

**ENVIRONMENTAL SCOPING ASSESSMENT (ESA) FOR THE  
PROPOSED SMALL SCALE MINING ACTIVITIES OF MINING CLAIM  
(MC) No. 74744 LOCATED SOUTHEAST OF KHORIXAS IN THE  
KUNENE REGION, NAMIBIA.**

**ENVIRONMENTAL ASSESSMENT REPORT: FINAL**

**ECC Application Reference: APP- 006179**

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.....  
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.....  
Proponent Signature

**October 2025**

## EXECUTIVE SUMMARY

Boris Micha Schmidbauer (The Proponent) applied to Ministry of Industries, Mines and Energy MIME for small-scale mining on MC No. 74744 on 21 June 2023, which was granted on 12 August 2024. The proponent has now requested to add base and rare commodities to the claim. Approval is contingent on obtaining an Environmental Clearance Certificate (ECC) from Ministry of Environment, Forestry and Tourism. The Mining claims (MC) No. 74744 cover a total surface area of 17. 2399 hectares and located about 50 km, southeast of Khorixas in the Kunene region as shown in **(Figure 1)**. The existing small-scale mining activities currently conducts semiprecious stones as commodities of interest; However, the proponent has applied for addition of Base and Rare to be conduct on MC No. 74744. The target commodities are **Base & Rare Metals** (Applied for), **Semi-Precious Stones**.

Mining and all extraction-related activities are among the listed activities that may not be undertaken without an ECC under the Environmental Impact Assessment (EIA) Regulations, Subsequently, to ensure that the proposed activity is compliant with the national environmental legislation, the 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 may be considered by the Environmental Commissioner at the MEFT's Department of Environmental Affairs and Forestry (DEAF).

### Brief Project Description

#### Planned Activities: Proposed Exploration Methods

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

1. **Non-invasive Technique:** This phase includes geological & geophysical mapping, reviewing of existing geological maps, field evaluation, and soil sampling.

- 2. Invasive Technique:** The phase includes trenching, pitting, and open-pit extraction using jack hammer. The extracted minerals are crushed from large boulders into smaller fragments to facilitate transportation. The minerals are then packed into bulk bags and transported from the mining claim to a processing facility for refinement.

## **Public Consultation**

### **Public Consultation Activities**

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

- A Background Information Document (BID) containing information about the proposed exploration activities was compiled and emailed upon request to all registered Interested and Affected Parties (I&APs).
- Project Environmental Assessment notices were published in New Era Newspaper (**26 March 2025 and 2 April 2025**) and The Namibian Newspaper (**26 March 2025 and 2 April 2025**) briefly explaining the activity and its locality, inviting members of the public to register as I&APs and submit their comments/concerns.
- A consultation meeting was scheduled and held with the affected landowners, Traditional authority and Conservancy on **01 July 2025** at **10h00**.
- The issues and concerns raised were noted and used to form part of the ESA Report and EMP.

### **Potential Impacts identified**

The following potential impacts are anticipated:

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

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

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Conclusions**

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

The public was consulted as required by the EMA and its 2012 EIA Regulations (Sections 21 to 24). This was done via the two newspapers (New Era and The Namibian) used for this environmental assessment. A consultation through a face-to-face meeting with directly affected conservancy, traditional authority and interested party's village whereby they raised concerns and comments on the proposed project activities.

The issues and concerns raised by the registered I&APs formed the basis for this Report and the Draft EMP. The issues were addressed and incorporated into this Report whereby mitigation

measures have been provided thereof to avoid and/or minimize their significance on the environmental and social components. Most of the potential impacts were found to be of medium-rating significance. With the effective implementation of the recommended management and mitigation measures, will particularly see a reduction in the significance of adverse impacts that cannot be avoided completely (from 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 reduced impacts' rating or maintain a low rating but to also ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away too.

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

## **Recommendations**

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

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

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

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

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

## **Disclaimer**

Excel Dynamic Solutions (EDS) warrants that the findings and conclusion contained herein were accomplished following the methodologies outlined in the Scope of Work and Environmental Management Act (EMA) of 2007. These methodologies are described as representing good customary practice for conducting an EIA of a property to identify recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist 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 small scale mining work is reliable. However, the Consultant cannot and does not warrant or guarantee that the information provided by the other sources is accurate or complete. The conclusions and findings outlined in this report are strictly limited in time and scope to the date of the evaluations. No other warranties are implied or expressed.

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

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

Appendix B: Draft Environmental Management Plan (EMP)

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

Appendix D: Proof of Public Consultation (Newspaper Adverts, Attendance register, and Meeting Minutes)

Appendix E: Non- Exclusive Licence Prospecting Licence

## LIST OF ABBREVIATIONS

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

S	Section
TOR	Terms of Reference

## DEFINITION OF TERMS

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

<b>Environmental Management Plan</b>	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled, and monitored.
<b>Interested and Affected Party (I&amp;AP)</b>	Concerning the assessment of a listed activity includes - (a) any person, group of persons, or organization interested in or affected by the activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity. Mitigate - practical measures to reduce adverse impacts. Proponent – as defined in the Environmental Management Act, a person who proposes to undertake a listed activity. Significant impact - means an impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.
<b>Fauna</b>	All of the animals that are found in a given area.
<b>Flora</b>	All of the plants are found in a given area.
<b>Mitigation</b>	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment.
<b>Monitoring</b>	Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends).
<b>Nomadic Pastoralism</b>	Nomadic pastoralists live in societies in which the husbandry of grazing animals is viewed as an ideal way of making a living and the regular movement of all or part of the society is considered a normal and natural part of life. Pastoral nomadism is commonly

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

Boris Micha Schmidbauer (The Proponent) applied to Ministry of Industries, Mines and Energy MIME for small-scale mining on MC No. 74744 on 21 June 2023, which was granted on 12 August 2024. The proponent has now requested to add base and rare commodities to the claim. Approval is contingent on obtaining an Environmental Clearance Certificate (ECC) from Ministry of Environment, Forestry and Tourism. The Mining claims (MC) No. 74744 cover a total surface area of 17. 2399 hectares and located about 50 km, southeast of Khorixas, in the Kunene region as shown in **(Figure 1)**. The existing small-scale mining activities currently conducts semiprecious stones as commodities of interest; However, the proponent has applied for addition of Base and Rare to be conduct on MC No. 74744. The target commodities are **Base & Rare Metals (Applied for), Semi-Precious Stones**.

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



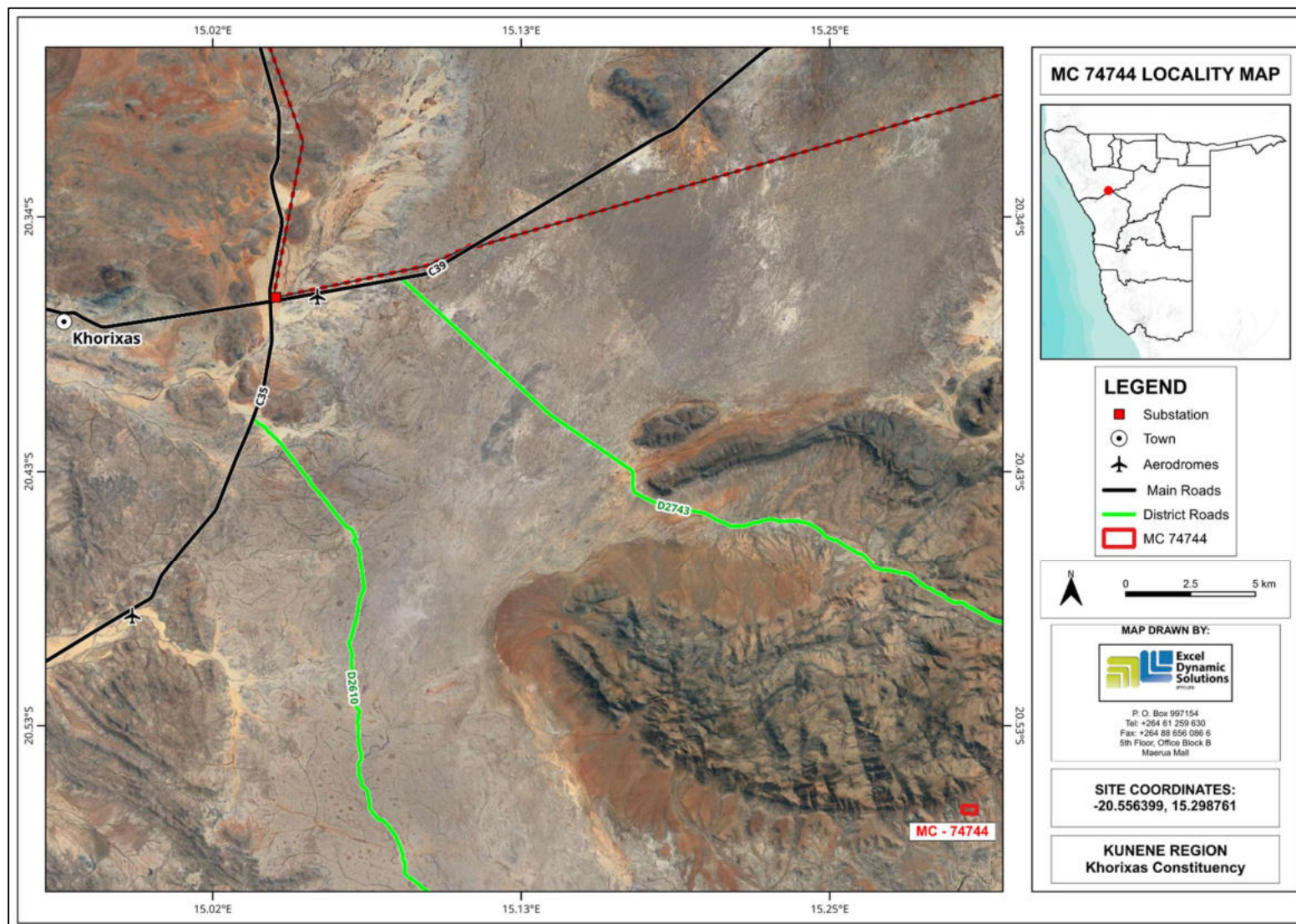


Figure 1: Locality map for MC No. 74744

Boris Micha Schmidbauer: MC No. 74744

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

To satisfy the requirements of the EMA and its 2012 EIA Regulations, The Proponent appointed EDS to conduct the required Environmental Assessment (EA) process on their (Proponent's) behalf, and thereafter, apply for an ECC for small-scale mining works on the MC. There were no formal Terms of Reference (ToR) provided to EDS by the Proponent. The consultant, instead, relied on the requirements of the Environmental Management Act (No. 7 of 2007) (EMA) and its EIA Regulations (GN. No. 30 of 2012) to conduct the study.

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

The EIA project is headed by Ms. Iyaloo Nakale, a qualified and experienced EAP. The consultation process and reporting are done by Mr. Wilbard Angula and. EAP CV is presented in **Appendix C**.

