled and submitted to the DEAF Portal as per provision made on the MEFT/DEAF's portal.

Disclaimer

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

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

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LIST OF ABBREVIATION

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

DEFINITION OF TERMS

Alternative	A possible course of action, in place of another that would meet the same purpose and need of the proposal.
Baseline	Work done to collect and interpret information on the condition/trends of the existing environment.
Biophysical	That part of the environment that does not originate with human activities (e.g. biological, physical and chemical processes).
Cumulative Impacts/Effects Assessment	In relation to an activity, means the impact of an activity that in it may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decision-maker	The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal.
Ecological Processes	Processes which play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy and biological diversity (as an expression of evolution).
Environment	As defined in Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values.

Environmental Management Plan	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled and monitored.
Exclusive Prospecting Licence	Is a license that confers exclusive mineral prospecting rights over land of up to 1000 km2 in size for an initial period of three years, renewable twice for a maximum of two years at a time
Interested and Affected Party (I&AP)	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	All of the animals found in a given area.
Flora	All of the plants found in a given area.
Mitigation	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment.
Monitoring	Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends).
Nomadic Pastoralism	Nomadic pastoralists live in societies in which the husbandry of grazing animals is viewed as an ideal way of making a living and the regular movement of all or part of the society is considered a normal and natural part of life. Pastoral nomadism is commonly

	found where climatic conditions produce seasonal pastures but cannot support sustained agriculture.
Proponent	Organization (private or public sector) or individual intending to implement a development proposal.
Public Consultation/Involvement	A range of techniques that can be used to inform, consult or interact with stakeholders affected by the proposed activities.
Protected Area	Refers to a protected area that is proclaimed in the Government Gazette according to the Nature Conservation Ordinance number 4 of 1975, as amended
Scoping	An early and open activity to identify the impacts that are most likely to be significant and require specialized investigation during the EIA work. Can, also be used to identify alternative project designs/sites to be assessed, obtain local knowledge of site and surroundings and prepare a plan for public involvement. The results of scoping are frequently used to prepare a Terms of Reference for the specialized input into full EIA.
Terms of Reference (ToR)	Written requirements governing full EIA input and implementation, consultations to be held, data to be produced and form/contents of the EIA report. Often produced as an output from scoping.

1. INTRODUCTION

1.1 Project Background

HD Mining CC (hereinafter referred to as *The Proponent*), has applied to the Ministry of Mines and Energy (MME) for the Exclusive Prospecting License (EPL) No. 8581 on the 2nd of September 2021. However, the approval of the EPL to the proponent requires the EPL to be granted an Environmental Clearance Certificate (ECC) for the proposed prospecting works. The EPL is located near Okombahe settlement in the Erongo Region. EPL-8581 covers a surface area of 14 767.3699 hectares (ha).

The EPL covers (overlies) Farm Okombahe Reserve No. 139, Okarundu Sud No. 138, Okarundu Nord West No. 118, Okarundu Nord No. 121, and Kawab No. 117. The target commodities for the EPL are **Base & Rare Metals, Dimension Stone, 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) obtained. Exploration activities are listed among activities that may not occur without an ECC. Therefore, individuals or organizations may not carry out exploration activities without an EIA undertaken and an ECC awarded.

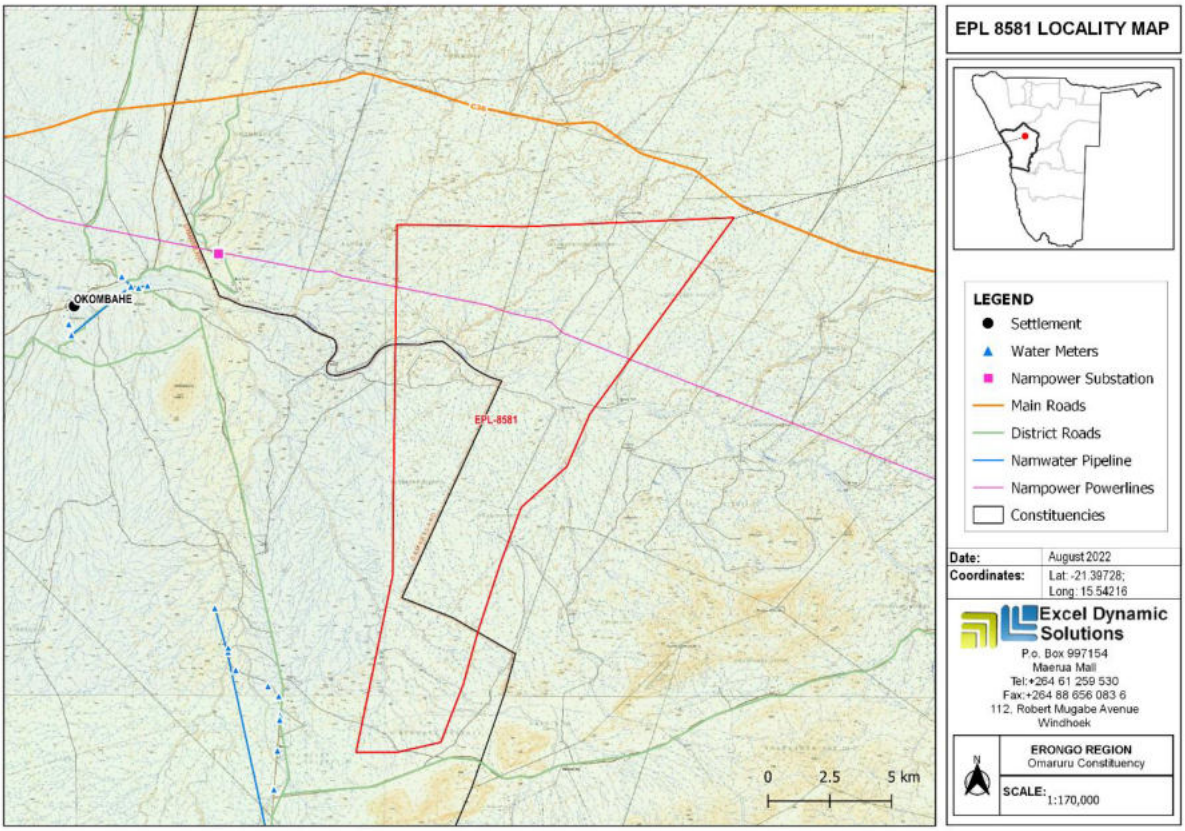

Figure 1: Locality map of EPL-8581 near Okombahe, Erongo Region

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

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

The application for the ECC (**Appendix A**) is compiled and submitted to the Ministry of Environment, Forestry and Tourism (MEFT), the environmental custodian for project registration purposes. Upon submission of an Environmental Scoping Assessment (ESA) Report and Draft

Environmental Management Plan (EMP) (**Appendix B**), an ECC for the proposed project may be considered by the Environmental Commissioner at the MEFT's Department of Environmental Affairs and Forestry (DEAF).

The EIA project is headed by Mr. Nerson Tjelos, a qualified and experienced Geoscientist and experienced EAP. The consultation meeting and reporting process were done by Mr. Silas David and Ms. Iyaloo Nakale and Reviewed by Ms. Rose Mtuleni. The CV of Mr. Nerson 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 local livelihoods. In Namibia, exploration for minerals is done mainly by the private sector, and exploration activities have a great potential to enhance and contribute to the development of other sectors and its activities provide temporary employment, and taxes that fund social infrastructural development. The minerals sector yields foreign exchange and account for a significant portion of gross domestic product (GDP). Additionally, the industry produces a trained workforce and small businesses that can serve communities and may initiate related businesses. Exploration activity fosters several associated activities such as manufacturing of exploration and mining equipment, and provision of engineering and environmental services. The mining sector is a vital part of some of Namibia's development plans, Vision 2030, National Development Plan 5 (NDP5) and Harambee Prosperity Plans (HPPs) I and II. Thus, mining is essential to the development goals of Namibia in contributing to meeting the ever-increasing global demand for minerals, and for national prosperity. Successful exploration on EPL 8581 could lead to the mining of targeted commodities which could contribute towards achieving the goals of the national development plans.

2. PROJECT DESCRIPTION: PROPOSED EXPLORATION ACTIVITY

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

2.1. Prospecting Phase (Non- Invasive Techniques)

2.1.1 Desktop Study: Geological mapping

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

2.1.2 Geophysical surveys

Geophysical surveys entail data collection of the substrata by air or ground, through sensors such as radar, magnetic and/or electromagnetic sensors, to detect and ascertain any mineralization in the area. Ground geophysical surveys 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 collected and taken for trace element analysis to be conducted by analytical chemistry laboratories to determine if enough minerals are present. Additionally, trenches or pits may be dug (in a controlled environment e.g., fencing off and labeling activity sites) to further investigate the mineral potential.

