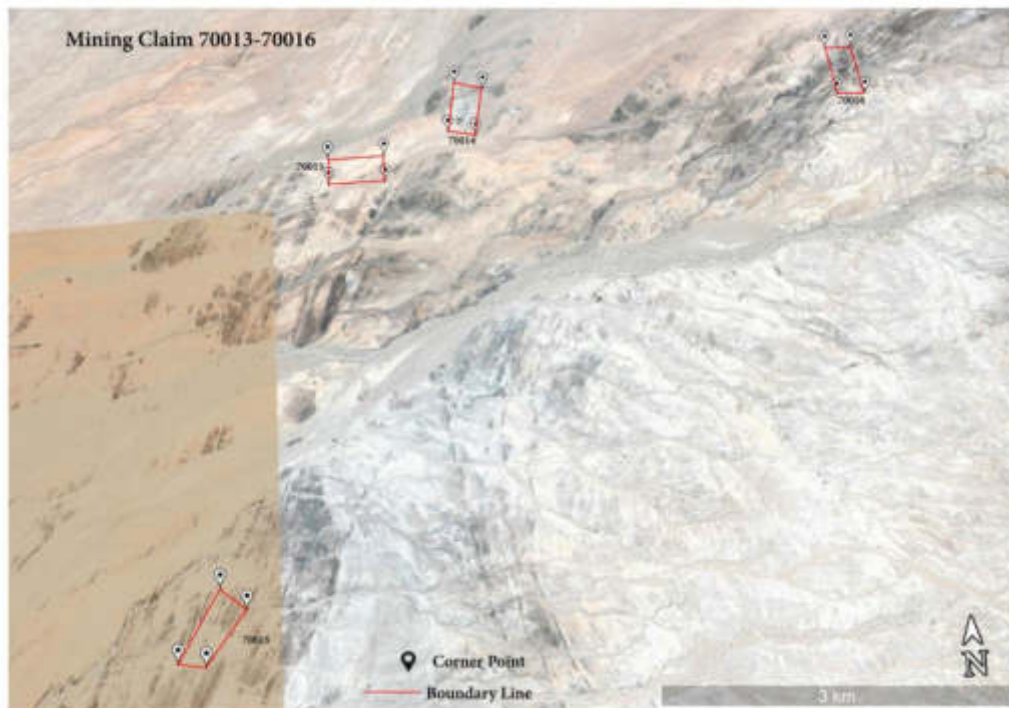

ENVIRONMENTAL MANAGEMENT PLAN FOR THE BASE AND RARE METALS AND OTHER INDUSTRIAL MINERALS AT MINING CLAIMS 70013, 70014, 70015 AND 70016 AT UIS DISTRICT, ERONGO REGION

REPORT DOCUMENT



MARCH 2022

DOCUMENT INFORMATION	
Title	Environmental Management Plan for the base and rare metals and other industrial minerals at Mining Claims 70013, 70014, 70015 and 70016 in Uis District, Erongo Region.
ECC Application (Renewal)	Mining activities for base and rare metals and industrial minerals such as (Tin (Sn), Tantalum (Ta), Lithium (Li) and Niobium (Nd))
Activity	Activity 3: Mining and Quarrying Activity 8: Water Resource Developments
Location	Uis District
Proponent	KARLOWA MINING ENTERPRISES PTY LTD <u>For Official Correspondence:</u> Mr. Timoteus Mashuna Office: Studio 42, Kock & Schmidt, Garden Street- Windhoek Namibia E-mail: tmashuna@gmail.com +264 81 162 5483
Revision	FINAL REPORT
Issue Date	28 MARCH 2022
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Executive Summary

This updated Environmental Management Plan (EMP) is aimed at small scale mining of rare and base metals and other industrial minerals at the proposed mining Claims 70013, 70014, 70015, and 70016 in Uis District in Erongo. The submission of the updated EMP report is a prerequisite for obtaining an Environmental Clearance Certificate Renewal and will be attached to the application to be submitted to the Department of Environmental Affairs Commissioner.

The aim of EMP is to validate the project activities to date and ensure legal compliance to relevant frameworks by ensuring that probable environmental flaws emanating during project construction and operations are managed. EMP further recommends mitigation measures to manage the project and ensure that the proposed activities are conducted in accordance with the provisions of the Environmental Management Act and its regulations.