## **1.3 Motivation for the Proposed Project**

The mining industry is one of the largest contributors to the Namibian economy, it contributes to the improvement of local livelihoods. In Namibia, the exploration and mining of minerals is done mainly by the private sector. Mining activities have a great potential to enhance and contribute to the development of other sectors and their activities do provide temporary employment, and taxes that fund social infrastructural development. The minerals sector yields foreign exchange and accounts for a significant portion of the gross domestic product (GDP). Additionally, the industry produces a trained workforce and small businesses that can serve communities and may initiate related businesses. Small Scale Mining activity fosters several associated activities such as the manufacturing of exploration and mining equipment, and the provision of engineering and environmental services. The mining sector forms a vital part of some of Namibia's development plans, namely. 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 mining on MC No. 74744 would contribute towards achieving the goals of the national development plans.

## **2 PROJECT DESCRIPTION: PROPOSED SMALL SCALE MINING ACTIVITY**

The description of small-scale mining activities and stages to be undertaken is presented below as well as the decommissioning of the mining activities

### **2.1 Pre-development Phase**

The small-scale mining phase includes reconnaissance and mapping to identify the lithostratigraphic packages. In addition, literature review, fieldwork (lithological (soil/rock) mapping and sampling) will be conducted to verify desktop work.

### **2.2 Operation and maintenance phase**

During this phase, extraction of minerals and all associated mining activities are carried out on site. Both, invasive and non-invasive activities are expected to take place. Non-invasive activities include detailed mapping. No ground geophysical surveys are planned for the project. While invasive activities include trenching, pitting, and open-pit extraction using excavators. The extracted minerals are crushed from large boulders into smaller fragments to facilitate transportation. The minerals are then packed into bulk bags and transported from the mining claim to a processing facility for refinement.

An initial 10-year period of small-scale mining period is predicted. The selection of the potential mineralization model and mineral targets will be based on the local geology, trenching, and assay results of the samples collected. No explosives will be used during the operational phase.

Other aspects of the proposed small-scale mining activities operations include:

#### **2.2.1 Accessibility to Site**

The MC is accessible via informal tracks from District roads D2743, D2610 that divert from the C35, C39 routes from Khorixas (**refer to Figure 1**). It is also anticipated that, if necessary, new tracks to the different targeted mining sites within the MC will be created. The Proponent may need to do some upgrade on the site access roads to ensure that they fit to accommodate project related vehicles, such as heavy trucks.

#### **2.2.2 Material and Equipment**

The requirements of the small-scale mining activities program in terms of vehicles and equipment include: (4X4) vehicles, a truck, water tanks, Excavators, front-end loader, 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 MC area.

### 2.2.3 Services and Infrastructure

- **Water:** Water for the operational phase will be obtained from the nearest existing boreholes near the mining claims or nearest town. This will be done upon agreement with the land owners and relevant authorities. In the case that the proponent needs to source water elsewhere, this needs to be carried out through the appropriate approval channels from relevant authorities. Estimated monthly water consumptions are at +- 3000 litres, which includes water for drinking, sanitation, cooking, dust control, as well as washing equipment. Potable water will also be made available for the mining crew (workers) on site.
- **Power supply:** Power required during the operation phase will be provided from diesel generators. About 500 litres of diesel will be used per day.
- **Fuel (diesel for generators and other equipment):** The fuel (diesel) required for small-scale mining activities equipment will be stored in a tank mounted on a mobile trailer, and drip trays will be readily available on this trailer and monitored to ensure that accidental fuel spills are cleaned up as soon as they have been detected/observed. Fuel may also be stored in a bunded diesel bowser on site, and in jerry cans placed on plastic sheeting to avoid unnecessary contamination of soils.

### 2.2.4 Waste Management

The site will be equipped with secured waste bins for each type of waste (i.e., domestic, hazardous, and recyclable). Depending on the amount generated, waste will be sorted and collected as regularly as possible and taken to the nearest certified landfill site. An agreement will need to be reached with different waste management facility operators/owners and authorization or permits will be obtained before utilizing these facilities, in the case of generation of any hazardous waste.

- **Sanitation and human waste:** Portable ablution facilities will be used, and the sewage will be disposed of according to the approved disposal or treatment methods of the waste products.
- **Hazardous waste:** Drip trays and spill control kits will be available on-site to ensure that oil/fuel spills and leaks from vehicles and equipment are captured on time and contained correctly before polluting the site.

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

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

### 2.2.5 Safety and Security

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

### 2.2.6 Accommodation

The mining crew will be accommodated in Khorixas, but if accommodation camp is to be set up near the MC, necessary arrangements will be made with the land owners. All mining activities will take place during daytime only and staff will commute to site(s) from their place of accommodation if they are not accommodated on site.

## 2.3 Decommissioning and Rehabilitation Phase

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

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

### **3 PROJECT ALTERNATIVES**

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

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

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

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

#### **3.1 Types of Alternatives Considered**

##### **3.1.1 The "No-go" Alternative**

The “no action” alternative implies that the status quo remains, and nothing happens. Should the proposal of small-scale mining activities on the MC, 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 is considered and a comparative assessment of the environmental and socio-economic impacts of the “no action” alternative, is undertaken to establish what benefits might be lost if the project is not implemented. The key losses that may never be realized if the proposed project does not go ahead include:

- Loss of foreign direct investment.
- Temporary job opportunities for community members will not be realized.

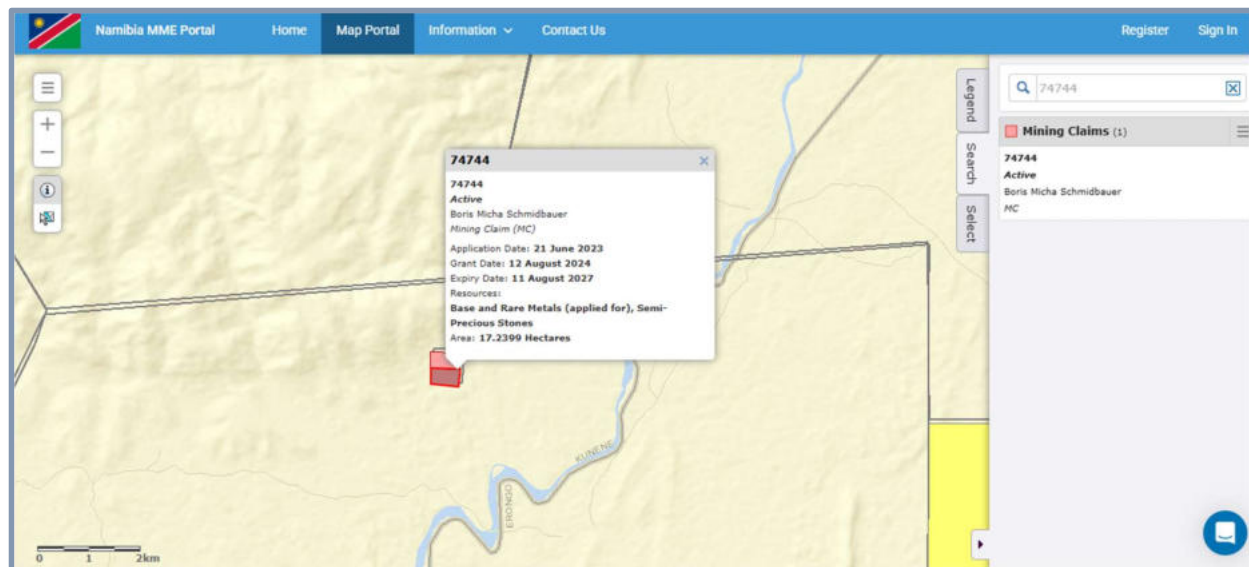
- No realization of local business supports through the procurement of consumable items such as Personal Protective Equipment (PPE), machinery spare parts, lubricants, etc.
- Loss of potential income to the local and national government through land lease fees, license lease fees, and various tax structures.
- Improved geological understanding of the site area regarding the targeted commodities.
- Socio-economic benefits such as skills acquisition for local community members would be not realized.

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

### **3.1.2 Small-scale mining activities Location**

The mining location is dependent on the geological setting (regional and local), the economic geology, and the small-scale mining activities and mining history of the MC area. Therefore, finding an alternative location for the planned mining 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 a sufficient surface area for future related facilities, should an economic mineral deposit be defined.

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



**Figure 2: The location of MC no. 74744 on the National Mining Cadastre.**

### **3.1.3 Small-scale mining 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 small-scale mining EIA and issuance of a mining claims license. If any other alternative viable mining 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

Small-scale mining activities have legal implications associated with certain applicable legal standards. A summary of applicable and relevant international policies and Namibian legislation, policies, and guidelines for the proposed development is given in this section (**Table 1**). This summary serves to inform the project Proponent, Interested and Affected Parties, and the decision-makers at the DEAF, of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled to establish the proposed small scale mining activities.

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

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

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

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

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

Other legal obligations that are relevant to the proposed mining activities on MC No. 74744 and related activities are presented.

**Table 1: Applicable local, national and international standards, policies and guidelines governing the proposed Small-Scale Mining activities.**

<b>Legislation / Policy / Guideline: Custodian</b>	<b>Relevant Provisions</b>	<b>Implications for this project</b>
<p>The Constitution of the Republic of Namibia, 1990 as amended:</p> <p><b>Government of the Republic of Namibia</b></p>	<p>The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include:</p> <p>“...the duty to investigate complaints concerning the over-utilization of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia...”</p> <p>Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the:</p> <p>“...Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State.”</p>	<p>By implementing the environmental management plan, the establishment will be conformant to the constitution in terms of environmental management and sustainability.</p> <p>Ecological sustainability will be the main priority for the proposed development.</p>
<p>Minerals (Prospecting and</p>	<p>Section 52 requires mineral license holders to enter into a written</p>	<p>The Proponent should enter into a written agreement with</p>

<b>Legislation / Policy / Guideline: Custodian</b>	<b>Relevant Provisions</b>	<b>Implications for this project</b>
<p>Mining) Act (No. 33 of 1992): <b>Ministry of Industries, Mines and Energy (MIME)</b></p>	<p>agreement with affected landowners before exercising rights conferred upon the license holder.</p> <p>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.</p> <p>Section 54 requires a written notice to be submitted to the Mining Commissioner if the holder of a mineral license intends to abandon the mineral license area.</p> <p>Section 68 stipulates that an application for Mining Claims (MC) shall contain the particulars of the condition of, and any existing damage to, the environment in the area to which the application relates and an estimate of the effect which the proposed prospecting operations may have on the environment and the measures to be taken to prevent or minimize any such effect.</p>	<p>landowners before exploring their land. On communal land, the Proponent should engage the landowners for land use consent.</p> <p>An assessment of the impact on the receiving environment should be carried out.</p> <p>The Proponent should include as part of their application for the MC, measures by which they will rehabilitate the areas where they intend to carry out mineral small scale mining activities.</p> <p>The Proponent may not carry out mining activities within the areas limited by Section 52 (1) of this Act.</p>

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
	Section 91 requires that rehabilitation measures should be included in an application for a mineral license.	
Nature Conservation Amendment Act, No. 3 of 2017: <b>Ministry of Environment, Forestry and Tourism (MEFT)</b>	National Parks are established and gazetted following the Nature Conservation Ordinance, 1975 (4 of 1975), as amended. The Ordinance provides a legal framework concerning 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 PAs and prohibits certain acts therein as well as the purposes for which permission to enter game parks and nature reserves may be granted.	<p>The MC fall within the !Khorob !Goreb Communal Conservancy. Therefore, the Proponent will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity of protected areas and another State land in the Project Site area.</p> <p>The Proponent will also be required to comply with the existing and planned local operational management plans, regulations, and guidelines.</p>
The Parks and Wildlife Management Bill of 2008: <b>Ministry of Environment, Forestry and Tourism (MEFT)</b>	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas, to	

<b>Legislation / Policy / Guideline: Custodian</b>	<b>Relevant Provisions</b>	<b>Implications for this project</b>
	conserve biodiversity and contribute to national development.	
Mine Health & Safety Regulations, 10th Draft: <b>Ministry of Health and Social Services (MHSS)</b>	Makes provision for the health and safety of persons employed or otherwise present in the mineral licenses area. These deal with among other matters; clothing and devices; design, use, operation, supervision, and control of machinery; fencing and guards; and safety measures during repairs and maintenance.	The Proponent should comply with all these regulations concerning their employees.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001): <b>Ministry of Industries, Mines and Energy (MIME)</b>	Regulation 3(2)(b) states that “No person shall possess [sic] or store any fuel except under the authority of a license or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 Liters or less in any container kept at a place outside a local authority area”	The Proponent should obtain the necessary authorization from the MIME for the storage of fuel on-site.
The Regional Councils Act (No. 22 of 1992): <b>Ministry of Urban and Rural Development (MURD)</b>	This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning perspective, their duties include, as described in section 28 “to undertake the planning of the development of the region for which it	The relevant Regional Councils are IAPs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Kunene Regional Council; therefore, they should be consulted.