During soil sampling small pits are dug, and 1kg samples can be extracted and sieved to collect about 50g of material. As necessary, and to ensure adequate risk mitigation, all major excavations will close immediately after obtaining the needed samples, or the sites will be secured until the trenches or pits are closed. At all times. The landowners or any 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 based on the local geology, and the trenching, drilling, and assay results of the samples collected. The planned exploration activities aim at delineating the mineral deposits and determining whether the deposits are economically feasible mining resources. **No explosives will be used during the exploration phase.**

2.2.1 Detailed Exploration Drilling

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

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

Other aspects of the proposed exploration operations include:

2.2.2 Accessibility to Site

The EPL is located near the Okombahe Settlement. The EPL is accessible via the C64 tarred road which diverge onto the D2300 that goes through the EPL. Project-related vehicles will use existing roads to access the EPL. Therefore, project-related vehicles will be using these existing roads to access the EPL. The Proponent may need to do some upgrades on the site access road to ensure that it fit to accommodate project-related vehicles, such as heavy trucks.

Material and Equipment

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

Services and Infrastructure

- **Water:** About 25000 liters will be required per month for exploration activities but will not exceed 80 000 liters. This water will be used for cooling down and washing equipment, drilling-related activities, and ablution. Potable water will be made available for the exploration crew (workers) on site in industry water storage tanks.
- **Power supply:** Power required during the operation phase will be provided from diesel generators.
- **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 and monitored to ensure that accidental fuel spills are cleaned up as soon as they have been detected/observed. Fuel may also be stored in jerry cans placed on plastic sheeting to avoid unnecessary contamination of the ground.

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 waste facility operators/owners and authorization or permits will be obtained prior to utilizing these facilities, in the case of production of any hazardous waste.

- **Sanitation and human waste**: Portable ablution facilities will be used and the sewage will be disposed of as according to the approved disposal or treatment methods of the Ablution facility manufacturers.
- **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 immediately on time and contained correctly to prevent polluting the soil.

Safety and Security

- **Storage Site**: Temporary storage areas for exploration material, equipment, and machinery will be required at the campsite and/or exploration sites. Security will be supplied on a 24-

hour basis at the delegated sites for storage. A temporary support fence surrounding the storage site will be constructed to ensure people and domestic animals are not put at risk.

- **Fire management:** A minimum of basic firefighting equipment, i.e., two fire extinguishers will be readily available in vehicles, at the working sites and camps. The exploration crew is required to have the contact details of the nearest fire station at hand in case of a larger scale of fires at site.
- **Health and Safety**: Adequate and appropriate Personal Protective Equipment (PPE) will be provided to every project personnel while working site. A minimum of two first aid kits will be readily available on site to attend to potential minor injuries.

Accommodation

The exploration crew will be accommodated in Okombahe, or a campsite will be set up for the exploration crew near the exploration sites. Exploration activities will take place during daytime only and staff will commute to exploration site (s) from their place of accommodation.

2.3 Decommissioning and Rehabilitation Phase

Once the exploration activities on the EPL come to an end, the Proponent will need to have 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 may force the Proponent to cease the exploration program before predicted closure. Therefore, it is of best practice for the Proponent to ensure the project activities cease in an environmentally friendly manner and the site is rehabilitated.

3. PROJECT ALTENATIVES

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

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" Alternatives

The "no action" alternative implies that the status quo remains, and no prospecting and exploration activities occur on the EPL. Should the proposal of exploration activities on the EPL, be discontinued, none of the potential impacts (positive and negative) identified would occur. If the proposed project is to be discontinued, the current land use for the proposed site will remain unchanged.

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

- Loss of foreign direct investment.
- About 5-10 temporary job opportunities for community members will not be realized.
- No realization of local businesses supports through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.

- Loss of potential income to local and national government through land lease fees, license lease fees and various tax structures.
- Improved geological understanding of the site area regarding the targeted commodities.
- Socio-economic benefits such as skills acquisition to local community members would be not realized.

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

3.1.2 Exploration Location

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

Furthermore, the national mineral resources’ potential locations are also mapped and categorized by the Ministry of Mines and Energy as exclusive prospecting licenses, mining licenses and claims, mineral deposit retention licenses, reconnaissance licenses and exclusive reconnaissance licenses. Available information on EPL 8581 (**Figure 2**) and other licenses are available on the Namibia Mining Cadastral Map here https://maps.landfolio.com/Namibia/

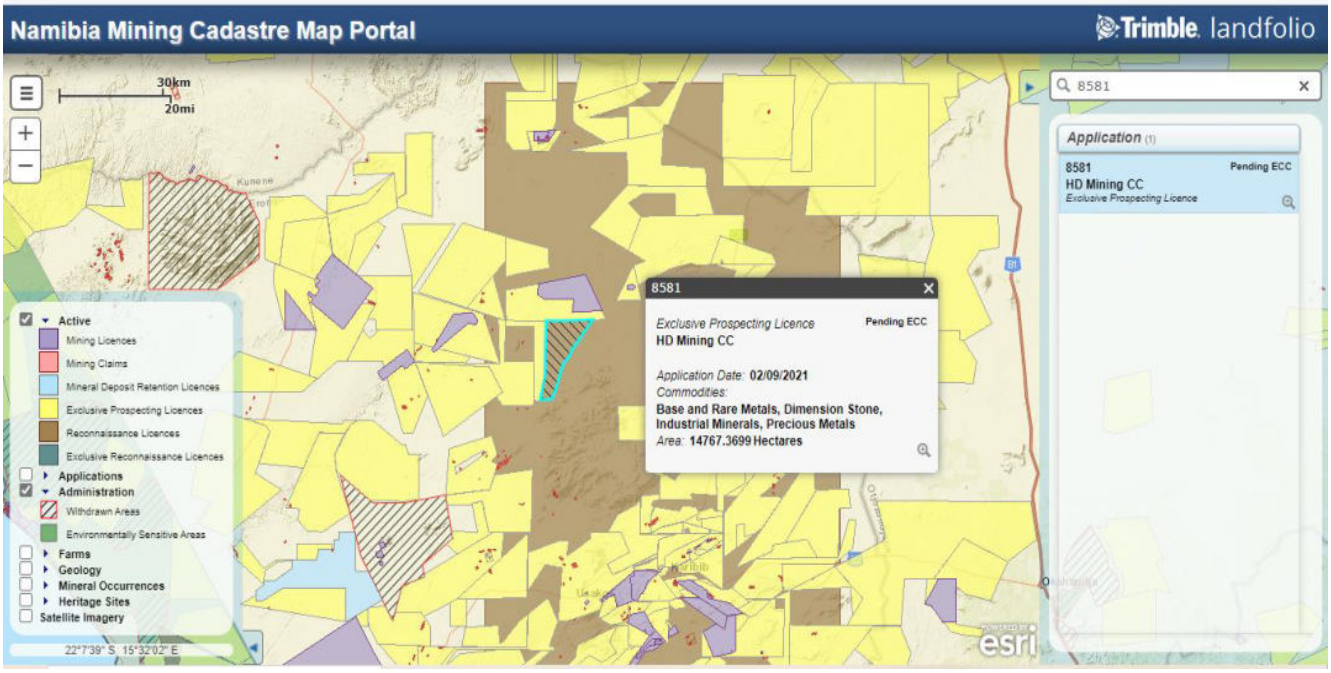

Figure 2: The Location of EPL-8581 on the National Mining Cadastre

3.1.3 Exploration Methods

Both invasive and non-invasive exploration activities as indicated under the project description chapter are expected to take place. If an economically viable discovery is made, the project will proceed to the mining phase upon approval of a mining EIA and issuance of a mining license. If any other alternative viable exploration methods are found to achieve the purpose more effectively and/or efficiently without aggravating any environmental measures put in place, it can be implemented.

4. LEGAL FRAMEWORK: LEGISLATION, POLICIES AND GUIDELINES

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

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

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

The EMA has stipulated requirements to complete the required documentation to obtain an 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, right of other forms of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting and Mining Act, 1992).
- 3.2 other forms of mining or extraction of any natural resources whether regulated by law or not.
- 3.3 Resource extraction, manipulation, conservation and related activities.

4.2 The National Policy on Prospecting and Mining in Protected Areas

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

Other legal obligations that are relevant to the proposed activities of EPL No. 8581 and related activities are presented in **Table 2.**

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

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
The Constitution of the Republic of Namibia, 1990 as amended	The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include: "…the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia…" Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the: "…Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State."	By implementing the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability. Ecological sustainability will be main priority for the proposed development.