In recognising to Namibia mineral wealth, the exploitation of minerals ore and mining of base and rare metals at mining claims in questions remain relevant. Not only to the proponent's benefit but the proposed activities contribute to the national economy bruised during Covid 19 related locked downs. Employment to be created during the operation will accelerate the hiring of 50 individuals whom could have lost their jobs to the pandemic. Therefore, the proponent needs to recognise the importance of accelerating the proposed project as a contribution to the development of Uis Town.

Since the commencement of this project, there have been minimal activities that took place on site; whereas the proponent has only embarked on trenching and sampling activities in order to determine the composition of the mineral ore. This means that only limited environmental adjustments have occurred since the first Environmental Clearance Certificate was issued. Though the surrounding environment has been altered the continuation of the project activities will trigger an interruption in the current ecosystem if unmanaged.

Abstraction of 225 000 liters monthly from the borehole aquifer, pollution of water resources, noise, and air pollutions and human wildlife conflicts are the main environmental impacts arising from the project. Therefore adhering to the mitigation measures stipulated in the EMP will lead to significant impacts avoid non-compliance.

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1. INTRODUCTION

1.1. Small Scale Mining

Historically, small scale mining has been in existence for many years and it involves enterprises or individuals that employ workers for mining, but generally still using manually-intensive methods, working with hand tools. Globally, the method has been practiced in more than 80 countries and affects more than 100 million people. It is mainly wide spread in developing countries such as Africa, Asia, Oceania and South America. According, to the World, small scale mining is considered as one of the mechanisms to alleviate poverty and ensure financial inclusion of poor communities.

In Namibia, small scale mining is practiced particularly by the Damara and the Nama people located central part of the country to explore gold, diamond, copper and other precious minerals. The sector affects between 5 000- 50000 miners and can be detrimental to the environment and surrounding communities if unmanaged. The ministry of Mines and Energy is the custodian ministry responsible for management of small scale in Namibia.

Small-scale mining can be also be damaging to the environment if unmanaged and result in serious health and safety consequences for both workers and surrounding communities. At times some government consider small scale mining as dangerous and illegal.

Under the Section 21 of the minerals (Prospecting and Mining Act 1992), the Ministry of Mines and Energy has issued Karlowa Mining Enterprises (PTY) LTD a Non-Exclusive Prospective Licence (EPL 7972). The license attached authorizes the proponent to undertake mining undertaking at Claim 70013, 70014, 70015 and 70016 in Uis District, Erongo Region. The mining claims covering a total of 71.81 hectares cannot be explored without an Environmental Clearance certificate. The proponent previously registered the project with Ministry of Environment in 2017 where it was cleared to carry out its activities. However, the Environmental Clearance Certificate expired in 2020. A valid environmental Clearance certificate is a requirement to renew the EPL. Thus, the proponent proposes to renew its mining activities initially proposed in Uis District, Erongo region.

1.2. Water Demand

In terms of water utility, the project will require high volumes of water mainly for commercial use. The proposed project will approximately make use of 225 000 litres/month which will be recycled over and over. Water required will be extracted from three boreholes aquifers available on site. The monthly water abstraction exceeds the allowable limit by the Water Act. Thus, abstract water for this purpose will be required and obtained from the Department of Water Affairs. On the other hand, portable water required for domestic purpose will be sourced from and supplied by NamWater. A separate application will be launched with the parastatal for water supply during the project life cycle.

1.3. Project Rationale

To date, the proponent has only explored to determine size of the mineral deposit present to date. The proponent will like to explore a small mining exercise that involves extraction base and rare metals and other industrial metals period of 5-years depending on the mineral ore.

The mining activities will extract Tin (Sn), Tantalum (Ta), Lithium (Li) and Niobium (Nd) for commercial purpose. The mineral ore will undergo through three major processes before the mineral is processed namely excavation, screening and sorting. The mine will further make use of several mining equipment's and machinery such as crusher, front and back loaders and conveyor belts which will help in extracting the precious stones. The mine will also make use of volumes of water (more than 150 000) liters per month for tin processing. For now, the mine does not foresee any use of blasting techniques; rather use crushing as the main process. Where applicable, the proponent will later take necessary step to obtain required blasting permits from the respective stakeholders in order to execute the process.