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
	has been established with a view to physical, social and economic characteristics, urbanization patterns, natural resources, economic development potential, infrastructure, land utilization pattern and sensitivity of the natural environment.	
Water Act 54 of 1956: <b>Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR)</b>	<p>The Water Resources Management Act 11 of 2013 is present without regulations; therefore, the Water Act No 54 of 1956 is still in force:</p> <p>Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duty of care to prevent pollution (S3 (k)).</p> <p>Provides for control and protection of groundwater (S66 (1), (d (ii))).</p> <p>Liability of clean-up costs after closure/abandonment of an activity (S3 (l)). (l)).</p>	<p>The protection (both quality and quantity/abstraction) of water resources should be a priority.</p> <p>The permits and license required thereto should be obtained from MAFWLR's relevant Departments (these permits include Borehole Drilling Permits, Groundwater Abstraction &amp; Use Permits, and when required, Wastewater / Effluent Discharge Permits).</p>
Water Resources Management Act (No 11 of 2013): <b>Ministry of Agriculture, Fisheries, Water and Land</b>	The Act provides for the management, protection, development, use, and conservation of water resources; provides for the regulation and monitoring of water services, and provides for incidental matters. The objects of this Act are to:	

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
<b>Reform (MAFWLR)</b>	Ensure that the water resources of Namibia are managed, developed, used, conserved, and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (S68).	
National Heritage Act No. 27 of 2004: <b>Ministry of Education, Innovation, youth, Sports Arts, and Culture (MEIYSAC)</b>	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	The Proponent should ensure compliance with this act's requirements. The necessary management measures and related permitting requirements must be taken. This is done by consulting with the National Heritage Council (NHC) of Namibia. The management measures should be incorporated into the Draft EMP.
The National Monuments Act (No. 28 of 1969): <b>Ministry of Education, Innovation, youth, Sports Arts, and</b>	The Act enables the proclamation of national monuments and protects archaeological sites.	

<b>Legislation / Policy / Guideline: Custodian</b>	<b>Relevant Provisions</b>	<b>Implications for this project</b>
<b>Culture (MEIYSAC)</b>		
Soil Conservation Act (No 76 of 1969): <b>Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR)</b>	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.
Local Authorities Act No. 23 of 1992	To provide for the determination, for purposes of traditional government, of traditional authority councils; the establishment of such authority councils; and to define the powers, duties and functions of traditional authority councils; and to provide for incidental matters.	The Khorixas town council is the responsible local Authority of the area therefore they should be consulted.
Public Health Act (No. 36 of 1919): <b>Ministry of Health and Social Services (MHSS)</b>	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)	Details various requirements regarding the health and safety of labourers.	



Legislation / Policy / Guideline: Custodian	Relevant Provisions	Implications for this project
1617): <b>Ministry of Health and Social Services (MHSS)</b>		
Public and Environmental Health Act No. 1 of 2015: <b>Ministry of Health and Social Services (MHSS)</b>	The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.	The Proponent should ensure that the project infrastructure, vehicles, equipment, and machinery are designed and operated in a way that is safe, or not injurious or dangerous to public health, and that the noise and dust emissions which could be considered a nuisance remain at acceptable levels.  Public and environmental health should be preserved and remain uncompromised.
Atmospheric Pollution Prevention Ordinance (1976): <b>Ministry of Health and Social Services (MHSS)</b>	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for section 4(1) (a) of the ordinance.	The proposed project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality. Mitigation measures should be put in place and implemented on-site.
Hazardous Substance Ordinance, No.	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal, and	The Proponent should handle and manage the storage and use of hazardous substances on

<b>Legislation / Policy / Guideline: Custodian</b>	<b>Relevant Provisions</b>	<b>Implications for this project</b>
14 of 1974: <b>Ministry of Health and Social Services (MHSS)</b>	dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	site so that they do not harm or compromise the site environment
Road Traffic and Transport Act, No. 22 of 1999: <b>Ministry of Works and Transport (Roads Authority of Namibia)</b>	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto. Should the Proponent wish to undertake activities involving road transportation or access to existing roads, the relevant permits will be required.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided, the relevant permits must be applied for.
Labour Act (No. 6 of 1992): <b>Ministry of Justice, Labour Relations (MJLR)</b>	Ministry of Labour, Industrial Relations and Employment Creation is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety, and enhanced labour market services for the benefit of all Namibians. This ministry insures the effective implementation of the Labour Act No. 6 of 1992.	The Proponent should ensure that the small-scale mining activities do not compromise the safety and welfare of workers.

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

The international policies, principles, standards, treaties, and conventions applicable to the project are listed in **Table 2** below.

**Table 2: International Policies, Principles, Standards, Treaties and Convention applicable to the project**

Statute	Provisions	Project Implications
<b>Equator Principles</b>	<p>A financial industry benchmark for determining, assessing, and managing environmental and social risk in projects (August 2013). The Equator Principles have been developed in conjunction with the International Finance Corporation (IFC), to establish an International Standard with which companies must comply to apply for approved funding by Equator Principles Financial Institutions (EPFIs). The principles apply to all new project financings globally across all sectors.</p> <p>Principle 1: Review and Categorization</p> <p>Principle 2: Environmental and Social Assessment</p> <p>Principle 3: Applicable Environmental and Social Standards</p> <p>Principle 4: Environmental and Social Management System and Equator Principles Action Plan</p> <p>Principle 5: Stakeholder Engagement</p> <p>Principle 6: Grievance Mechanism</p> <p>Principle 7: Independent Review</p>	<p>These principles are an attempt to: ‘...encourage the development of socially responsible projects, which subscribe to appropriately responsible environmental management practices with a minimum negative impact on project-affected ecosystems and community-based upliftment and empowering interactions.’</p>

Statute	Provisions	Project Implications
	<p>Principle 8: Covenants</p> <p>Principle 9: Independent Monitoring and Reporting</p> <p>Principle 10: Reporting and Transparency</p>	
<p><b>The International Finance Corporation (IFC) Performance Standards</b></p>	<p>The International Finance Corporation's (IFC) Sustainability Framework articulates the Corporation's strategic commitment to sustainable development and is an integral part of the IFC's approach to risk management. The Sustainability Framework comprises IFC's Policy and Performance Standards on Environmental and Social Sustainability, and IFC's Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability.</p> <p>As of 28 October 2018, there are ten (10) Performance Standards (Performance Standards on Environmental and Social Sustainability) that the IFC requires project Proponents to meet throughout the life of an investment. These standard requirements are briefly described below.</p> <p>Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts</p>	<p>The Performance Standards are directed toward clients, guiding how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business sustainably, including stakeholder engagement and disclosure obligations of the Client (Borrower) concerning 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</p>

Statute	Provisions	Project Implications
	<p>Performance Standard 2: Labour and Working Conditions</p> <p>Performance Standard 3: Resource Efficient and Pollution Prevention and Management</p> <p>Performance Standard 4: Community Health and Safety</p> <p>Performance Standard 5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement</p> <p>Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</p> <p>Performance Standard 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities</p> <p>Performance Standard 8: Cultural Heritage</p> <p>Performance Standard 9: Financial Intermediaries (FIs)</p> <p>Performance Standard 10: Stakeholder Engagement and Information</p> <p>A full description of the IFC Standards can be obtained from <a href="http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-framework">http://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-framework</a></p>	<p>opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives.</p>

Statute	Provisions	Project Implications
	<a href="#">social-standards?cq_ck=1522164538151#ess1</a>	
<b>The United Nations Convention to Combat Desertification (UNCCD) 1992</b>	<p>Addresses land degradation in arid regions with the purpose to contribute to the conservation and sustainable use of biodiversity and the mitigation of climate change.</p> <p>The convention's objective is to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas to support poverty reduction and environmental sustainability United Nations Convention.</p>	The project activities should not be such that they contribute to desertification.
<b>Convention on Biological Diversity 1992</b>	<p>Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, to ensure their conservation and sustainable use.</p> <p>Promote the protection of ecosystems, and natural habitats, and the maintenance of viable populations of species in natural surroundings.</p>	Removal of vegetation cover and destruction of natural habitats should be avoided and where not possible minimized.
<b>Stockholm Declaration on the Human Environment, Stockholm (1972)</b>	It recognizes the need for: "a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.	Protection of natural resources and prevention of any form of pollution.

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

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

## **5 ENVIRONMENTAL AND SOCIAL BASELINE**

The project activities will be undertaken in specific environmental and social conditions. The understanding of these conditions helps in identifying sensitive environmental features that may need to be protected through the implementation of certain management and mitigation measures. The summary of selected physical, biological and social baseline information of the project area is provided below as per the site visit conducted by the Environmental Consultant and relevant published reports and books.

The climatic conditions of the project area are described using the weather station data for the area obtained from the meteoblue website (2025).

### **5.1 Biophysical Environment**

#### **5.1.1 Climate**

The proposed small-scale mining activity will operate 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 MC. 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 Kunene Region, Khorixas settlement and Braunfels area's. Further information was obtained by the consultant during the site visit.

The Köppen-Geiger climate classification for Khorixas is BSh, considered as a semi-arid to arid climate, with hot summers and mild, dry winters. Rainfall is low and highly seasonal, which is common in Namibia. Temperatures remain high year-round, with hottest months (October–December) averaging around 34°C. Winters are cooler, with mean maximums of 27–28°C. Nighttime lows range from 11–12°C in winter (July–August) to 18–20°C in summer (January–March). Rainfall is concentrated in summer (January–March), with February being the wettest month of approximately 80 mm. The dry season (May–September) sees little to no rain (0–5 mm).