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 regards to the permission of entering a state protected area, as well as requirements for individuals damaging objects (geological, ethnological, archaeological and historical) within a protected area. Though the Ordinance does not specifically refer to mining as an activity within a protected area (PA) or recreational area (RA), it does restrict access to PA's and prohibits certain acts therein as well as the purposes for which permission to enter game parks and nature reserves may be granted.	The Proponent will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity of protected areas and other State land
The Parks and Wildlife Management Bill of 2008	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas, in order to conserve biodiversity and in order to contribute to national development.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
The National Policy on Prospecting and Mining in Protected Areas	Requires that, where necessary a Memorandum of Understanding is developed between prospecting and mining Companies, the MET and the MME to set out additional implementation mechanisms.	The Proponent should maintain the integrity of ecosystems and natural resources, and avoiding degradation of areas highly sensitive for their ecological, social and/or cultural heritage value
Minerals (Prospecting and Mining) Act (No. 33 of 1992)	Section 52 requires mineral license holders to enter into a written agreement with affected landowners before exercising rights conferred upon the license holder. Section 52(1) mineral license holder may not exercise his/her rights in any town or village, on or in a proclaimed road, land utilized for cultivation, within 100m of any water resource (borehole, dam, spring, drinking trough etc.) and boreholes, or no operations in municipal areas, etc.), which should individually be checked to ensure compliance. Section 54 requires written notice to be submitted to the Mining Commissioner in the event that the holder of a mineral license (which includes and EPL) intends to abandon the mineral license area.	The Proponent should enter into a written agreement with landowners before carrying out exploration on their land. The Proponent should carry out an assessment of the impact on the receiving environment. 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 68 stipulates that an application for an EPL shall contain the particulars of the condition of, and any existing damage to, the environment in the area to which the application relates and an estimate of the effect which the proposed prospecting operations may have on the environment and the proposed steps to be taken in order to prevent or minimize any such effect. 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 mineral licenses area. These deal with among other matters; clothing and devices; design, use, operation, supervision and control of machinery; fencing and guards; and safety measures during repairs and maintenance.	The Proponent should comply with all these regulations with respect to their employees.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that "No person shall possess [sic] or store any fuel except under authority of a license or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area"	The Proponent should obtain the necessary authorization from the MME for the storage of fuel on-site.

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 considered to be I&APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Erongo Regional Council; therefore, they should be consulted.
Local Authorities Act No. 23 of 1992	To provide for the determination, for purposes of traditional government, of traditional authority councils; the establishment of such traditional authority councils; and to define the powers, duties and functions of traditional authority councils; and to provide for incidental matters.	The Okombahe Settlement is the responsible local Authority of the area therefore they should be consulted.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Traditional Authority Act (Act No. 25 of 2000)	Namibian legislation recognizes both statutory and customary forms of governance. The Traditional Authorities Act recognizes Traditional Authorities (TAs), as the customary leadership of traditional communities as legal entities. The primary functions of these authorities are to promote peace and welfare amongst the community members, as well as to supervise and ensure the observance of the customary law of that community by its members. The Act also stipulates that TAs should ensure that natural resources are used on a sustainable basis that conserves the ecosystem. The implications of this Act are that TAs must be fully involved in the planning of land use and development for their area. It is the responsibility of the TA's customary leaderships, the Chiefs, to exercise control on behalf of the state and the residents in their	Traditional Authority such as the Okombahe Settlement is a key I&AP and will therefore be provided with the opportunity to comment on the proposed project and issue a consent letter.
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)).	The protection (both quality and quantity/abstraction) of water resources should be a priority.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	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)).	
Water Resources Management Act (No 11 of 2013)	The Act provides for the management, protection, development, use and conservation of water resources; and provides for the regulation and monitoring of water services and to provide for incidental matters. The objects of this Act are to: 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.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	The Proponent should ensure compliance with these Acts requirements. The necessary management measures and related permitting requirements must be taken. This done by the consulting with the National Heritage Council of Namibia.
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.
Public Health Act (No. 36 of 1919)	Section 119 states that “no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.”	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	

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 onto existing roads, the relevant permits will be required.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for.
Labour Act (No. 6 of 1992)	Ministry of Labour (MOL) is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry insures effective implementation of the Labour Act no. 6 of 1992.	The Proponent should ensure that the prospecting and exploration activities do not compromise the safety and welfare of workers.

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	These principles are an attempt to: '…encourage the development of socially

Statute	Provisions	Project Implications
	have been developed in conjunction with the International Finance Corporation (IFC), to establish an International Standard with which companies must comply with to apply for approved funding by Equator Principles Financial Institutions (EPFIs). The Principles apply to all new project financings globally across all sectors. **Principle 1:** Review and Categorization **Principle 2**: Environmental and Social Assessment **Principle 3:** Applicable Environmental and Social Standards **Principle 4:** Environmental and Social Management System and Equator Principles Action Plan **Principle 5:** Stakeholder Engagement **Principle 6:** Grievance Mechanism **Principle 7:** Independent Review **Principle 8:** Covenants **Principle 9:** Independent Monitoring and Reporting **Principle 10:** Reporting and Transparency	responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based upliftment and empowering interactions.'
The International Finance Corporation (IFC) Performance Standards	The International Finance Corporation's (IFC) Sustainability Framework articulates the Corporation's strategic commitment to sustainable development and is an integral part of IFC's approach to risk	The Performance Standards are directed towards clients, providing guidance on how to identify risks and

Statute	Provisions	Project Implications
	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 **Performance Standard 5:** Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement	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 Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the

Statute	Provisions	Project Implications
	Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources **Performance Standard 7**: Indigenous Peoples/Sub-Saharan African Historically Undeserved Traditional Local Communities **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	Corporation to achieve its overall development objectives.
The United Nations Convention to Combat Desertification (UNCCD) 1992	Addresses land degradation in arid regions with the purpose to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change. The convention objective is to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and	The project activities should not be such that they contribute to desertification.

Statute	Provisions	Project Implications
	environmental sustainability United Nation Convention	
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.

4.3 Relevant international Treaties and Protocols ratified by the Namibian Government

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

5. ENVIRONMENTAL BASELINE

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

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

5.1 Biophysical Environment

5.1.1 Climate

Okombahe settlement is located in the Erongo Region, north western Namibia, and some 70km from Karibib. It is situated within a transition zone between a semi-arid climate and an arid climate due to its geographic location in the escarpment between the Namib Desert and the Central Plateau.

The arid conditions are as a result of dry descending air and upwelling of the cold Benguela Current. As the Namibian interior is warm (particularly in summer), localized low-pressure systems are created which draws the cold southerly winds towards the inland desert areas. These winds manifest themselves in the form of strong prevailing south-westerly winds, which range from an average of 20 knots (37 km/h) during winter months to as high as 60 knots (110 km/h) during the summer. Winds near Okombahe Area display two main trends; high velocity and frequency south to south-westerly winds in summer and high velocity, low frequency east to north-easterly winds during winter. During winter, the east winds generated over the hot Namib Desert have a strong effect on temperature, resulting in temperature in the upper 30 degrees Celsius and tend to transport plenty of sand. (Shagama, 2022)

5.1.2 Topography

This area is flatter, harsh, and rugged and presents a harder surface than the Coastal Region. The Erongo Region is characterised by gravel plains and rocky outcrops. (Christelis and Struckmeier, 2011). Morphologically, the Central Namib is a steeply inclined plain, rising from sea level to 1 000 m in less than 100 km. The topographic elevation of the EPL area is between 100m to 2200 m above sea level. There is a conspicuous gap in the Great Escarpment in this area and in its place are isolated mountains and inselbergs. **Figure 3** shows the Elevation Model of the EPL and surrounding areas.

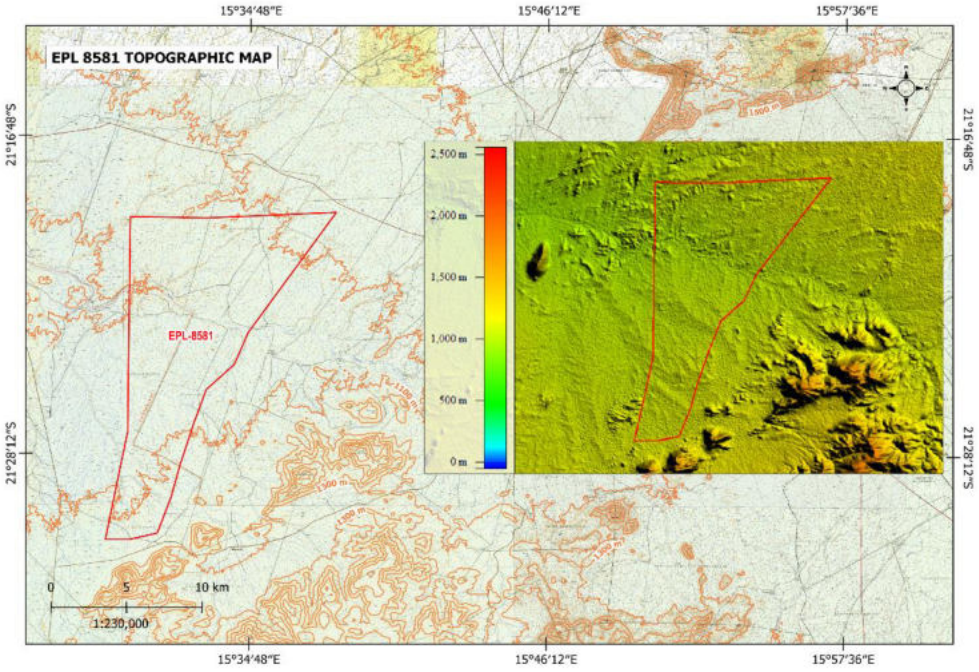

Figure 3: Topographic Map of EPL-8581

5.1.2 Soil and Geology

The northern section of the EPL is covered by Eutric Regosols while the Petric Calcisols covers the southern areas of the EPL.