The minerals mined at the mine will be sold and be utilized for various purposes. Income generated through selling of these minerals will contribute to the economic development of Namibia. The project further envisages bringing infrastructural development to the Uis. Uis is currently an abundant town and in 2010 it was downgraded from a mining village to a settlement. Therefore, the resuscitation of the small scale mining in Uis while managing its environmental impacts could not only be beneficial to the environment but contributes to livelihood improvement.

- **Job creation:** The project will employ an estimate of 50 employees who will directly be employed by the proponent or indirectly by the contractors.
- **Improved Livelihoods:** Employment enhances household income, food security and improved livelihoods while.

1.4. Environmental management plan (EMP) Context

This document constitutes the Environmental Management Plan (EMP) for the proposed small scale mining at Claim 70013, 70014, 70015 and 70016 situated in near Uis District –Erongo Region.

The EMP has been developed in accordance with the provisions of the Environmental Management Act (Act No.7 of 2007), EIA Regulations of 2012, while taking into account the issues highlighted in national legal framework and other relevant /applicable legislation (across all sectors). Furthermore, it is developed to update the project activities to date as required for the renewal of the Environmental Clearance Certificate application.

1.5. What is an EMP?

The EMP outlines mitigation measures against specific activities, steps, stages or processes of the proposed development. Thus, the EMP can be defined as the tool to prevent / minimize the impacts identified during the EIA process.

The (EMP) is a tool used to mitigate potential environmental risks associated with the proposed project / activity, and provides a risk strategy and logical framework for

implementation during the construction and operation of the proposed mining claims, in order to mitigate potential environmental and social impacts. Furthermore, the EMP outlines specific roles and responsibilities for role-players against which they can be evaluated and non-compliance is punishable.

1.6. EMP Scope

The purpose of the EMP is to identify potential environmental and social impacts associated with the small scale mining of Base and Rare metals and other industrial minerals in Uis District in-order to ensure compliance to the EMA and its relevant legal framework. It further aims to protect the environment for the entire project life span.

The aim of the EMP is to ensure that the activities undertaken during mining of rare and base metals and other industrial minerals at Claim 70013, 70014, 70015 and 70016 are conducted in accordance with the following:

- i. Environmental Management Act (No. 7 of 2007),
- ii. EIA regulations of 2012 (GN: 30), and
- iii. Best environmental practices (benchmarks)
- iv. Any other applicable legislation (*as presented in Table 3.1 to 3.3*)

The EMP provides environmental guidelines to be followed throughout the lifespan of the mining activity. The guideline comprise of the following:

- a) Environmental Aspects,
- b) Management Objective,
- c) Mitigation Measures / Actions Required,
- d) Monitoring Indicators, and
- e) Party Responsible

1.7. Objective

The objective of the EMP is to prevent / minimize (where possible), unacceptable and adverse environmental, social or economic impacts that may arise from the proposed development. Overall, the EMP aims to prevent any negative impact/s (real, potential or perceived) that may result from the projected activities of the project. This EMP will further comply with Management Plan of small scale mining.

1.8. EMP Scope

The EMP is not limited to the boundaries of the proposed project and activities related to 70013, 70014, 70015 and 70016 claims, but it includes the bigger picture, and serve as the guiding tool to protecting the natural, bio-physical and socio-economic environment both in the surrounding area, and beyond the scope of construction, operation and rehabilitation of small scale mine. The bigger picture is important because, most impacts (pollution of the air, noise pollution, ecological impacts, solid waste, water abstraction from borehole aquifer, human wildlife conflict etc.) may not be confined to the boundaries of mining claims but the entire region.

1.9. Possible adjustments to the EMP

The EMP is an open-ended document and maybe considered inconclusive. In other words, the EMP should allow room for adjustments if new information becomes available at a later stage, in which new / additional mitigation measures may become necessary.

The necessity of possible adjustments to the EMP at a later stage may be attributed to:

- a) Lack of information at the time of drafting the initial EMP,
- b) Evolution or addition of new activities, or
- c) Unintended omission of potential impacts during the initial project design and development of the initial EMP.
- d) Development of industry best practice.