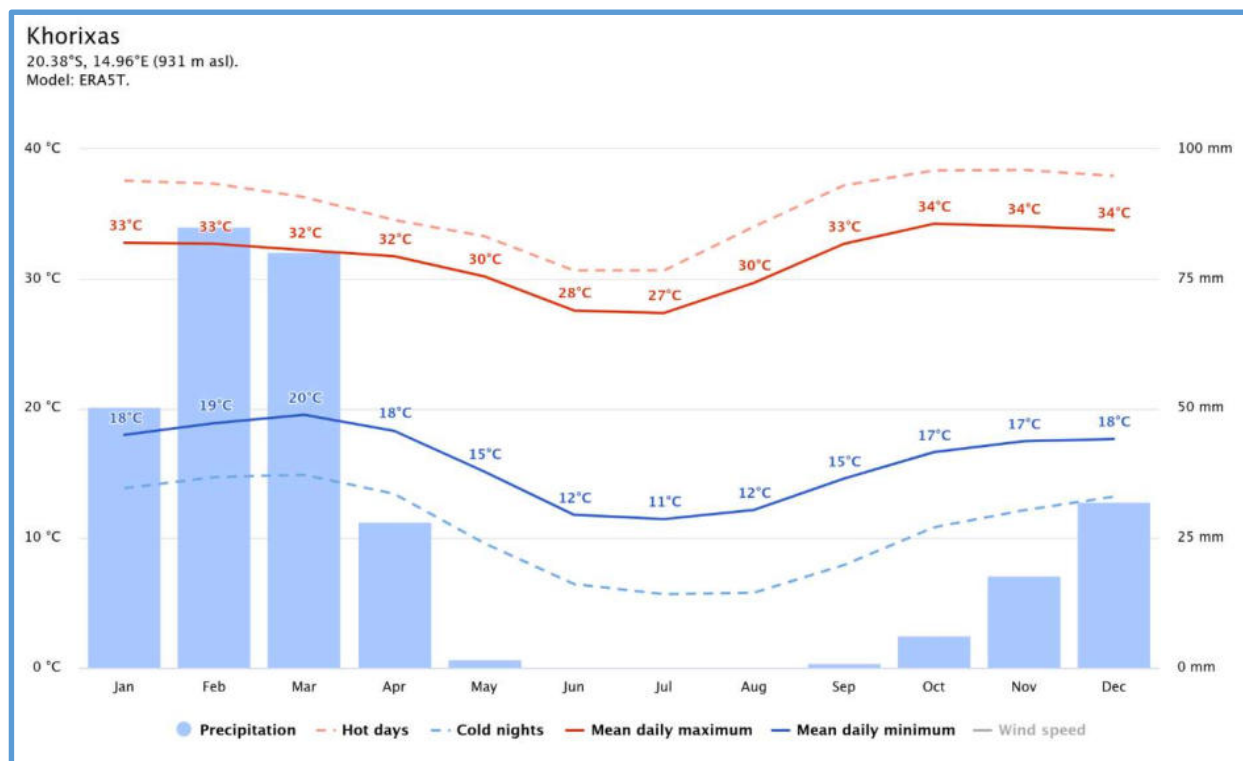


Figure 3: Climate condition nearby the MC No. 74744, Khorixas.

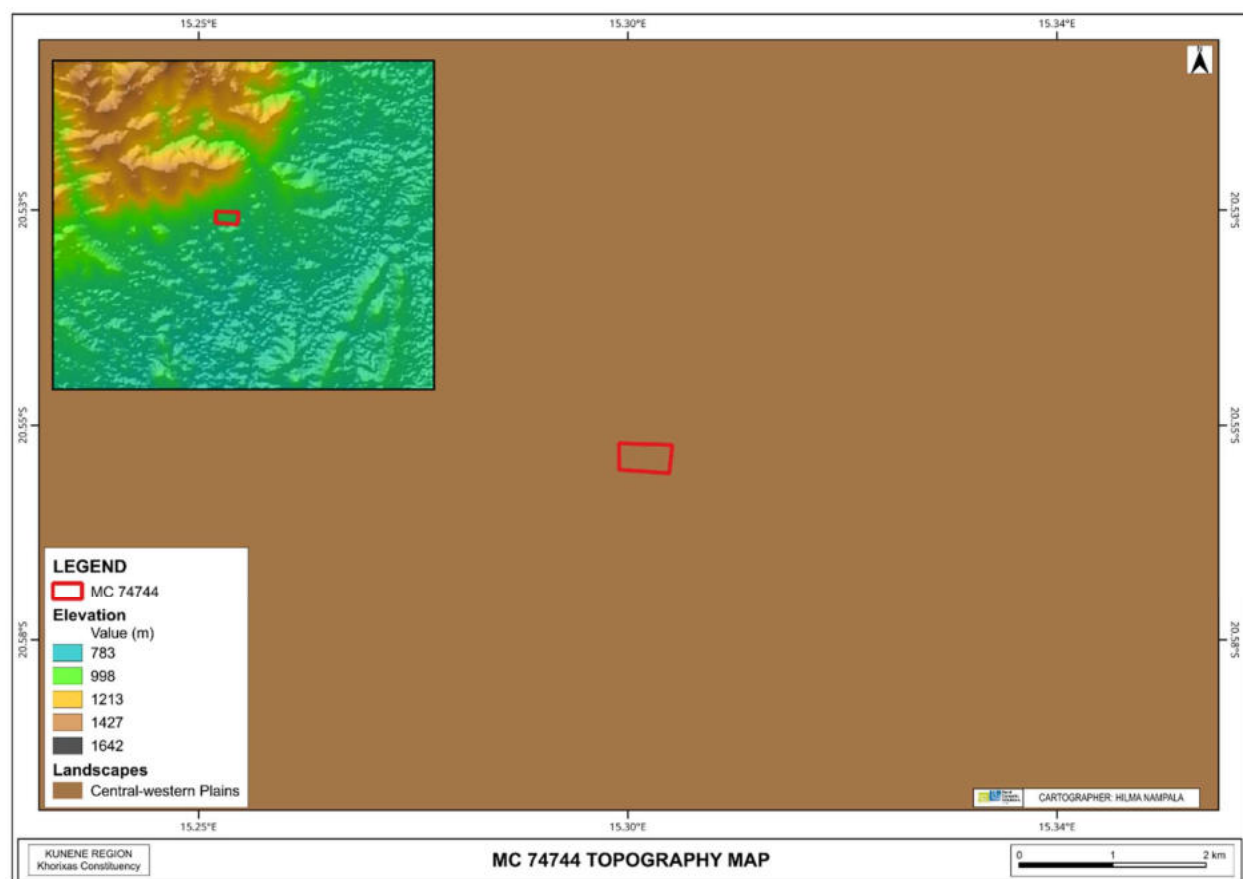
## 5.1.2 Landscape and Topography

The MC 74744 is situated in the central-western plains, a region marked by dissected terrain and significant erosional features. Elevations range between 783 to 1,213 meters, with flat areas interspersed by small granite inselbergs. The landscape is rugged, shaped by the escarpment and steep slopes exceeding 1 degree gradient, generally descending westward toward the coastal plain. The central-western plains were formed by eastward erosion, creating a catchment for ephemeral rivers like the Khan, Omaruru, Swakop, and Ugab. During heavy



rains, these rivers carry enough water to flow into the Atlantic (Erongo Region Council, 2025).

**Figure 4** and **Figure 5** below shows the landscape and topography of the project area.



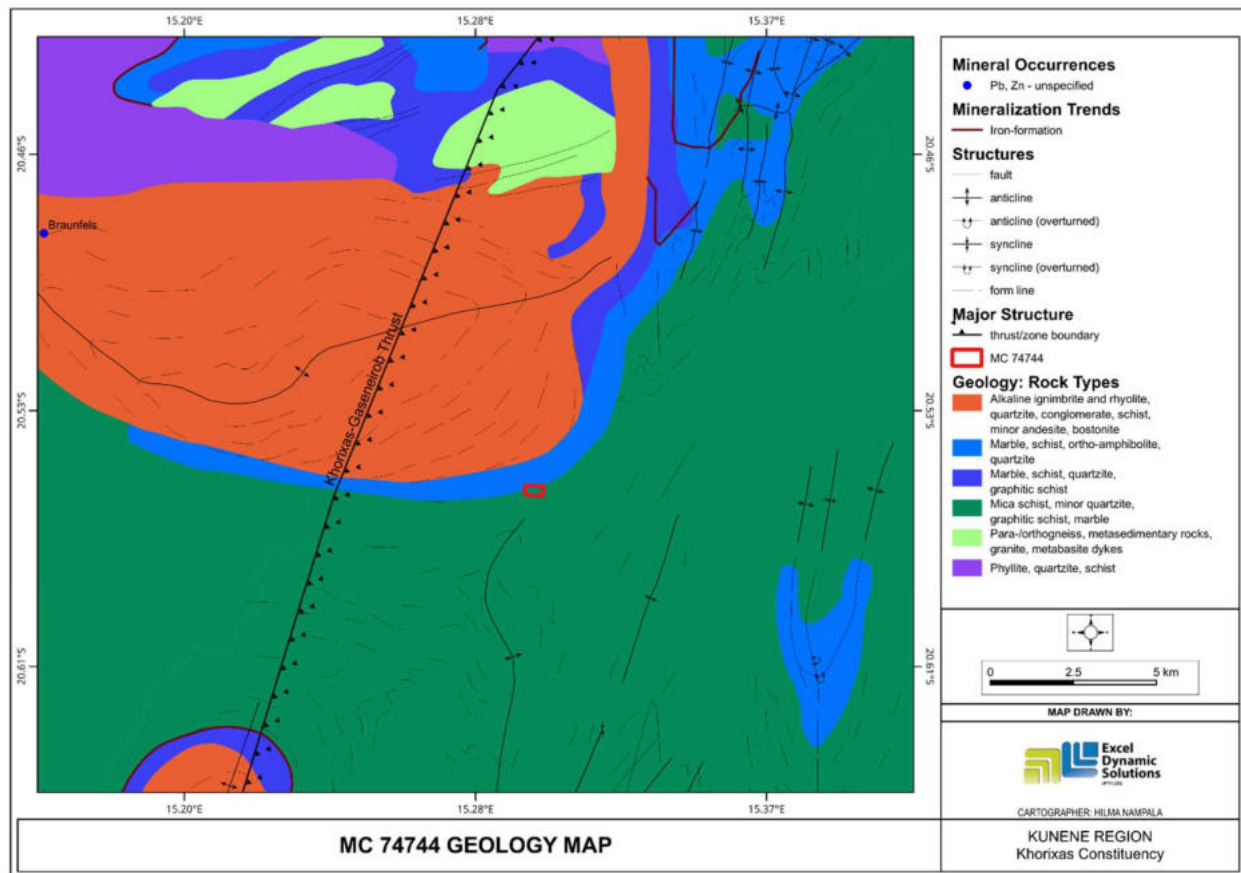
**Figure 4: Landscape and Topography map on MC No. 74744.**



**Figure 5: General topography on the MC 74744.**

### **5.1.3 Geology**

The geology around the project area is marked by a Proterozoic geological history, dominated by diverse metamorphic and igneous lithologies. The Khorixas-Grootberg Thrust fault, trending northeast-southwest, serves as a major structural boundary. Northwest of this thrust, Alkaline ignimbrite and rhyolite are prevalent, alongside Phyllite, quartzite, and schist, with minor occurrences of younger Post-Karoo/Cretaceous sedimentary rocks. To the southeast of the thrust, the geology consists of quartzite, conglomerate, schist, minor andesite, and bostonite, as well as various Marble and schist units that are part of the damara supergroup (Miller, 2008). The area is crisscrossed by numerous other faults and displays significant folding (including anticlines and synclines). **Figure 6** below shows the geology and lithology map.