Calcisols have a significant accumulation of secondary calcium carbonate within one meter of the soil surface. They are commonly found in arid and semi-arid environments with distinct dry seasons. Calcisols typically have a thin, pale brown surface horizon, they occur in level to hilly landscapes under sparse natural vegetation of shrubs, trees, ephemeral grasses and forbs that

are adapted to arid conditions. Most Calcisols have fine to medium texture and good water retention. Internal drainage and root development are impeded if the petrocalcic horizon is strongly and continuously cemented. However, a petrocalcic horizon beneath a thick B horizon can be an asset in an arid climate with very sandy soils, as it allows water to be retained in the root zone for longer. Most Calcisols are susceptible to erosion. The surface is prone to slaking and crusting, thus hampering water infiltration**. Figure 4** below shows the soil types map found within the EPL area.

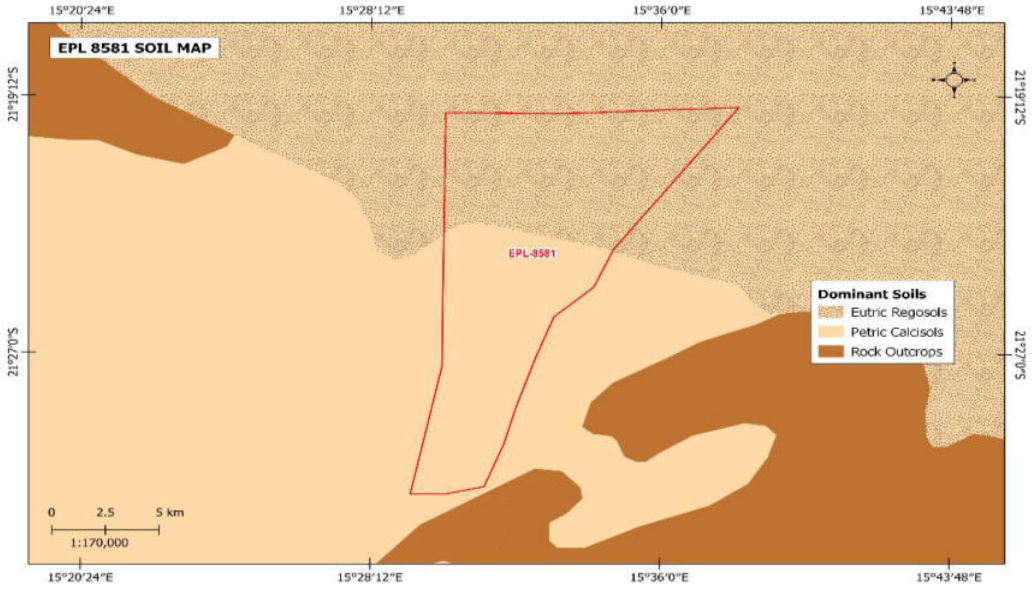

Figure 4: Soil Type Map of EPL-8581

Geology

The Central Namibia region is part is essentially underlain by the inland, northeast-trending, ensialic branch of the well-documented late Proterozoic/early Palaeozoic, Pan-African Damara Orogen. Early Proterozoic (1.8-2.0 Ga) basement gneiss lithologies crop out in a series of inliers that floor the orogen, the most prominent being the Abbabis Inlier. The pre-Damaran basement comprises both meta-sedimentary and metavolcanic rocks, but the most common lithotype is granite gneiss. The Abbabis Inlier is cut by a metadolerite swarm that was probably intruded during the rifting that initiated the Damaran episode. The overlying Damara Sequence comprises the metamorphosed equivalents of fluviatile quartzites, limestones, marls, turbidites and shales. Within the Damara Sequence, the proportion of mafic volcanics and banded iron formations, both welld ocumented hosts of gold mineralisation, is small (Shagama, 2022). The Central Namibia has been intruded by numerous granitoids which define the magmatic belt of the orogen and are concentrated in the Central Zone. The rock units underlying the EPL are of the Cambian and

Namibia Formations that comprise of marbles, granite, mica schists and basalt as shown on the map in **Figure 5.**

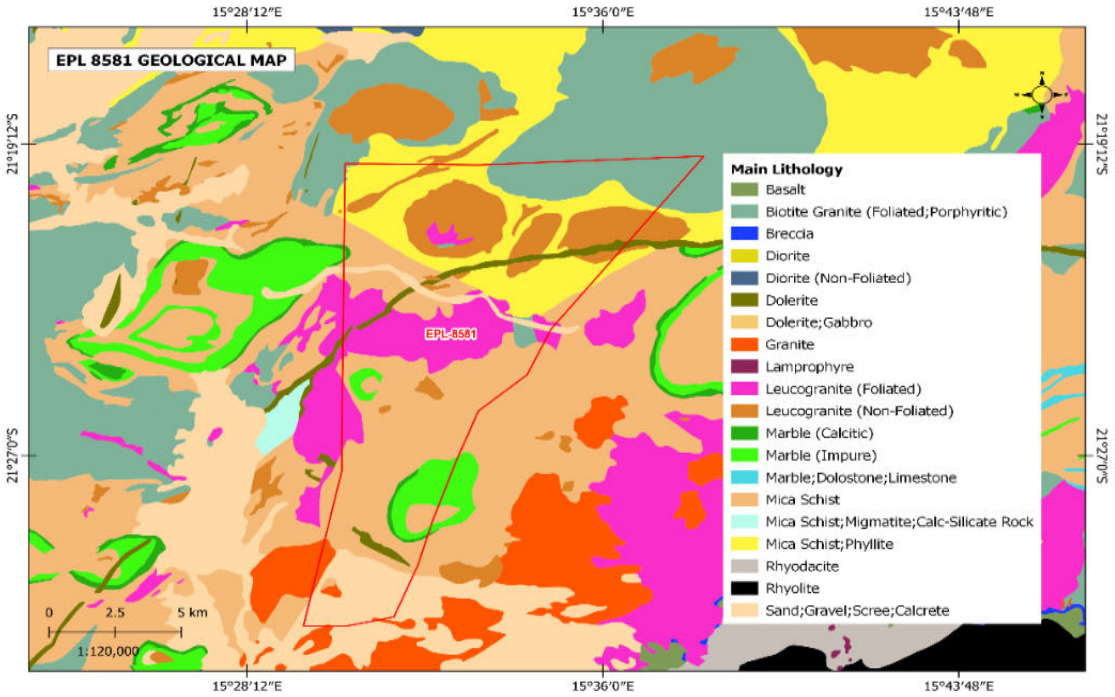

Figure 5: Geological Map of EPL-8581

5.1.3 Hydrology

The EPL lies within an area that is drained by ephemeral rivers within the Ugab catchment and Omaruru River. The noticeable ephemeral rivers running through or nearby the EPL include the major Omaruru Rver (through the Okombahe Settlement in a easterly-westerly direction) and the Goab and Okandjau tributaries. All the watercourses (ephemeral rivers) within the area can be expected to flow after an exceptional rainfall, but only for a short period of time. In terms of groundwater, the Okombahe Area falls under the Central Namib-Windhoek Groundwater Basin. The Central Namib -Windhoek region extends from Windhoekt to the Atlantic Ocean in the west. The Ugab and Kuiseb rivers form the northern and southern boundaries (Christelis and Struckmeier, 2020).