This implies that, in-addition to the information contained herein, any other relevant information that may surface during the construction, operations, decommissioning through internal monitoring or auditing by the Environmental Compliance Officers (ECOs), can be added to the EMP (evolution of activities), and such changes or inclusions will be binding to the proponent and all contractors / sub-contractors.

1.10. Implementation Framework and Accountability to the EMP

For effective implementation of the EMP, the Institutional roles are presented below. However, the specific roles and responsibilities are defined and broken down as presented in Sections 5 and 6, respectively.

Table 1-1: Role players, Institutional Framework

Role-player	Company / Institution	Role
Proponent	Marlowa Mining Enterprises PTY Ltd	Compliance to the EMP
Environmental Consultant	Gwayela Environmental Solutions cc (Ms. Eva Shitaatala)	Development and Updating of the EMP
Environmental Compliance Officer/s (ECO)	Ministry of Environment & Tourism (MET) – Department of Environmental Affairs (DEA),	Monitoring Compliance to EMP: <ul style="list-style-type: none"> ➤ Un-announced spot checks, ➤ Warning, penalties / fines, license suspension
Public	All Interested and affected parties, eg. communities, Conservancies, Uis Community)	Report to the ECOs, any activity of environmental concern (e.g Pollution, safety risks, etc)

2. PROJECT INFORMATION

2.1 Project Location

The project comprising of four mining claims referred in figure 2-1 and Table 2-1 below is located 20km nearby the popular Brandberg Mountain and is 50km away from Uis settlement-Erongo Region. The project is situated on the C36, the main road between the coast and the Damaraland interior there is reasonable amount of traffic, by far the main source of economic activity in Uis. The area is formerly known as Damaraland located north-western part of the Namib Desert near the popular Brandberg Mountain. The area is popular due to its geological enrichment, rock paintings and worship areas for the Nama. Within the location lies the popular for its White Lady paint which attracts many tourists.