**Figure 6: General geology map of the MC.**

#### 5.1.4 Soil

The soil type on the MC No. 74744 is Lithic Leptosols, Lithic Leptosols are considered as extremely shallow soils, with a continuous bedrock layer beneath the surface. They typically feature an ochric A horizon above fractured rock formations. Due to their shallow depth and gravelly composition, they exhibit poor water retention capacity, severely restricting their suitability for agricultural use (Strohbach & Kutuahuripa, 2014). These soils are have high proportion of stones or rocks on the surface and within the soil profile. They are typically found in arid and semi-arid regions where the weathering of rocks is slow, leading to the accumulation of stones on the soil surface. These soils are poorly developed, with little horizon differentiation, and are often nutrient-poor and low in organic matter (IUSS Working Group WRB, 2015). The stones and rocks in these soils can hinder root development and water infiltration, making them challenging for agriculture without proper management practices such as terracing or mulching (IUSS Working Group WRB, 2015). **Figure 7** below is a map of the type of soil found within the MC and **Figure 8** shows the soil type observed on the MC.

It is notable that during the operational phase of the project, soil sampling may be conducted. Therefore, the Soil Conservation Act (No 76 of 1969) should be taken into account to ensure that soils are conserved in a way that does not promote soil erosion. (Refer to the EMP).



Figure 7: Dominant soil type on the MC.





**Figure 8: Observed soil type on Mc No. 74744.**

### **5.1.5 Water Resources: Groundwater and Surface Water**

The hydrology of the MC 74744 area and surrounding area is primarily characterized by ephemeral surface water flow and a significant reliance on groundwater resources. The Ugab river, a major ephemeral drainage, crosses the southeastern portion of the map, serving as a key surface water feature during rainfall season. Numerous boreholes are distributed across the area, indicating widespread groundwater abstraction for various uses. The majority of the area is underlain by rock bodies with little groundwater potential; generally low potential; locally moderate potential and a small portion is underlain by fractured, fissured, or karstified aquifers exhibiting moderate groundwater potential. This aquifer type also associates with areas of high groundwater vulnerability, indicating that groundwater resources are vulnerable. In the northwestern part of the map, rock bodies generally possess lower groundwater potential, though localized porous aquifers with moderate potential exist. Overall, the area's hydrology is defined by its arid to semi-arid nature, with groundwater being a critical resource developed through boreholes tapping into moderately productive, yet vulnerable, fractured aquifer systems. **Figure 9** shows the groundwater map of the project area.

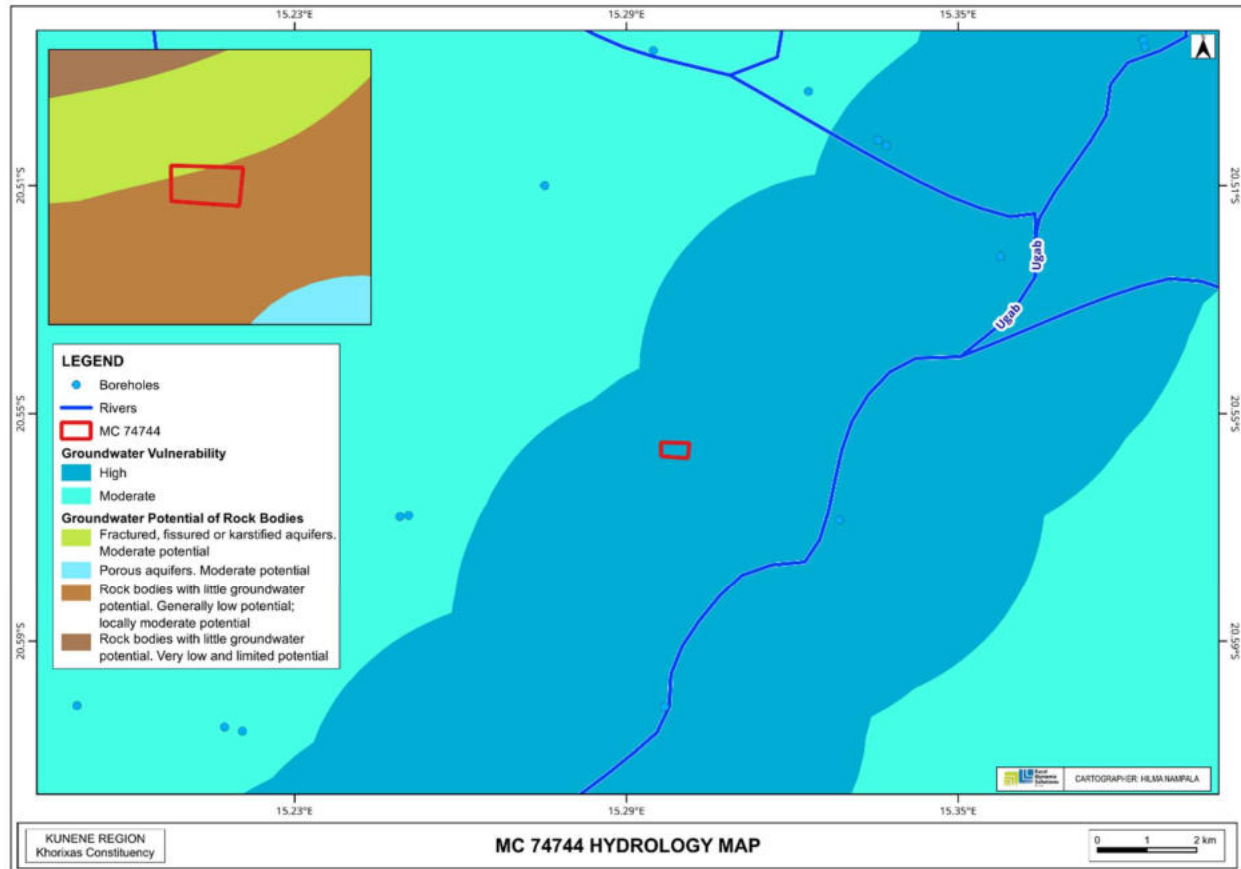


Figure 9: Hydrology map for the MC.

## 5.1.6 Flora and Fauna

### 5.1.6.1 Flora

The MC is located in the western highlands a substratum of the tree and shrub savanna biome, an area known for its mix of grasslands and dispersed trees. The Atlas of Namibia Team (2022) states the western highland hosts between 100 and 300 plant species. The dominant floristic group is the Kaokoveld, which, as described by Craven (2009) this florist group is distinguished by the presence of *Sesamothamnus guerichii*, Craven (2002) further states, the Kaokoveld group comprises of 1,064 native vascular plant taxa and 51 naturalized species. On-site vegetation observations include species such as mopane trees (*Colophospermum mopane*), Purple-pod cluster (*Terminalia prunioides*), Black willow (*salnix nigra*), *Acacia* spp., and *Vachelias* spp (Figure 10) shows the type of vegetation observed on the MC.

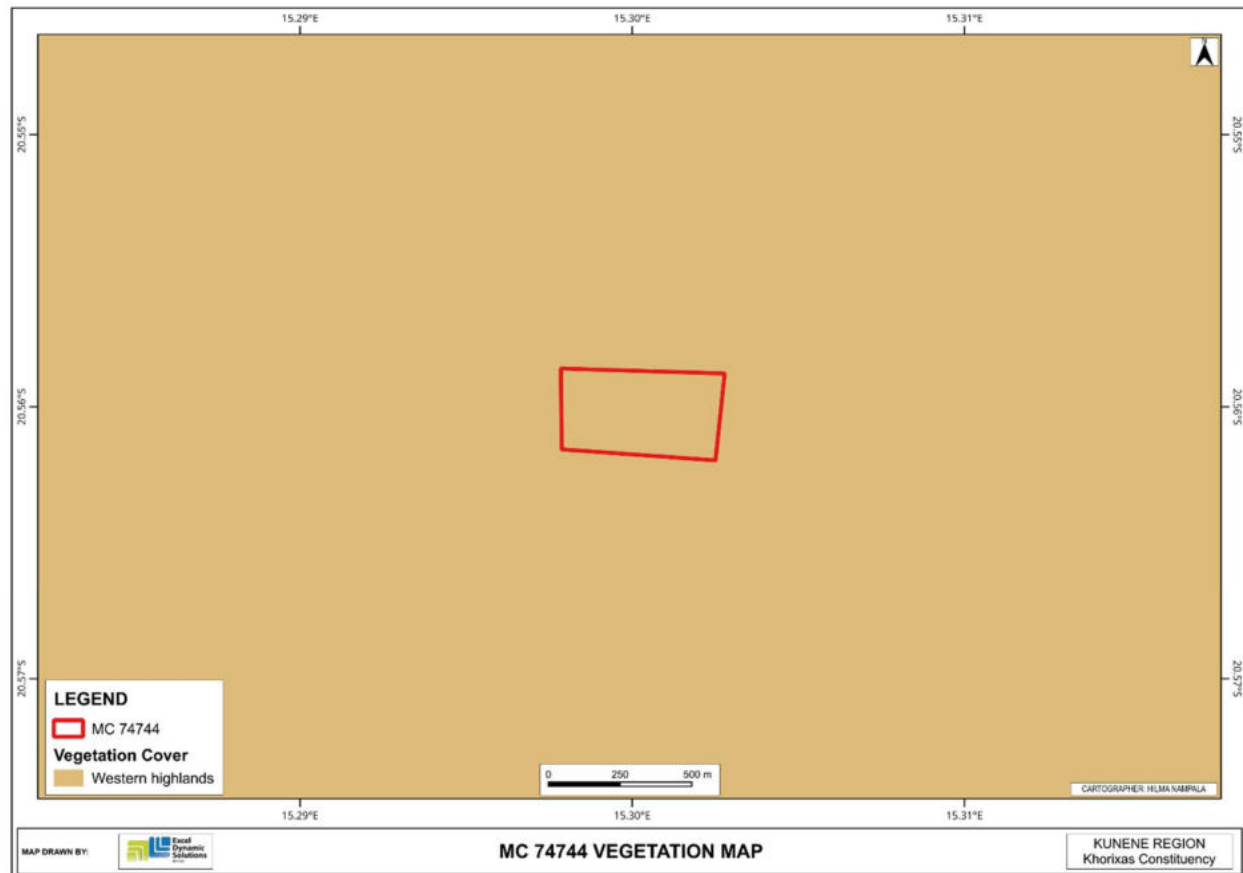
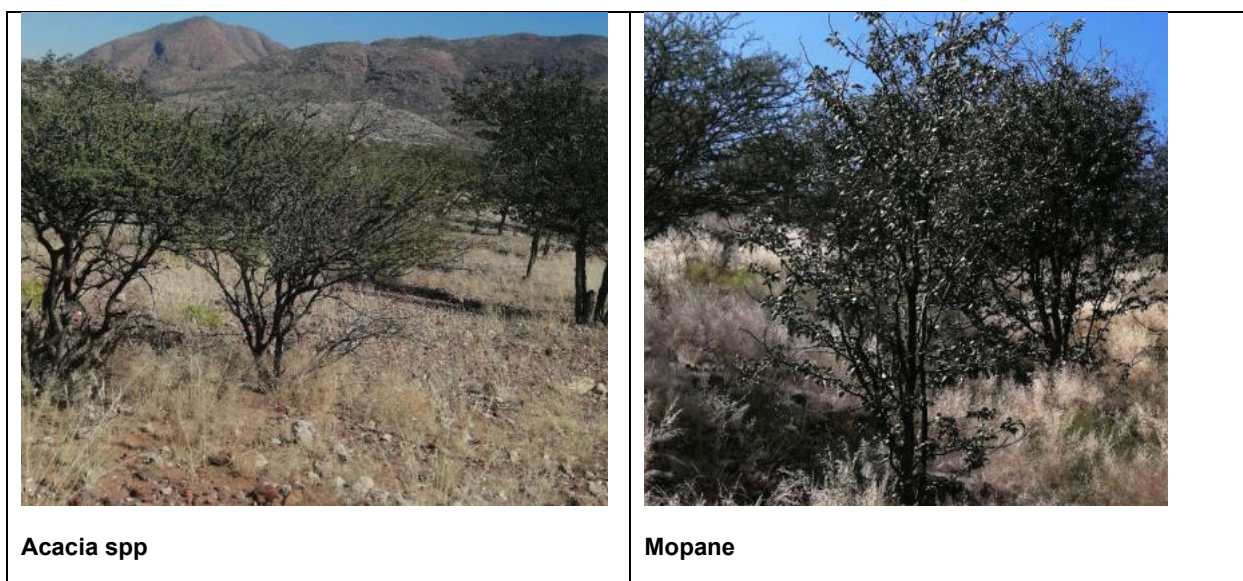