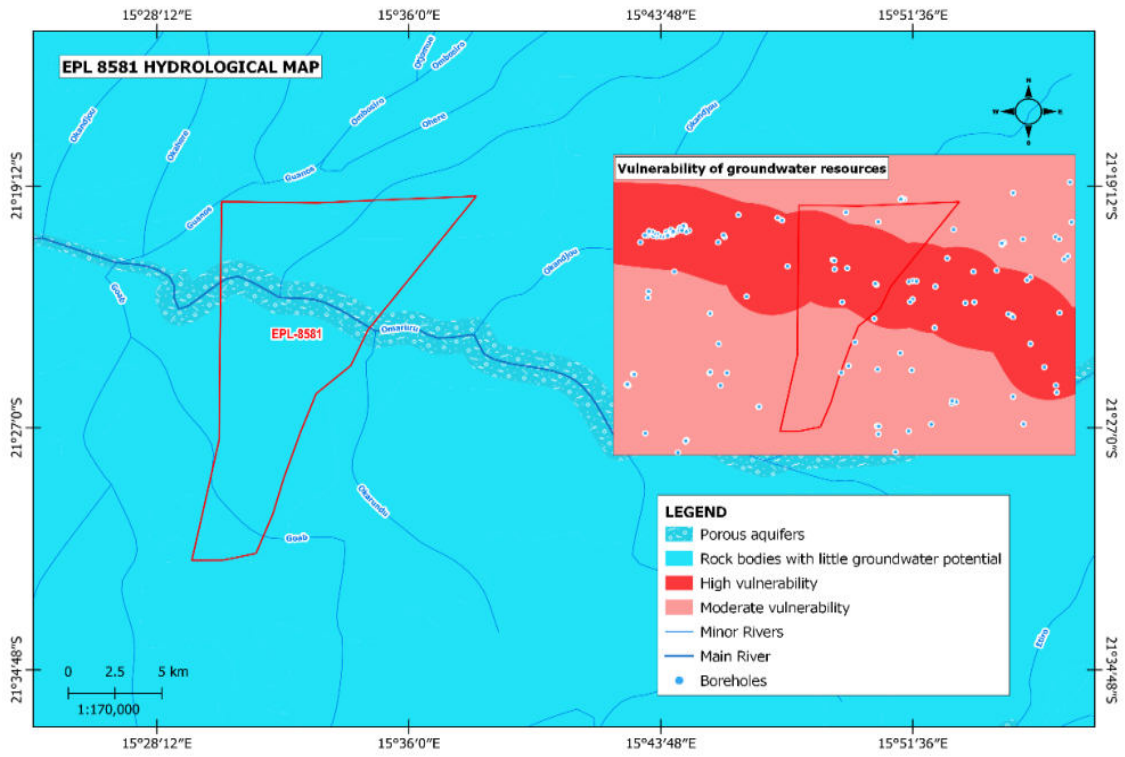

Figure 6: Hydrological Map of EPL-8581

5.1.4 Flora and Fauna

Flora

The EPL area is made up of shrubland of the central escarpment, the western outside boundaries of the EPL is covered by the Acacia hilly shrublands and inselbergs in the south east of the Erongo Mountains. The dominant vegetation structure in the EPL area is known as varied shrubland and grasslands. It however supports a diversity of natural flora such as: the devil's claw (Harpagophytum procumbens subsp. procumbens), tsamma melon (Citrullus lanatus), quiver tree (Aloe dichotoma), and the red-thorn (Acacia reficiens). (NamWater, 2020) **Figure 7** Below shows the vegetation map of the EPL area.

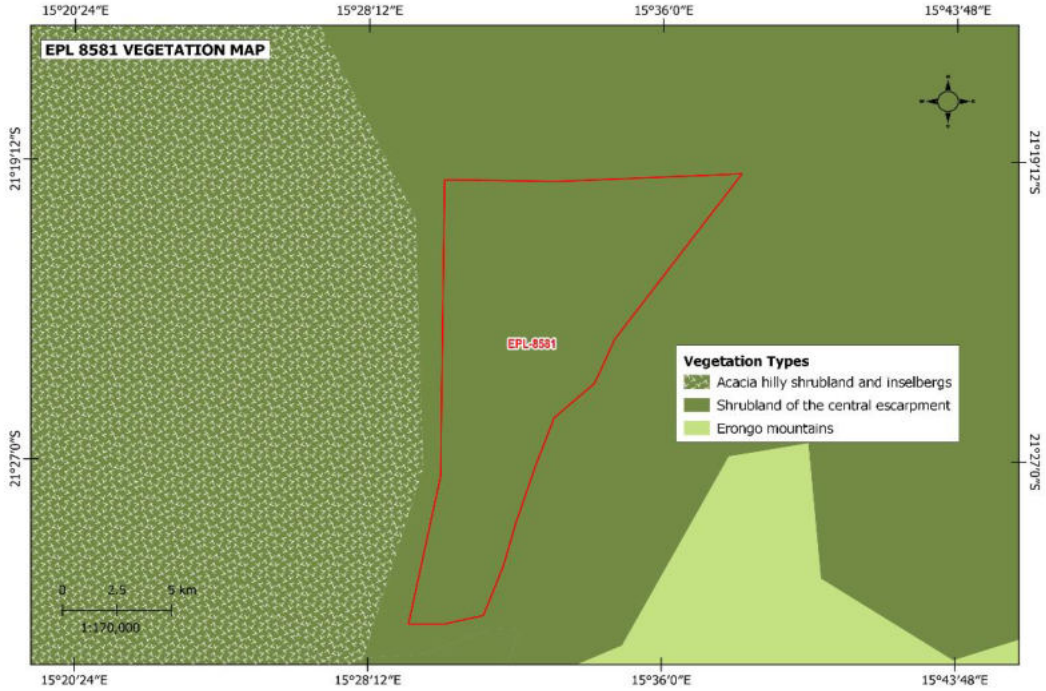

Figure 7: Vegetation Cover for EPL-8581

The EPL vegetation according to site observations is indicated in the images below **Figure 8**

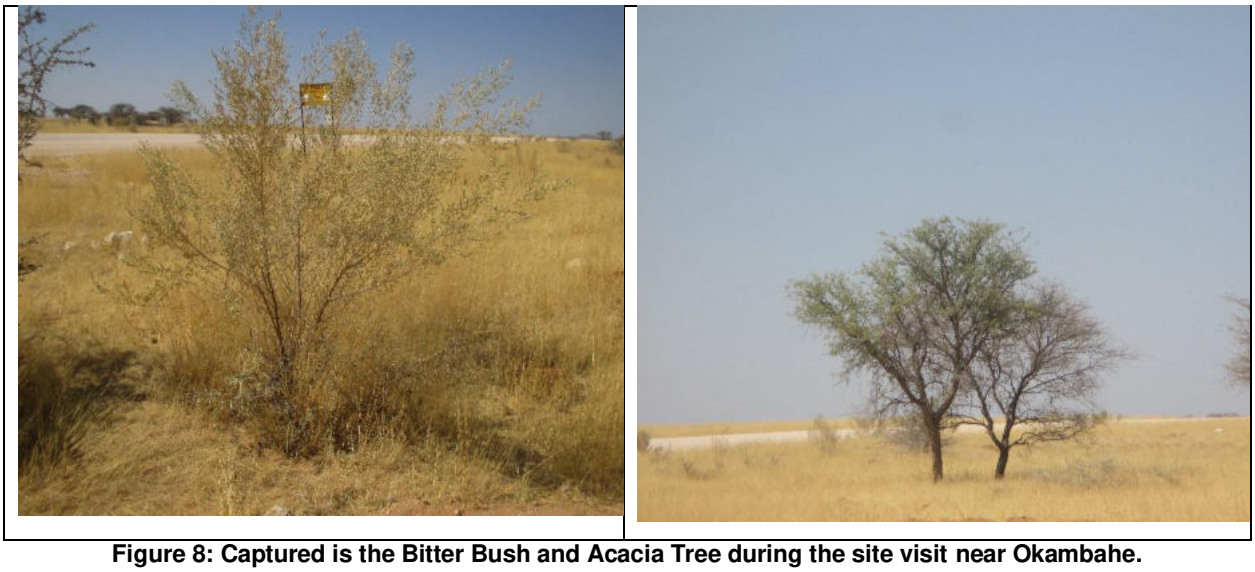

Figure 8: Captured is the Bitter Bush and Acacia Tree during the site visit near Okambahe.

Fauna

The Okombahe area is found in the western highlands biome regions. The area supports a variety of fauna, which including kudu (Tragelaphus strepsiceros), springbok (Antidorcas marsupialis), gemsbok (Oryx gazella), and mountain zebra (Equus zebra hartmannae), lion (Panthera leo), leopard (Panthera pardus), cheetah (Acinonyx jubatus), spotted hyena (Crocuta crocuta), and brown hyena (Hyaena brunnea) (Mendelsohn et al., 2009 as cited by NamWater, 2020). During the site visit, livestock such as cattles and goats on farms Okarundu Nordwest and Okarundu Sud was observed. The site visit was conducted during the day and there was no wildlife observed. This however, does not mean that there is no wildlife and habitats present in the EPL area.

5.2 Heritage and Archaeology

5.2.1 Local Level and Archaeological Findings

The EPL is situated within a transition zone between a semi-arid climate and an arid climate due to its geographic location in the escarpment between the Namib Desert and the Central Plateau. 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 Recent Holocene period, represented by thousands of archaeological sites mainly concentrated in the central highlands, escarpment and Namib Desert.

The Recent Holocene archaeological sequence in Namibia, i.e. the last 5 000 years, is of particular importance because it provides the background evidence for the development and recent history of the indigenous peoples of Namibia before the advent of written historical records during the colonial era. Many archaeological sites from this period are of great significance to the understanding of Namibian history, and some are considered to be of global importance to our understanding of the African past. This assessment involved direct observation of archaeological or cultural and historical sites, positions were fixed by hand-held GPS *etrex 32,* photographed and documented. 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 were recorded, but only sites of local significances were recorded in the surveyed areas. However, at the localized level, the recorded sites/artifacts/ or features which they are of moderate to low significances are presented herein **Table 3** below. These were in different areas within the EPL 8581 boundaries.

Table 3: The findings of Archaeological and Heritage sites on EPL-8581 were recorded during the site observation and surface walk-over.