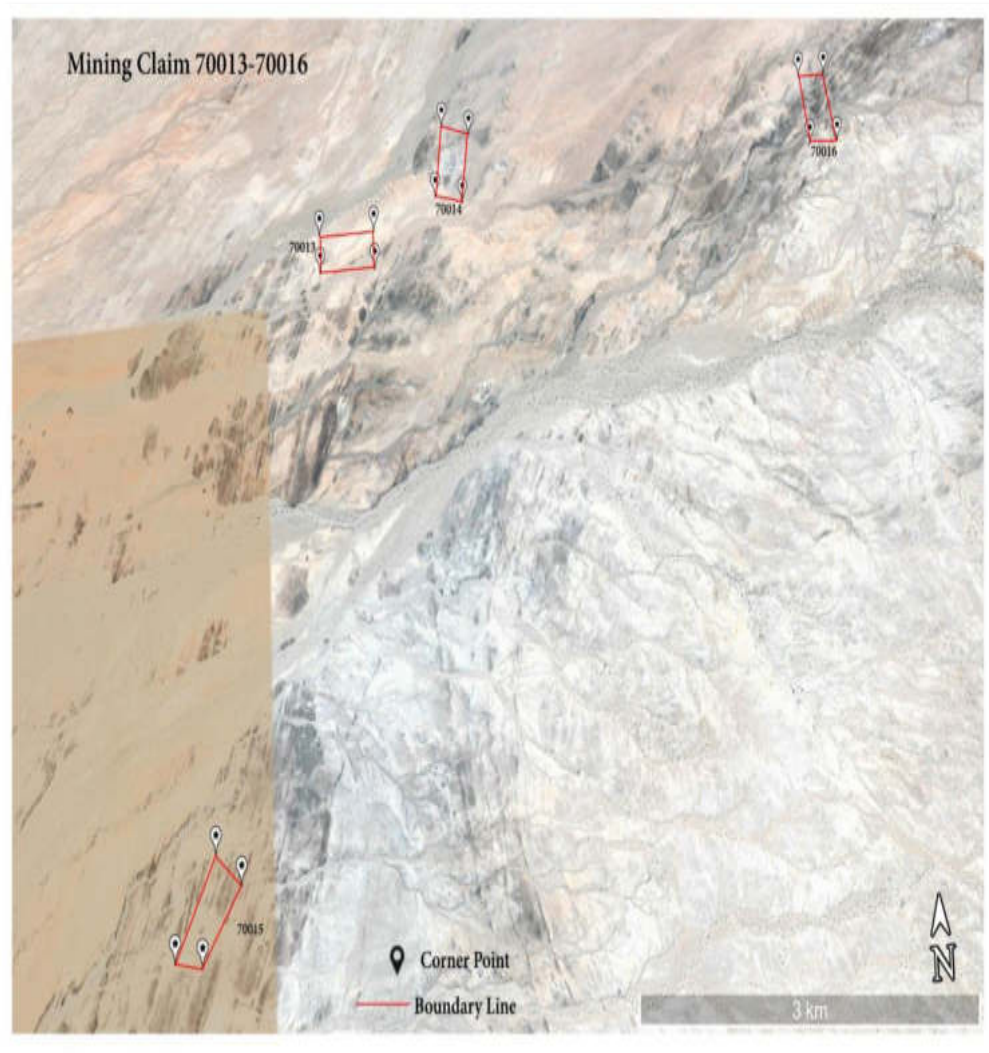


Figure 2-1: Mining Claims Locations

The claims are located with Uis settlement and were established in 1958 as mining town. Uis is rich in minerals and many settlers settled there to exploit local tin deposits. Due to the slowdown in mining activities over the years, Uis was downgraded from a village to a settlement in 2010. To date it has an estimated population of 3600 inhabitants.

Table 2-1 Mining Claims Coordinates

CORNER BEACON	LATITUDE	LONGITUDE	AREA SIZE (Ha)
Mining Claim No: 70013			
1	21° 28' 27.05" S.	014°30'25.95" E	18.0196
2	21° 28' 27.05" S.	014°30'46.15" E	
3	21° 28'37.22" S	014° 30'45.96' E	
4	21° 28'37.11" S	014°30'25.88 E	
Mining Claim No: 70014			
1	21° 28' 19.16" S.	014°31'09.86" E	18.4186
2	21° 27' 59.09" S.	014°31'13.92" E	
3	21° 28' 02.12" S	014°31'24.05" E	
4	21° 28'21.32" S.	014°31'19.85" E	
Mining Claim No: 70015			
1	21° 30' 48.43" S.	014°29'47.67" E	17.2835
2	21° 30' 55.07" S.	014°29'55.75" E	
3	21° 31' 10.15" S.	014°31'24.05" E	
4	21° 31' 08.8" S.	014°29'35.21" E	
Mining Claim No: 70016			
1	21° 27' 52.89" S.	014°33'33.85" E	18.0900
2	21° 27' 52.89" S.	014°33'43.74" E	
3	21° 28' 12.83" S.	014°33'44.35" E	
4	21° 28' 12.97" S.	014°33'33.81" E	