Figure 10: Vegetation map for MC 74744.







**Figure 11: Vegetation Observed on MC No. 74744.**

#### **5.1.6.2 Fauna**

The MC no. 74744 is located within the !Khorro Conservancy. According to the Namibian Association of CBNRM Support Organizations (NASCO, 2016), the 2016 wildlife status summary reported the presence of elephant, gemsbok, giraffe, jackal, klipspringer, kudu, mountain zebra, ostrich, springbok, and steenbok in the area. Additionally, predator monitoring mentions leopard, hyena in the area. However, during the recent site visit, none of these species were directly observed, similar with the May 2024 game count, which recorded only steenbok suggesting a potential decline in local fauna in the area. This trend may be attributed to migratory patterns, previous species removals (as noted in NASCO, 2016), or other ecological factors.





**Figure 12: Evidence of rodents on MC 74744.**

## **5.2 Heritage and Archaeology**

### **5.2.1 Local Level and Archaeological Findings**

There are no nationally recognized archaeological sites recorded within the MC. A possibility that unrecorded or undiscovered archaeological features or artifacts may be discovered during the mining phase. In the case where an archaeological discovery is made on-site during exploration works, the procedures outlined in the National Heritage Act, No. 27 of 2004 are to be followed. Section 55 (4) of the National Heritage Act, No. 27 of 2004, requires that any archaeological or paleontological object or meteorite discovered is reported to the National Heritage Council as soon as practicable.

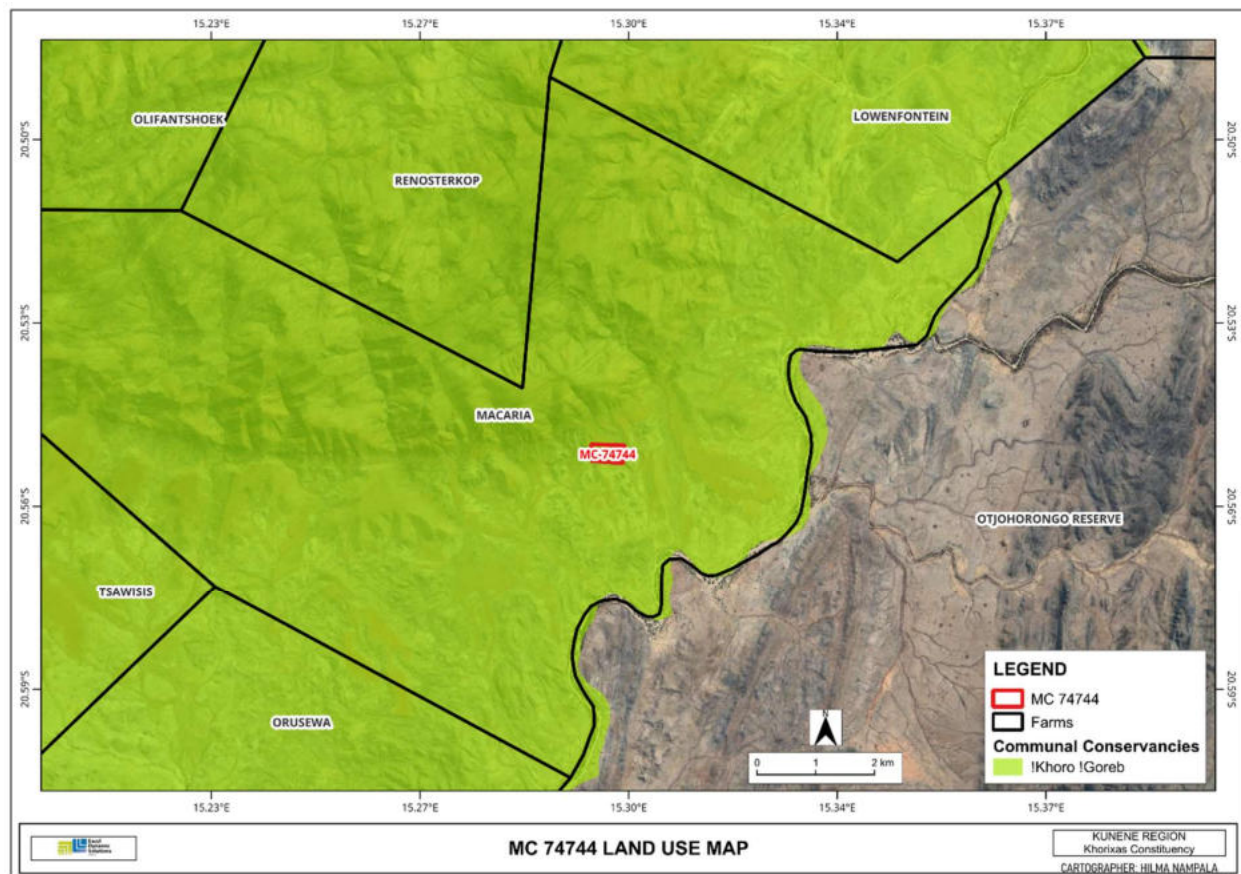
### **5.3 Surrounding Land Uses**

The MC No. 74744 falls within communal land as shown in **(Figure 13)**. The Proponent is required to secure a signed agreement from the relevant authorities to gain access to the areas of interest for small-scale mining activities as per Section 52 of the Minerals (Prospecting and Mining) Act No. 33 of 1992 and Section 2.2.3 of the Minerals Policy of Namibia.

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

- (a) In, on, or under any and until such holder has agreed 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 waived 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 License Holder and/or mineral explorers currently have to negotiate a contract with landowners to gain access for mining purposes.



**Figure 13: Land use map.**

There are no infrastructures within the MC, and as according to the (!Khorro !Goreb conservancy, 2022) the area falls in exclusive wildlife: All wildlife utilization. However, mining activities on the Mc 74744 in the Area would not harm sensitive habitats, endangered species, or critical ecosystem services, as the area has low ecological sensitivity. This suggests that mining can coexist with the conservancy's conservation objectives.



**Figure 14** below shows the open pit from previous prospecting activities under the semi-precious stone category, conducted using a jackhammer by the proponent.



**Figure 14: Previous works done on the MC.**

## **5.4 Socio-Economic conditions**

### **Kunene Region**

According to the Kunene Regional Development Profile (2015), the Kunene Region is geographically located in the North-western part of Namibia, the region's administrative capital is Opuwo. The Region covers an area of 115 293 square kilometres of the total Namibian land making it the second largest region in Namibia after //Karas Region. According to the Kunene regional council development profile of the Kunene region of 2015, the Khorixas Constituency is located in the southern part of Kunene bordering Kamanjab to the East and Sesfontein to the North. The constituency's name is derived from Khor tree, which is found in the Khorixas area only.

### **Mining**

Kunene Region offers great opportunities for mineral exploration due to its rock and mountainous formations, which are pivotal for regional economic growth and development. Exploration and discovery of mineral resources is at an advanced stage and if found economically viable, could contribute significantly to the economic growth of the region. According to the Namibia Chamber of Mines' 2013 annual review, the Koako Base Metals Project has discovered Okanihova Copper targets and confirmed that there is a body of Iron-Ore at Otuziru (e.g. lead, zinc, and silver deposits) Kunene Regional Development Profile (2015).

### **Socioeconomic Status of Khorixas Settlement**

#### **Location and Population Demographic**

According to the Kunene regional council development profile of the Kunene region of 2015, the Khorixas Town is one of the local authorities of Namibia, which was proclaimed in 1998. Khorixas town is situated 400 km northwest of Windhoek, 140 km west of Outjo, 154 km from /Uis Village and 121 km from Kamanjab village. According to the 2023 Population and Housing Census, Khorixas Constituency has a total population of 15, 506 of which 7,933 are males while 7,573 are females. The total area size of Khorixas Constituency is 21,328.01 square kilometres a population density of 0.7 inhabitants, among the least populated constituency in the region. Khorixas Constituency has 13,769 household population, 4,321 households representing an average household size of 3.2 (NSA, 2024).

### **Economic Activities, Livelihood, and Source of Income**

The Town has emerged from a feisty bustling farming community that used to be a trading post called Nuwe Dorp, it went through three name changes, including Welwitschia. The town has evolved into a tourism growth point with future mining potential in the constituency. According to the First Capital Namibia (2023), The labour force participation rate of Khorixas Town is 69%. The main sources of income in Khorixas town include salaries and wages (45%), old pension (19.3), farming (12%), cash remittances (9%), and businesses (7.7%). This constituency has a high safe water supply, where the Kunene Region Profile Census report (2011) shows 78% of its population has safe water supply.

According to the Kunene regional council development profile of the Kunene region of 2015, the Khorixas Constituency has a high investment potential for industrial development and tourism. It hosts major tourist sites such as, The World Heritage Site, Petrified Forest, Burned Mountain, and rock paintings – white lady. Other areas of potential investment include, but are not limited to: Tourism Facilities – Lodges, Hostels and Camping sites; Construction of Roads and Bridges; Construction of schools (Government and Private); Rural Electrification – Off Grid and On-grid electricity; Construction of service stations; Small scale mining and processing; Industrial development (Rare Earth and Marble); and Meat processing.