Waypoint	Location	Elevation	Description of the findings	Heritage Significance	Grading
200	S 21º 19' 26.8'' E 15º 35' 22.8''	1093 m	**A river bed:** This river is tributary that connects to Omaruru river in the southern direction of the EPL 8581.	Moderate/High	3
201	S 21º 19' 28.1'' E 15º 35' 15.3''	1097 m	**Family burial site:** This site consists of one grave.	Moderate/High	3
202	S 21º 23' 38.1'' E 15º 35' 23.7''	1036 m	**Ruins:** Old farm house that is over 50 years. This particular ruin (house) was being occupied by the person who was overseeing farm activities and also he was in-charge over other farm workers in the area.	Moderate	3
203	S 21º 23' 44.9'' E 15º 35' 07.8''	1026 m	**Grave site:** This site contains two graves, and one grave with piles of stones (cairns) that are believed to be very old. They all are unmarked	Moderate/High	3
204	S 21º 23' 35.3'' E 15º 35' 29.5''	1038 m	**Old fire place:** This structure was being used by the farm workers of the area at that time.	Moderate	3
205	S 21º 23' 35.3'' E 15º 35' 29.2''	1037 m	**Ruins:** This house used to accommodate farm workers, which is built by brick clay soil.	Moderate	3
206	S 21º 23' 36.3'' E 15º 35' 28.9''	1035 m	A small structure with a hexagon shape, it is believe this small structure was being used either for grinding mahangu or to raise chicks (it is unclear as to what exactly this structure represents or for what purpose it was built for).	Moderate	3
207	S 21º 19' 27.7'' E 15º 35' 22.7''	1089 m	An old house that was built in the 1950s. This was among the first houses to be built on this farm.	Moderate	3

Figure 9: (A) A family burial site, (B) Old unamarked grave site found on Farm Okarundu.

Figure 10: (A) and (B) are ruins over 50 years old on Farm Okarundu which used to accommodate farm workers in the bygone era.

5.2.2 Surrounding Land Use

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

1. *Section 52 (1) The holder of mineral licence shall not exercise any rights conferred upon such holder by this Act or under any terms and conditions of such mineral 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 must negotiate a contract with landowners to gain access for or mining purposes.

5.3 SOCIO-ECONOMIC CONDITIONS

Population

According to the Namibia Statistic Agency (NSA), 2011. The Erongo Region recorded a population of about 150 400 people. However, the vicinity settlement of the project which is Okombahe, recorded a population of approximately 683 people

Farming

Farming activities in the Erongo Region relatively depends on the rainfall, which is less than 100 mm on average per year. The eastern Erongo Region and certain western parts are characterized by livestock farming on commercial farms and on the communal areas at Okongwe, Otjohongoro, Otjongoro, Ozondati, Omatjette, **Okombahe**, Tubusis, Goabeb and Otjimbingwe.

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. Okombahe settlement is an Inland settlement surrounded by varieties of private game reserves, hunting farms, lodges and guest farms offer the tourist the wildlife and the African experience they come to expect in Namibia.

Mining

The Mining Sector of the Erongo Region has been characterized by the establishment and expansion of a number of 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. The small-scale mining, as a sub-sector of

the mining sector, provides a livelihood to a quite number of people and their dependents, alleviating poverty.

It is estimated that there are about 2,000 small-scale miners in the Erongo Region, operating in cooperatives of about ten people each. These cooperatives can be found mining semi-precious stones at Omatjete, Uis, Okombahe, Omaruru, Tsubusis, Otjimbingwe, Usakos and Walvis Bay.

6. PUBLIC CONSULTATION PROCESS

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

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

Relevant and applicable national, regional, and local authorities, local leaders, and other interested members of the public were identified. Pre-identified I&APs were contacted directly, while other parties who contacted the Consultant after project advertisement notices in the newspapers, were registered as I&APs upon request. Newspaper advertisements of the proposed exploration activities were placed in two widely-read national newspapers in the region (The Namibian Newspaper and New Era Newspaper). The project advertisement/announcement ran for two consecutive weeks 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 4** below and the complete list of I&APs is provided in **Appendix D**.

Table 4: 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
Okombahe Settlement
Gao of the !Oe-≠Gan Traditional Authority
General Public
Land owners /Interested members of the public

Namibia Community Based Tourism Association

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 exploration works was compiled (**Appendix E**) and hand delivered to relevant Authoritative Ministries, and upon request to all new registered Interested and Affected Parties (I&APs);
- Project Environmental Assessment notices were published in The Namibian Newspaper and New Era Newspaper (08 August 2022 and 15 August 2022) (**Appendix F**), briefly explaining the activity and its locality, and inviting members of the public to register as I&APs and submit their comments/concerns;
- Public notices were placed at frequented places at Okombahe Settlement to inform members of the public of the EIA process and inform the public to register as I&APs, as well as submit comments.
- A public meeting was scheduled and held on **05 September 2022**, at The Okombahe Traditional Authority Offices at 09h00 (**Figure 11**)

Figure 11: Meeting held at the Traditional Authority Offices with the settlement elders

6.3 Feedback from Interested and Affected Parties

Issues raised by I&APs have been recorded and incorporated in the environmental report and EMP. The summarized issues raised during the public meeting are presented in **Table 5** below. The issues raised and responses by EDS are attached under **Appendix G** and **H**

Table 5: Summary of main issues and comments received during the public meeting

Issues	Concerns
Employment	Employment is an issue in the area. Therefore, exploration companies should employ the local people (general labour and semi-skilled).
Rehabilitation	Biodiversity rehabilitation is a big concern when it comes to such projects in these areas and this needs to be considered during the operational phase of the project.
Waste Management	The proponent must reach an agreement with the town council on the management of waste generated from the project to prevent pollution

7. IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION MEASURES

7.1 Impact Identification

Proposed developments/activities are usually associated with different potential positive and/or negative impacts. For an environmental assessment, the focus is placed mainly on the negative impacts. This is done to ensure that these impacts are addressed by providing adequate mitigation measures such that an impact's significance is brought under control, while maximizing the positive impacts of the development. The potential positive and negative impacts that have been identified from the prospecting activities are listed as follow:

Positive impacts:

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

Negative impacts:

- Land degradation and Biodiversity Loss
- Generation of dust
- Water Resources Use
- Soil & Water Resources Pollution
- Waste Generation
- Occupational Health & Safety risks
- Vehicular Traffic Use & Safety
- Noise & Vibrations
- Disturbance to Archaeological & Heritage Resources
- Impacts on local Roads
- Social Nuisance: local property intrusion & disturbance
- Social Nuisance: Job seeking & differing Norms, Culture & values

Impacts associate with closure and decommissioning of exploration works.

7.2 Impact Assessment Methodology

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

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

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

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

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

7.2.1 Extent (spatial scale)

Extent is an indication of the physical and spatial scale of the impact. **Table 6** shows rating of impact in terms of extent of spatial scale.

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

Table 7: Duration impact rating

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
Immediate mitigating measures, immediate progress	Impact is quickly reversible, short term impacts (0-5 years)	Reversible over time; medium term (5-15 years)	Impact is long-term	Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources

7.2.3 Intensity, Magnitude / severity

Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. The magnitude of alteration can either be positive or negative. These ratings were also taken into consideration during the assessment of severity. **Table 8** shows the rating of impact in terms of intensity, magnitude or severity.

Table 8: Intensity, magnitude or severity impact rating

Type of criteria	Negative				
	H- (10)	M/H- (8)	M- (6)	M/L- (4)	L- (2)
Qualitative	Very high deterioration, high quantity of deaths, injury of illness / total loss of habitat, total alteration of ecological processes, extinction of rare species	Substantial deterioration, death, illness or injury, loss of habitat / diversity or resource, severe alteration or disturbance of important processes	Moderate deterioration, discomfort, partial loss of habitat / biodiversity or resource, moderate alteration	Low deterioration, slight noticeable alteration in habitat and biodiversity. Little loss in species numbers	Minor deterioration, nuisance or irritation, minor change in species / habitat / diversity or resource, no or very little quality deterioration.

7.2.4 Probability of occurrence

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

Table 9: 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 6**, **Table 7**, **Table 8** and **Table 9)** have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

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

The maximum value per potential impact is 100 significance points (SP). Potential impacts were rated as high, moderate or low significance, based on the following significance rating scale **(Table 10)**.

Table 10: Significance rating scale

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

Positive (+): Beneficial impact

Negative (-): Deleterious/ adverse + Impact

Neutral: Impacts are neither beneficial nor adverse

For an impact with a significance rating of high (-ve), mitigation measures are recommended to reduce the impact to a medium (-ve) or low (-ve) significance rating, provided that the impact with a medium significance rating can be sufficiently controlled with the recommended mitigation

measures. To maintain a low or medium significance rating, monitoring is recommended for a period of time to enable the confirmation of the significance of the impact as low or medium and under control.

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

The risk/impact assessment is driven by three factors:

Source: The cause or source of the contamination.