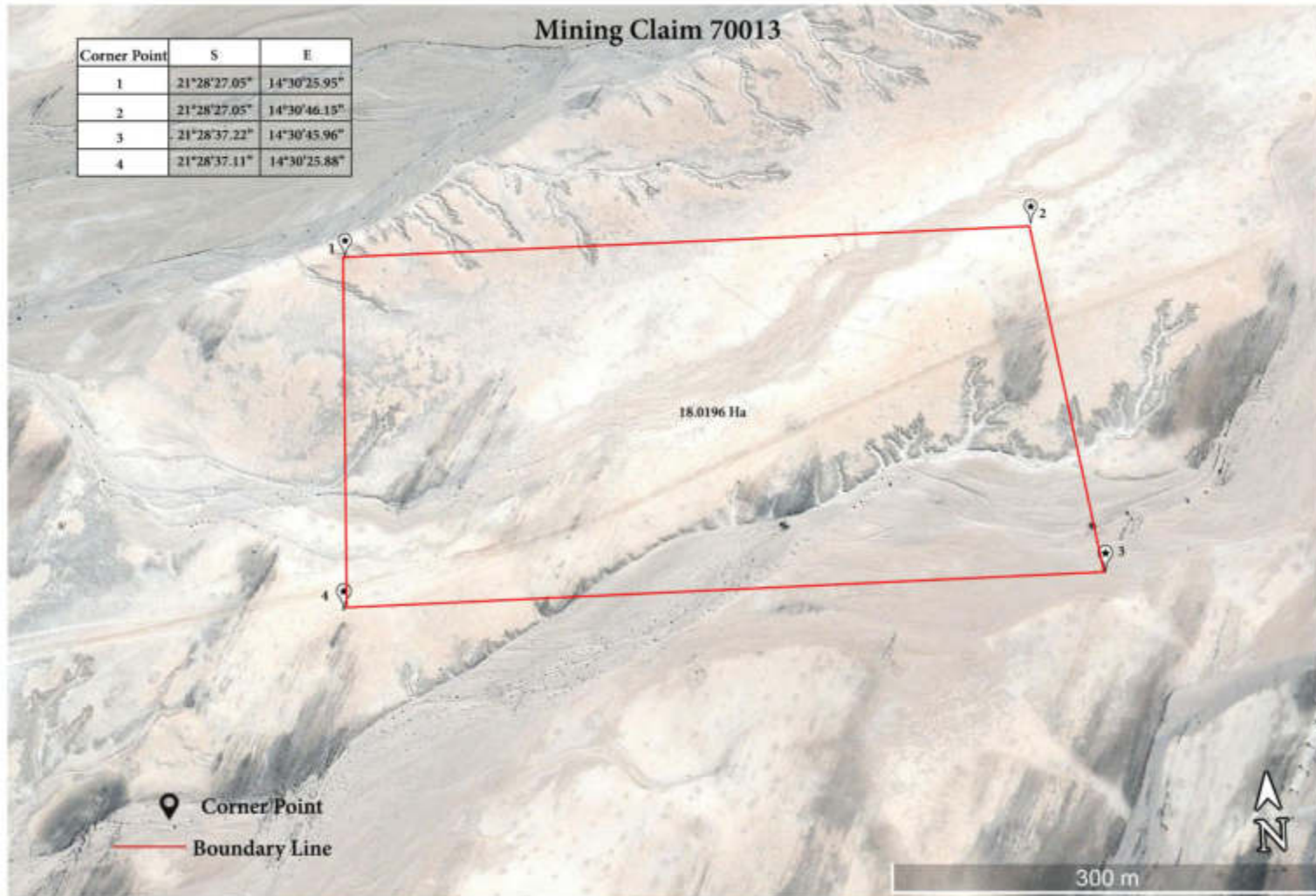


Figure 2-2: Mining Claim 70013



Figure 2-3: Mining Claim 70014

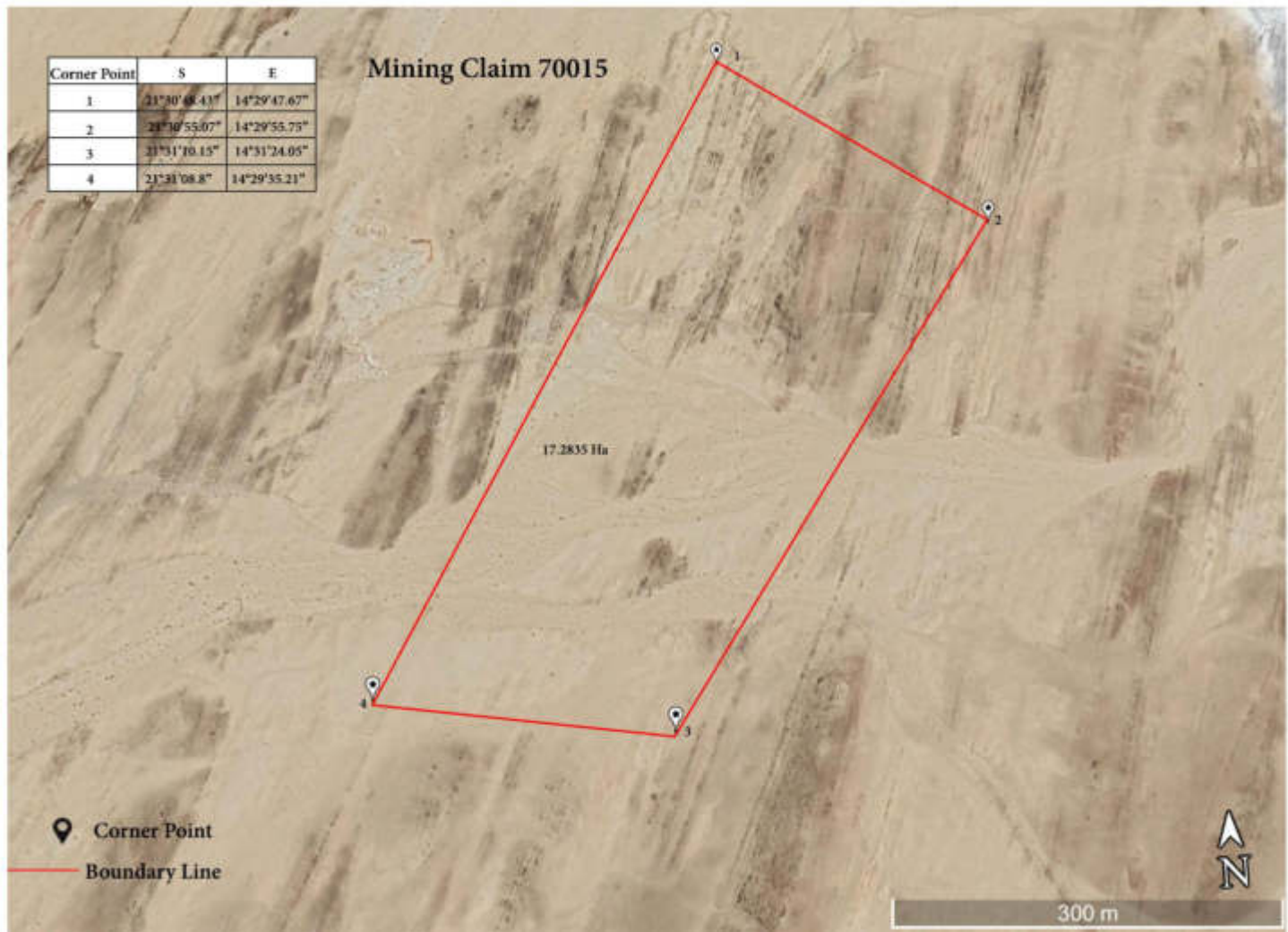


Figure 2-4: Mining Claim 70015

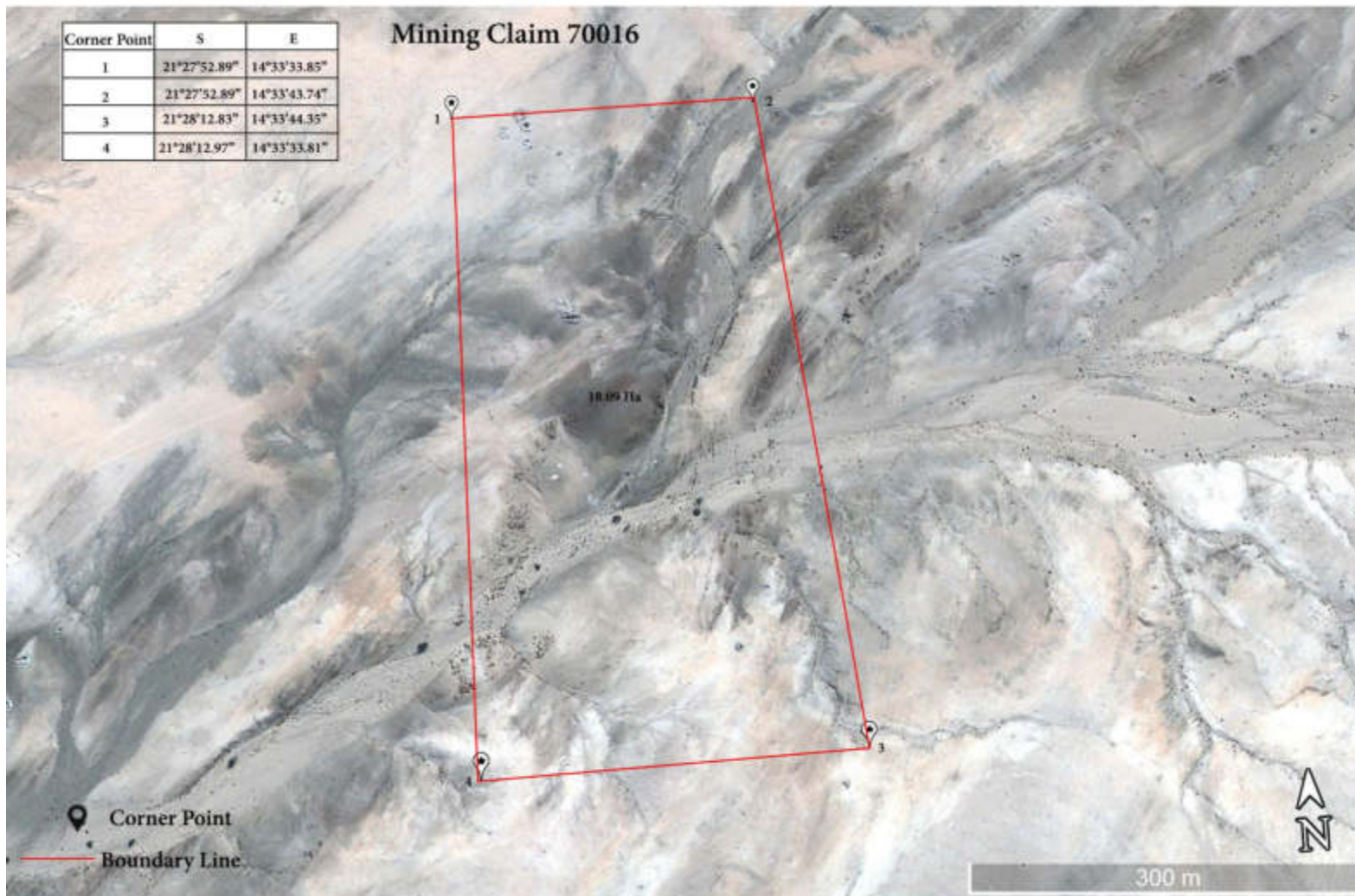


Figure 2-5: Mining Claim 70016

2.2. Existing Activities / Current Status

The four mining claims are located adjacent to each other covering a total 71.81 hectares. The topographic belt is associated with the escarpment, between the Namib Desert and the Central Plateau of Namibia. Climatic conditions are associated with a transition between the semi-arid (east) and the arid (west) parts of Namibia.

The previously disturbed area is home to a large diversity of wildlife with minimal inhabitants. Due to its desert nature, the environment cannot support large populations. However, most of the desert species that are