### **Infrastructure**

Khorixas town has public services and institutions, including one hospital and five clinics to cater to the healthcare needs of its residents. The town also features a post office, a police station, and several educational institutions, such as Cornelius Goreseb High School, Eddie Bowe Primary School, Versteende Woud Primary School, and Welwitchia Primary School. For shopping, locals and nearby farmers rely on Choppies Khorixas and various informal shops. Additionally, key government offices operate in the area, including the Ministry of Agriculture and Forestry, the Ministry of Health (Veterinary Office), the Ministry of Social Services, and the Ministry of Education.

The primary energy sources for cooking in Khorixas include wood (53%), electricity (21%), gas (1%), solar energy (0.9%), and paraffin (0.4%). The settlement's water supply is managed through a scheme consisting of three terminal reservoirs, which are primarily fed by the Gainatseb-Khorixas pipeline but can also draw water from the Braunfels-Khorixas scheme. Electricity for the area is provided by Cenored.

## 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 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 following 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 and other interested members of the public were identified. Pre-identified I&APs were contacted directly, while other parties who contacted the Consultant after project advertisement notices in the newspapers, were registered as I&APs upon their request. Newspaper advertisements of the proposed exploration activities were placed in two widely read national newspapers in the region (New Era Newspaper and The Namibian 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 3.** below and the complete list of I&APs is provided in **Appendix D.**

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

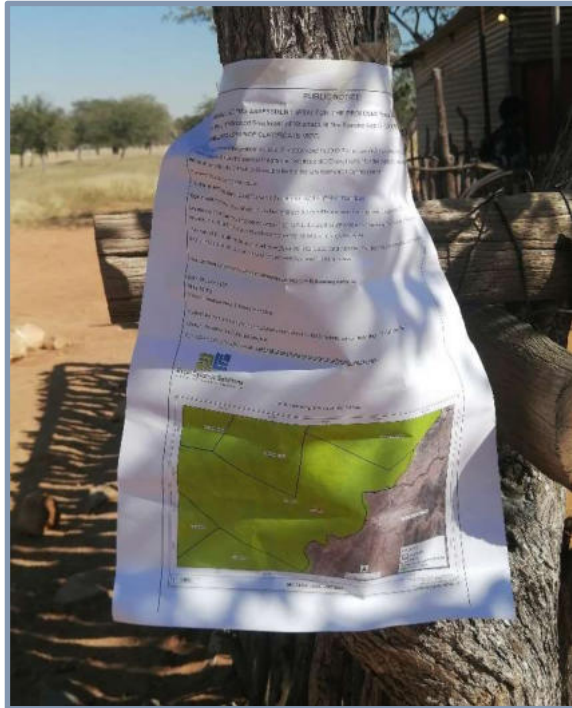
<b>National (Ministries and State-Owned Enterprises)</b>
Ministry of Environment, Forestry and Tourism
Ministry of Mines and Energy
<b>Regional, Local, and Traditional Authorities</b>
Kunene Regional Council
!Gaiodaman Traditional Authority
!Khoru !Gareb conservancy
<b>General Public</b>
Landowners /Interested members of the public

## 6.2 Communication with I&APs

Regulation 21 of the EIA Regulations details the steps to be taken during a public consultation process and these have been used in guiding this process. Communication with I&APs concerning 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 and emailed to registered and Identified Interested and Affected Parties (I&APs);
- Project Environmental Assessment notices were published in the New Era Newspaper (**26 March 2025 and 02 April 2025**) and The Namibian Newspaper (**26 March 2025 and 02 April 2025**), briefly explaining the activity and its locality and inviting members of the public to register as I&APs and submit their comments/concerns.
- A public notice was placed at Braunfels tuckshop (**Figure 15**) to inform members of the public about the EIA process. Communication was made with the !Khoru !Goreb conservancy, and the !Gaiodaman traditional authority about the proposed project and upcoming public consultation meetings.
- A public meeting was scheduled and held on **1<sup>st</sup> June 2025**, onsite the MC at 10h00 (**Figure 16**).





**Figure 15: Public notice placed at Braunfels Tuckshop.**





**Figure 16: Public Consultation onsite the MC.**

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 4** below. The issues raised and responses by EDS are attached under **Appendix G**.

**Table 4: Summary of main issues raised, and comments received during public meeting engagements and e-mails.**

Issue	Concern
Mining claims in Protected Wildlife Zone.	Mining claims in a protected wildlife zone as according to the conservancy GMUP.

## 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 follows:

Positive impacts:

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

Negative impacts:

- Disturbance to grazing areas
- 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 associated with closure and decommissioning of exploration works

## **7.2 Impact Assessment Methodology**

The Environmental Assessment process primarily ensures that potential impacts that may occur from project activity are identified and addressed with environmentally cautious approaches and legal compliance. The impact assessment method used for this project is following 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 5**, **Table 6**, **Table 7**, and **Table 8**, respectively.

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

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

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

### 7.2.1 Extent (spatial scale)

The extent is an indication of the physical and spatial scale of the impact. **Table 5** shows the rating of impact in terms of the extent of spatial scale.

**Table 5: Extent or spatial impact rating**

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

### 7.2.2 Duration

Duration refers to the timeframe over which the impact is expected to occur, measured concerning the lifetime of the project. **Table 6** shows the rating of impact in terms of duration.

**Table 6: Duration impact rating**

Low (1)	Low/Medium (2)	Medium (3)	Medium/High (4)	High (5)
Immediate mitigating measures, immediate progress	The impact is quickly reversible, and 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 7** shows the rating of impact in terms of intensity, magnitude, or severity.

**Table 7: Intensity, magnitude, or severity impact rating**

Type of criteria	Negative				
	H- (10)	M/H- (8)	M- (6)	M/L- (4)	L- (2)
<b>Qualitative</b>	Very high deterioration, high quantity of deaths, injury or 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 occurring. This determination is based on previous experience with similar projects and/or based on professional judgment. **Table 8** shows impact rating in terms of probability of occurrence.

**Table 8: Probability of occurrence impact rating**

Low (1)	Medium/Low (2)	Medium (3)	Medium/High (4)	High (5)
Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards.	Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards	A 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, and 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 5**, **Table 6**, **Table 7**, and **Table 8**) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

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

The maximum value per potential impact is 100 significance points (SP). Potential impacts were rated as high, moderate, or low significance, based on the following significance rating scale (**Table 9**).

**Table 9: Significance rating scale**

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

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

**Positive (+)** – Beneficial impact

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

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

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

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

The risk/impact assessment is driven by three factors:

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

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

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

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

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

**Boris Micha Schmidbauer: MC No. 74744**

## 7.3 Assessment of Potential Negative Impacts

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

### 7.3.1 Disturbance to grazing areas

The MC is overlying communal land that has livestock and wildlife. Small-scale mining activities such as site clearing, trenching, and drilling can potentially lead to the disturbance of grazing land. This will potentially affect the grazing land available to wildlife, and since the wildlife greatly depends on the little available flora, their livelihood will be impacted.

The effect of small-scale mining work on the land (when done over a wider spatial extent), if not mitigated, may hinder grazing areas. Under the status quo, the impact can be considered to be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a lower significance. The impact is assessed in **Table 10** below.

**Table 10: Assessment of the impacts of small-scale mining on grazing areas**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M/H: -4	M: -3	L/M: -4	H: 5	M: -55
Post mitigation	L/M: -2	L/M: -2	L: -2	L/M: 3	L: -18

### 7.3.2 Land Degradation and Loss of Biodiversity

**Fauna:** The trenching, pitting, and drilling activities carried out during mining would result in land degradation, leading to habitat loss for a diversity of flora and fauna ranging from microorganisms to large animals and trees. Endemic species are most at risk since even the slightest disruption in their habitat can result in extinction.

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

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



**Flora:** The direct impact of small-scale mining works on flora will mainly occur through clearing for mining access routes and associated infrastructure. The dust emissions from drilling may also affect surrounding vegetation through the fall of dust, if excessive. Some loss of vegetation is an inevitable consequence of the development. However, given a moderate abundance of vegetation and site-specific areas of mining on the MC, the impact will be localized and, therefore manageable.

Under the status, the impact can be of a medium significance rating. With the implementation of appropriate mitigation measures, the rating will be reduced to a low significance rating. The impact is assessed in **Table 11** below.

**Table 11: Assessment of the impacts of small-scale mining on biodiversity**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
<b>Pre mitigation</b>	M/H: -4	M: -3	M: -6	M/H: 4	<b>M: -52</b>
<b>Post mitigation</b>	L/M: -3	M: -3	L: -2	L/M: 2	<b>L: -16</b>

### 7.3.3 Generation of Dust (Air Quality)

Dust emanating from site access routes when transporting equipment and supplies to and from the site may compromise the air quality in the area. Vehicular movements from heavy vehicles such as trucks would potentially create dust, even if it is not anticipated to be low. Additionally, activities carried out as part of the small-scale mining 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 small-scale mining on air quality**

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



#### 7.3.4 Water Resources Use

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

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

The impact of the project activities on the resources would be dependent on the water volumes required by each project activity. Small-scale mining activities do not use a lot of water, mainly for drilling. However, this depends on the type of drilling methods employed (diamond drilling is more water-consuming compared to drilling methods such as reverse circulation for instance) and the type of mineral being explored.

Given the low to moderate groundwater potential of the project site areas, the Proponent may consider carting some of the water volumes from outside the area and stored in industry-standard water reservoirs/tanks on site. The exact amounts of water required for proposed operations would be dependent on the duration of the mining works and the number of mining boreholes required to make a reliable interpretation of the commodities to be mined. The mining period can be temporally limited, therefore, the impact will only last for the duration of the mining activities and cease upon their completion.

Without the implementation of any mitigation measures, the impact can be rated as medium, but upon effective implementation of the recommended measures, the impact significance would be reduced to low as presented in **Table 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/H - 4	M/H - 3	M - 6	M/H - 4	M - 52
Post mitigation	L/M - 1	L/M - 1	L - 2	L/M - 3	L - 12

#### 7.3.5 Soil and Water Resources Pollution

The proposed small-scale mining activities are associated with a variety of potential pollution sources (i.e., lubricants, fuel, and wastewater) that may contaminate/pollute soils, and eventually, surface and groundwater. The anticipated potential source of pollution to water resources from

the project activities would be hydrocarbons (oil) from project vehicles, machinery, and equipment as well as potential wastewater/effluent from mining-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 are relatively small. Therefore, the impact will be moderately low.

Pre-implementation of any mitigation measures, the impact significance is medium to high and upon implementation, the significance will be reduced to moderate. 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	H - 5	M - 3	M - 6	M/H - 4	M - 56
Post mitigation	L - 2	L/M - 2	L - 2	L/M - 3	L - 18

### 7.3.6 Waste Generation

During the small-scale mining program, domestic and general waste is produced on-site. If the generated waste is not disposed of responsibly, land pollution may occur on the MC or around the sites. The MC is in an area of moderate sensitivity to pollution. Improper handling, storage, and disposal of hydrocarbon products and hazardous materials at the site may lead to soil and groundwater contamination, in case of spills and leakages. Therefore, the mining program needs to have appropriate waste management for the site. To prevent these issues, any hazardous waste that may have an impact on 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 be reduced to low significance, upon implementing the mitigation measures. The assessment of this impact is given in **Table 15** below.