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

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

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

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

7.3 Assessment of Potential Negative Impacts

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

7.3.1 Land Degradation and Loss of Biodiversity

Fauna: The trenching, pitting and drilling activities done for detailed exploration would result in land degradation, leading to habitat loss for a diversity of flora and fauna ranging from microorganisms to large animals and vegetation. Endemic species are most severely affected since even the slightest disruption in their habitat can results in extinction or put them at high risk of being wiped out.

The presence and movement of the exploration workforce and operation of project equipment and heavy vehicles would disturb not only the domestic animals (livestock) grazing at the explored

sites of the EPL, but also the wildlife present on the explored areas. Disturbance, not only due to human and vehicle movements, but also potential illegal hunting (poaching) of local wildlife by project related workers. This could lead to the loss or a number reduction of specific faunal species which also impacts tourism in the community.

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

Flora: Direct impacts on flora will mainly occur through clearing for the exploration access roads and associated infrastructure. The dust emissions from drilling may affect surrounding vegetation through the fall of dust. Some loss of vegetation has an inevitable consequence on the development. However, given the abundance of the shrubs and site-specific areas of exploration on the EPL, the impact will be localized, therefore manageable. The impact is assessed in **Table 11** below.

Table 11: 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 recommendation to minimize the loss of biodiversity

- The Proponent should 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 should not be unnecessarily removed.
- Movement of vehicle and machinery should be restricted to existing roads and tracks to prevent unnecessary damage to the vegetation.

- No onsite vegetation should 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 producer or seller.
- Design access roads appropriately in a manner that disturbs minimal land areas as possible.
- Vegetation clearing to be kept to a minimum. The vegetation of the site is largely low and open and therefore whole-sale 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 the progressive rehabilitation measures.
- Workers should 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 should be provided to the workers.

7.3.2 Generation of Dust (Air Quality)

Dust emanating from site access roads when transporting exploration equipment and supply (water) to and from site (time-to-time) may compromise the air quality in the area. Vehicular movements from heavy vehicles such as trucks would potentially create dust even though it is not always so severe. The hot and dry environment, loose and sandy nature of the substrate and low vegetation cover causes ambient fugitive dust levels. Additionally, activities carried out as part of the exploration works such as drilling would contribute to the dust levels in the air. The medium significance of this impact can be reduced to a low significance rating by properly implementing mitigation measures. The impact is assessed in **Table 12** below.

Table 12: 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 recommendation to minimize dust

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

7.3.3 Water Resources Use

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

The drilling method to be employed for this project's exploration activities is Reverse Circulation Drilling. The required water for exploration is about 4000 litres per month. This water will be used for drilling purposes such cooling and washing drilling equipment, drinking and other domestic purposes. The exploration period is limited time wise, therefore, the impact will only last for the duration of the exploration activities and ceases upon their completion.

Without the implementation of any mitigation measures, the impact can be rated as medium, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in the **Table 13** below.

Table 13: 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 recommendation to manage water use

- Water reuse/recycling methods should be implemented as far as practicable e.g. the water used to cool off exploration equipment should be captured and used for the cleaning of project equipment, if possible.
- In the case of water cartage, water cartage tanks should be inspected daily to ensure that there is no leakage, resulting in wasted water on site.
- Water conservation awareness and training should be provided to all the project workers to highlight the importance of conserving water and become accountable.

7.3.4 Soil and Water Resources Pollution

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

The spills (depending on volumes spilled on the soils) from 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 is assessed in **Table 14** below.

Table 14: 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 recommendation to manage soil and water pollution

- Spill control preventive measures should be in place on site to management 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 condition and spills.
- All project employees should be sensitized to 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) training and mentor new workers as they get hired.
- Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated on site.
- Polluted soil should be removed immediately and put in a designate waste container for later disposal.
- Drip trays must be readily available on this trailer 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.
- Ablution waste must be transported to a wastewater treatment facility.

7.3.5 Waste Generation

During the prospecting and exploration phase, domestic and general waste is produced on site. If the generated waste is not disposed of in a responsible way, land pollution may occur on the EPL or around the site. Improper handling, storage and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. 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 15**.

Table 15: 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 recommendation to waste management

- Workers should be sensitized to dispose of waste in a responsible manner.
- After each daily works, 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 should be stored as per the instruction of the manufacturers of portable chemical toilets supplied on site and regularly disposed of at the nearest treatment facility
- Oil spills should 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.

7.3.6 Occupational Health and Safety Risks

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

The use of heavy equipment, especially during drilling and the presence of hydrocarbons on sites may result in accidental fire outbreaks. This could pose a safety risk to the project personnel and equipment. If machinery and equipment are not properly stored, the safety risk may be a concern for project workers.

The impact is probable and has a medium significance rating. However, with adequate mitigation measures, the impact rating will be reduced to low. This impact is assessed in **Table 16** below and mitigation measures provided.

Table 16: 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 recommendation to minimize health and safety issues

- The Labour Act's Health and Safety Regulations should be complied with.
- The Proponent should make provision for medical check-up for all the workers at site to monitor the impact of project related activities on them (workers).

- As part of their induction, the project workers should be provided with an awareness training of 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 should be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc.
- Heavy vehicle, 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 should be properly marked for visibility and capped/closed off.
- Ensure that after completion of exploration holes and trenches, drill cuttings are put back into the hole and the holes filled and levelled, and trenches backfilled respectively.
- An emergency preparedness plan should be compiled, and all personnel appropriately trained.
- Workers should not be allowed to consume any intoxicants prior to and during working hours as this may lead to mishandling of equipment which results into injuries and other health and safety risks.
- The site areas that are considered temporary risks should be equipped with cautionary signs.

7.3.7 Vehicular Traffic Use and Safety

The district roads are the main transportation routes for all vehicular movement in the area and provide access to the EPL and connect the project area to other towns such as Omaruru. Therefore, traffic volume will increase on these district roads during exploration as the project would need a delivery of supplies and services on site.

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

Transportation of materials and equipment from and to site during exploration should be carried out on an efficiently structured schedule. However, 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 17** below.

Table 17: 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 recommendation to minimize impact on road safety and related vehicular traffic issues.

- The transportation of exploration materials, equipment and machinery should be limited to reduce the pressure on local roads.
- The heavy truck loads should comply with the maximum allowed speed limit for respective vehicles while transporting materials and equipment/machinery on the public and access roads (40km/h).
- Carting of water to site (from other source of water supply) should be done at limited frequencies in containers that can supply and store water for most of the week, thus reducing the number of water-carting trucks on the road daily.
- Drivers of all project phases' vehicles should be in possession of valid driving licenses and adhere to the road safety rules.
- Drivers should drive slowly (40km/hour or less) and be on the lookout for livestock and wildlife as well as residents/travelers.
- The Proponent should ensure that the site access roads are well equipped with temporary road signs conditions to cater for vehicles travelling to and from site throughout the project's life cycle.
- Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents owing to mechanical faults.
- Vehicle drivers should only make use of designated site access roads provided and as agreed.

- Vehicle's drivers should not be allowed to operate vehicles while under the influence of any intoxicants.
- No heavy trucks or project related vehicles should be parked outside the project site boundary or demarcated areas for such purpose.
- To control traffic movement on site, deliveries from and to site should be carefully scheduled. This should optimally be during weekdays and between the hours of 8:00 and 17:00pm.
- The site access road(s) should be upgraded to an unacceptable standard to be able to accommodate project related vehicles as well as farm vehicles.

7.3.8 Noise and vibrations

Prospecting and exploration work (especially drilling) may be a nuisance to surrounding communities due to the noise produced by the activity. Excessive noise and vibrations can be a health risk to workers on site. The exploration equipment used for drilling on site is of medium size and the noise level is bound to be limited to the site only, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium significance. To change the impact significance from the pre-mitigation significance to low rating, the mitigation measures should be implemented. This impact is assessed in **Table 18** below.

Table 18: 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 recommendation to minimize noise

- Noise from operations' vehicles and equipment on the sites should be 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 mornings.
- Exploration hours should be restricted to between 08h00 and 17h00 to avoid noise and vibrations generated by exploration equipment and the movement of vehicles before or after hours.
- When operating the drilling machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise

7.3.9 Disturbance to Archaeological and Heritage resources

No exploration activities should be conducted near the recorded areas through establishment of buffer zones. Therefore, this impact can be rated as medium significance if there are no mitigation measures in place. Upon implementation of the necessary measures, the impact significance will be reduced to a lower rating. The impact is assessed in **Table 19.**

Table 19: 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 recommendation to minimize impact on archaeological and heritage resources

- If any archaeological material or human burials are uncovered during the course of prospecting or exploration activities, then works in the immediate area should halt, the finds would need to be reported to the heritage authorities and may require inspection by an archaeologist.
- A “No-Go-Area” should be put in place where there is evidence of sub-surface archaeological materials, archaeological site, historical, rock paintings, cave/rock shelter or past human dwellings. It can be a demarcation by fencing off or avoiding the site completely by not working closely or near the known site. The ‘No-Go Option’ might have a NEUTRAL impact significance.
- On-site personnel and contractor crews must be sensitized to exercise and recognize “chance finds heritage” in the course of their work.
- During the prospecting and exploration works, it is important to take note and recognize any significant material being unearthed, and making the correct judgment on which actions should be taken.
- Direct damage to archaeological or heritage sites should be avoided as far as possible and, where some damage to significant sites is unavoidable, scientific/historical data should be rescued.