**Table 15: Assessment of waste generation impact**

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
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<b>Pre mitigation</b>	M - 3	L/M - 2	M - 6	M/H - 4	<b>M – 44</b>
<b>Post mitigation</b>	L - 1	L - 1	L - 2	L/M - 2	<b>L - 8</b>

### 7.3.7 Occupational Health and Safety Risks

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

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

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

**Table 16: Assessment of the impacts of exploration on health and safety**

<b>Mitigation Status</b>	<b>Extent</b>	<b>Duration</b>	<b>Intensity</b>	<b>Probability</b>	<b>Significance</b>
<b>Pre mitigation</b>	M - 3	L/M - 2	M - 6	M/H - 4	<b>M – 44</b>
<b>Post mitigation</b>	L/M - 2	L/M - 2	L - 2	L/M - 2	<b>L - 12</b>

### 7.3.8 Vehicular Traffic Use and Safety

The MC are accessible via informal track from the D2743 road diverting from the C39 road. These are some of the main transportation routes for all vehicular movement in the area, and provide access to the MC, and connect the project area to other towns. Traffic volume will therefore

increase on these district roads during mining as the project would need delivery of supplies and services on site.

Depending on the project needs, trucks, medium-sized vehicles, and small vehicles will frequent the area to and from mining sites on the MC. This would potentially increase slow-moving heavy vehicular traffic along these roads and add additional pressure on the roads. However, transportation of materials and equipment is expected to occur on a limited schedule and only for the duration of the project. Therefore, the risk is anticipated to be short-term, not frequent, and therefore of medium significance. Before 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 - 3	L/M - 4	M/H - 5	M - 50
Post mitigation	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

### 7.3.9 Noise and vibrations

Small-scale mining work (especially drilling) may be a nuisance to surrounding communities due to the noise produced by the activity. Excess noise and vibrations can be a health risk to workers on site. The small-scale mining equipment used for drilling on site is of medium size and the noise level is bound to be limited to the site only, therefore, the impact likelihood is minimal. Without any mitigation, the impact is rated as of medium significance. To change the impact significance from the pre-mitigation significance to a low rating, 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 - 4	M - 40
Post mitigation	L - 1	L/M - 2	L - 2	L/M - 2	L - 10

### 7.3.10 Disturbance to Archaeological and Heritage Resources

The Kunene Region contains archaeological/cultural significant sites, and there is a possibility of unveiling/discovering new archaeological and/or cultural materials in the proposed project area. If such Materials are found, the areas must be mapped out and coordinates taken to establish “No-Go-Areas”, due to their sensitivity and then documented. They may be protected either by fencing them off or demarcation for preservation purposes, or excluding them from any development i.e., no small-scale mining activities should be conducted near these recorded areas through the establishment of buffer zones.

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

**Table 19: Assessment of the impacts of small-scale mining on archaeological & heritage resources**

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

### 7.3.11 Impact on Local Roads/Routes

Mining projects are usually associated with the movements of heavy trucks and equipment or machinery that use local roads. Heavy vehicles traveling on local roads exert pressure on the roads and may make the roads difficult to use. This will be a concern if maintenance and care are not taken during all the phases.

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 of 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/M - 2	L/M - 2	M/L - 4	M/L - 2	L - 16

### 7.3.12 Social Nuisance: Local Property Intrusion and Disturbance/Damage

The presence of some non-resident workers may lead to social annoyance to the local community. This could particularly be a concern if they enter or damage local private property. The private properties of the locals may include houses, fences, vegetation, livestock, wildlife, or any properties of economic or cultural value to land users. The damage or disturbance to properties may not only be private but also local public properties. The unpermitted and unauthorized entry to private property may cause clashes between the affected property (land) owners and the Proponent.

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

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

Mitigation Status	Extent	Duration	Intensity	Probability	Significance
Pre mitigation	M - 3	M - 3	M - 6	M/H - 3	M – 36
Post mitigation	L - 1	L - 1	M/L - 4	M/L -2	L - 12

## 8 RECOMMENDATIONS AND CONCLUSION

### 8.1 Recommendations

The potential positive and negative impacts of the proposed small-scale mining activities on MC no. 74744 were identified and assessed and appropriate management and mitigation measures (to negative impacts) were made thereof for implementation by the Proponent, their contractors, and project-related employees.

Mitigation measures for identified issues have been provided in the Environmental Management Plan, for the Proponent to avoid and/or minimize their significant impacts on the environmental and social components. Most of the potential impacts were found to be of medium-rating significance. With effective implementation of the recommended management and mitigation measures, a reduced rating in the significance of adverse impacts is expected from Medium to Low. To maintain the desirable rating, the implementation of management and mitigation measures should be monitored by the Proponent directly, or their Environmental Control Officer (ECO). The monitoring of implementation will not only be done to maintain a low rating but also

to ensure that all potential impacts identified in this study and other impacts that might arise during implementation are properly identified in time and addressed right away.

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

It is, therefore, recommended that in the case of granting an ECC for this project, the proposed small-scale mining activities may be granted an ECC, provided that:

- All the management and mitigation measures provided in the EMP are effectively and progressively implemented.
- All required permits, licenses, and approvals for the proposed activities should be obtained as required. These include permits and licenses for land use access agreements to explore and ensure compliance with these specific legal requirements.
- The Proponent and all project workers and contractors must comply with the legal requirements governing the project and ensure that all required permits and or approvals are obtained and renewed as stipulated by the issuing authorities.
- Site areas where small-scale mining activities have ceased are rehabilitated, as far as practicable, to their pre-mining state.

## **8.2 Conclusion**

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

## 9 References

- !Khorro !Goreb conservancy. (2022). *Game Management and Utilization Plan*. Unpublished.
- Ali, S.H., Cartier, L.E., Lawson, L., Syvrud, P and Altingoz, M. (Undated). *Gemstones and Sustainable Development Knowledge Hub*. Retrieved from Sustainable Gemstones: <https://www.sustainablegemstones.org/gemstones/tourmaline/>
- Atlas of Namibia Team. (2022). *Atlas of Namibia: its land, water and life*. Windhoek: Namibia Nature Foundation.
- BG Drilling. (2016). *Drilling equipment and services overview*. . Retrieved from <https://www.bgdrilling.com.au/>
- Booth, P. (2011). *Environmental Conceptual Site Model Exercise: Source – pathway – receptor*. WSP Global: Semantic Scholar.
- Cermak, J. . (2012). *Low clouds and fog along the South-Western African coast—Satellite-based retrieval and spatial patterns*. *Atmospheric Research*, 116, 15–21.
- Christelis, G. and Struckmeier, F. (editors). (2001). *Groundwater in Namibia: An Explanation to the Hydrogeological Map*. Windhoek: Ministry of Agriculture, Water and Forestry.
- Christelis, G. and Struckmeier, W. (eds). (2001). *Groundwater in Namibia: An Explanation to the Hydrogeological Map*. Windhoek: Ministry of Agriculture, Water and Forestry.
- Correia, R. I. (1976). The Main Vegetation Types of Kaokoland, Northern Damaraland and A Description of some transect of Owambo, Etosha and Norh western south west. 6.
- Craven, P. (2002). *Plant species diversity in the Kaokoveld, Namibia*. Retrieved from EIS Namibia: <https://the-eis.com/elibrary/sites/default/files/downloads/literature/Plant%20species%20diversity%20in%20the%20Kaokoveld.pdf>
- Craven, P. (2009, March). *Phytogeographic study of the Kaokoveld centre of endemism*. Stellenbosch: PHD thesis. Retrieved from Sun scholar: <https://scholar.sun.ac.za/server/api/core/bitstreams/5bfb04f8-dca5-4d4f-8cc1-e6c5061bdf46/content>
- Dhanuka, S. (2016, March 9). *Gemstone Mining Methods*. Retrieved from Jewelinfo4U: <https://www.jewelinfo4u.com/gemstone-mining-methods>



- Environment Agency (UK)*. (2002, May). Retrieved July 16, 2019, from Scoping the environmental impacts of cemeteries and crematoria:  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/297117/geho0112bvzy-e-e.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/297117/geho0112bvzy-e-e.pdf)
- Environmental Management Consultants (Caribbean) Ltd. (2007). *Environmental Impact Assessment for the Proposed Cemetery Development, Burnt Ground, Hanover*. Ocho Rios: National Environment and Planning Agency (NEPA).
- Erongo Region Council. (2025). *Erongo Region Council*. Retrieved from Geography:  
<https://www.erc.com.na/erongo-region/geography/>
- Grassi, L.R. (2014). *A Geochemical Investigation of the Usakos Gem Tourmaline Pegmatite, Namibia*. New Orleans: University of New Orleans.
- GRN. (2007). *Environmental Management Act, 2007 (Act No. 7 of 2007)*. . Retrieved from Government Gazette of the Republic of Namibia.:  
<https://www.meft.gov.na/files/files/Environmental%20Management%20Act%207%20of%202007.pdf>
- Kinahan, J. (2009). *Central Namib Uranium Rush: Strategic Environmental Assessment - Archaeological Specialist Report*. Windhoek: Environmental Information Service Namibia.
- Klaus, J., Kulls, C and Dahan, O. (2008). Evaluating the recharge mechanism of the Lower Kuiseb Dune area using mixing cell modelling and residence time data. *Journal of Hydrology: Science Direct*, 304-316.
- Kunene Regional Council. (2015). *Development Profile 2015: The Ultimate Frontier*. Retrieved from Kunene Regional Council:  
[https://kunenerc.gov.na/documents/53359/0/Dev\\_profile.pdf/e20fcb44-46e3-ffa-6344-2189605e1c7f](https://kunenerc.gov.na/documents/53359/0/Dev_profile.pdf/e20fcb44-46e3-ffa-6344-2189605e1c7f)
- McKechnie, W. F. (2019). Diamond exploration and mining in southern Africa: some thoughts on past, current, and possible future trends. *The Journal of the Southern African Institute of Mining and Metallurgy*, 9.
- Mendelsohn, e. a. (2002). *Atlas of Namibia*. Cape Town: David Philip Publishers.

- Miller, M. (2008). *Notes on traverses across the Khorixas-Gaseneirob Thrust, Southern Khorixas and Outjo Districts, Namibia*. Retrieved from Ministry of Industries, Mines and Energy: [https://mme.gov.na/files/publications/9ba\\_Miller%202021\\_Khorixas-Gaseneirob%20Thrust%20traverses.pdf](https://mme.gov.na/files/publications/9ba_Miller%202021_Khorixas-Gaseneirob%20Thrust%20traverses.pdf)
- Namibia Statistics Agency. (2011). *2011 Population and Housing Census Regional Profile, Erongo Region*. Windhoek: Namibia Statistics Agency.
- Namibia Statistics Agency. (2011). *Namibia 2011: Population and Housing Census Main Report*. Windhoek: Namibia Statistics Agency.
- NASCO. (2016). *!Khoru !Goreb Status Summary & Natural Resource Report*. Windhoek: Nasco.
- Strohbach, B., & Kutuahuripa, J. T. (2014). *Online Appendix 1: Description of the major soil types within the central eastern communal conservancies, Namibia*. Windhoek: Koedoe.
- Technidrill. ( 2020). *Technidrill drilling equipment catalog*. Retrieved from <https://www.technidrill.com/>