- All ground works should be monitored and where any stratigraphic profiles in context with archaeological material are exposed, these should be recorded, photographed and coordinates taken.
- The footprint impact of the proposed prospecting and exploration activities should be kept to minimal to limit the possibility of encountering chance finds within the EPL boundaries.
- A landscape approach of the site management must consider culture and heritage features in the overall planning of exploration infrastructures within and beyond the licenses' / EPL boundaries;
- When there is removal of topsoil and subsoil on the site for exploration purposes in archaeologically sensitive areas, the site should be monitored for subsurface archaeological materials by a qualified Archaeologist or Site manager.
- Show overall commitment and compliance by adapting "minimalistic or zero damage approach" throughout the exploration activities.
- In addition to these recommendations above, there should be a controlled movement of the people i.e. a contractor, exploration crews, equipment, setting up of camps and everyone else involved in the prospecting and exploration activities. This is recommended to limit the proliferation of informal pathways, gully erosion and disturbance to surface and sub-surface artifacts such as stone tools and other buried materials, etc.
- There should be a controlled movements of heavy loads such as abnormal vehicles and kinds of heavy duty machineries within the EPL. This means avoiding chances of crossing paths that may lead to the destruction of on and sub-surface archaeological materials
- It is essential that cognizance be taken of the larger historical landscape of the area to avoid the destruction of previously undetected heritage sites. Should any previously undetected heritage or archaeological resources be exposed or uncovered during exploration phases of the proposed project, these should immediately be reported to the heritage specialist or heritage authority (National Heritage Council of Namibia).
- The Proponent and Contractors should adhere to the provisions of Section 55 of the National Heritage Act in event significant heritage and culture features are discovered in the course of exploration works.

- Whoever is going to be in charge of mitigation and monitoring measures should have the authority to stop any exploration or construction activities that is in contravention with the National Heritage Act of 2004 and National Heritage Guidelines as well as the overall project EMP.

7.3.10 Impact on Local Roads/Routes

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

Without any management and or mitigation measures, the impact can be rated as medium and to reduce this rating to low, the measures will need to be effectively implemented. The assessment of this impact is presented in **Table 20**.

Table 20 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 recommendation to minimize the impact on local services

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

7.3.11 Social Nuisance: Local Property intrusion and Disturbance or Damage

The presence of some non-resident workers may lead to social annoyance to the local community. This could particularly be a concern if there is cause of damage or vandalism to local private and public properties. The private property of the locals could be houses, fences, vegetation, or domestic and wild animals (livestock and wildlife) or any properties of economic or cultural value to the farm/land owners/users. The unpermitted and unauthorized entry to private properties may cause crashes between the affected property (land) owners and the Proponent.

Pre-implementation of mitigation measures, the impact is rated as of medium significance. However, upon mitigation (post-mitigation), the significance will change from medium to low rating. The impact is assessed below **(Table 21)**.

Table 21: Assessment of social impact of community property damage or disturbance

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

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

- The exploration crew must respect the farmer/landowner's property and avoid intruding or vandalising property.
- Any workers or site employees that will be found guilty of intruding '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's private properties, values, and norms.
- No worker should be allowed to wander or loiter in private yards or fences without permission.
- The 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.

7.3.12 Social Nuisance: Job seeking and Differing Norms, Culture and Values

The proposed project activities could attract a potential influx of people from outside the project area in search of job opportunities. Such influxes during the exploration phase may lead to social annoyance to the local community as well as conflicts. This is generally considered a concern, given the current unemployment rate of youth in Namibia. People from other areas/regions may learn of the project intentions through EIA notices in the newspapers and be forced to go look for work opportunities in the area. Different people may come with different ways of living to the area, which could interfere with the local norms, culture, and values. This could potentially lead to social crashes between the locals and outsiders (out-of-area job seekers).

Pre-implementation of mitigation measures, the impact is rated as of medium significance. However, upon mitigation (post-mitigation) – see mitigation measures below, the significance will change from medium to low rating. The impact is assessed in **Table 22** below.

Table 22: Social impact assessment of outsiders' influx into the area (job seeking related)

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 recommendation measure to reduce the influx of outsiders into the area

- The Proponent should prioritize the employment of more local people. This is to avoid the influx of outsiders into the area for works that can be done by the locals.
- The locals employed during exploration should be provided with the necessary training of skills required for the project to avoid bringing in many out-of-area employees. This way, skills development and transfer is ensured in the local community.
- The workers should be engaged in health talks and training about the dangers of infectious disease.
- Out-of-area workers that may be employed (due to their unique work skills) on site should be sensitized on the importance of respecting the local values and norms, so that they can co-live-in harmony with the local communities during the duration of their employment period on site.

7.4 Cumulative Impacts Associated with Proposed Exploration

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

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

- **Impact on road infrastructure:** The proposed exploration activity contributes cumulatively to various activities 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 local extent (site-specific) of the intended mineral exploration activities.
- **The use of water:** While the contribution of this project will not be significant, mitigation measures to reduce water consumption during exploration are essential.

7.5 Mitigations and Recommendations for Rehabilitation

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

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

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusion

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

8.2 Recommendations

The potential positive and negative impacts stemming from the proposed exploration activities on EPL No. 8581 were identified, assessed and appropriate management and mitigation measures (to negative impacts) made thereof for implementation by the Proponent, their contractors and project related employees.

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

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

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

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

9. References

Bender, K. B. (1999). Coastal Profile of the Erongo Region. Windhoek: Environmental Information Service Namibia.

Chetty, P. (2021). Visual Impact Assessment for the Proposed Exploration and Mining Activities of Dimension Stone on Mining Claims 71609-71617 in the Erongo Region. Johannesburg: Unpublished.

Christelis, G and Struckmeier, W (eds). (2011). Groundwater in Namibia: An Explanation to the Hydrogeological Map. Windhoek: Department of Water Affairs.

Erongo Consulting Group. (2020). Environmental & Social Impact Assessment Report for the Electrification of Goagomes in the Okombahe Area with 41 Dwellings, Erongo Region, Namibia. Swakopmund. Ministry of Environment, Forestry and Tourism.

Erongo Regional Council. (2021). Available from http://www.erc.com.na/erongoregion/demographics/.

GCS Water & Environmental Consultants. (2017). National Environmental Assessment for the MTC Namibia 100% Population Coverage Project: Landscape Specialist Report. Windhoek: MTC Namibia.

Kanime, N. and Kamwi, J. (2021). Biodiversity Assessment for the Exploration of suitable rocks that can be quarried for Dimension Stone and Industrial Minerals production on Mining Claims 71609 – 71617 in the Erongo Region. Windhoek: Unpublished.

Meteoblue. (2021). Okombahe Weather & Historical Data from Meteoblue: Wind Rose Okombahe Available from https://www.meteoblue.com/en/weather/archive/windrose/okombahe_namibia_3354676

Mushi, R. (2021). Desktop Archaeological and Heritage Impact Assessment for the Proposed Exploration Activities on Exclusive Prospecting License (EPL) No. 8639
, Located Near Okombahe Settlement in the Erongo Region, Namibia. Windhoek. Unpublished.

Namibia Statistics Agency. (2011). 2011 Population and Housing Census: Erongo Regional Profile 2011, Census Regional Profile. Windhoek: Namibia Statistics Agency.

NamWater. (2020). Okombahe Water Supply Scheme: Environmental Management Plan. Wnindhoek. Ministry of Environment. Forestry and Tourism.

OMAVI Geotechnical & Geo-Environmental Consultants. (2020): Environmental Scoping Assessment (ESA) Report for the Proposed Exploration Activities of Dimension Stone on Exclusive Prospecting License (EPL) 7008 near Karibib in the Erongo Region, Namibia. Windhoek. Ministry of Environment. Forestry and Tourism.

Resilient Environmental Solutions. (2019). Environmental Assessment for Exclusive Prospecting License (EPL) 7264 near Talismanis in the Omaheke Region. Windhoek: Resilient Environmental Solutions.

Shagama, F., (2022) Environmental Scoping Assessment (ESA) Report for the Proposed Exploration Activities of Dimension Stone and Precious Metals on Exclusive Prospecting License (EPL) No. 7343 near Okombahe Settlement in the Erongo Region. Unpublished.

Steven, N. M., Badenhorst, F. P., and Petyel, V .F. W. (1994). A review of gold occurrences in the Northern and Central Zones of the Damara Orogen and the underlying mid-Proterozoic basement, central Namibia. Cape Town.

World Weather Online. (2021). Okombahe - Erongo Region, Namibia Weather. Available https://www.worldweatheronline.com/okombahe-weather-averages/erongo/na.aspx