found in Namibia are present and visitors to the area might glimpse a desert dwelling elephant or a rare black rhino. In summer, temperatures reach up to 40 °C.

The proposed further envisaged exploring mining activities as proposed in the initial application comprising four steps described below.

The mining process

- Site Excavation: this will involve the digging of the site, drilling and blasting diamond pattern to get relatively small rocks. The small rocks will be stockpiled at the site.
- Crushing: the stockpiled rocks are then fed into a jaw crusher and secondary crusher for crushing. After crushing material that -2mm will be screened out and anything bigger than 2mm is returned to be further crushed. Preferably with a roll crusher as impact crushing pulverized tin into minus 38 micron which is very difficult to recover.
- Screen and classify: here the crushed material is classified into 2mm, minus 1mm and minus 500 micron. The small fraction goes for floatation to recover lithium via floatation. The balance goes into spiral and shaking tables classified into three sizes for recovery of tin and tantalum. The rest is waste to be stockpiled.
- It is also important to note that gravity recovery for tin and tantalum only uses pure water no chemicals. Only lithium floatation does require some form of chemicals.

Furthermore, the Tin mining process will make use of up to 9000 liters a day. This volume of water will be abstracted from 3 aquifer boreholes available on site. Since

project registration in 2017, the proponent has undertaken few activities on site such as trenching, sampling and excavation as illustrated in the current biophysical environment below.

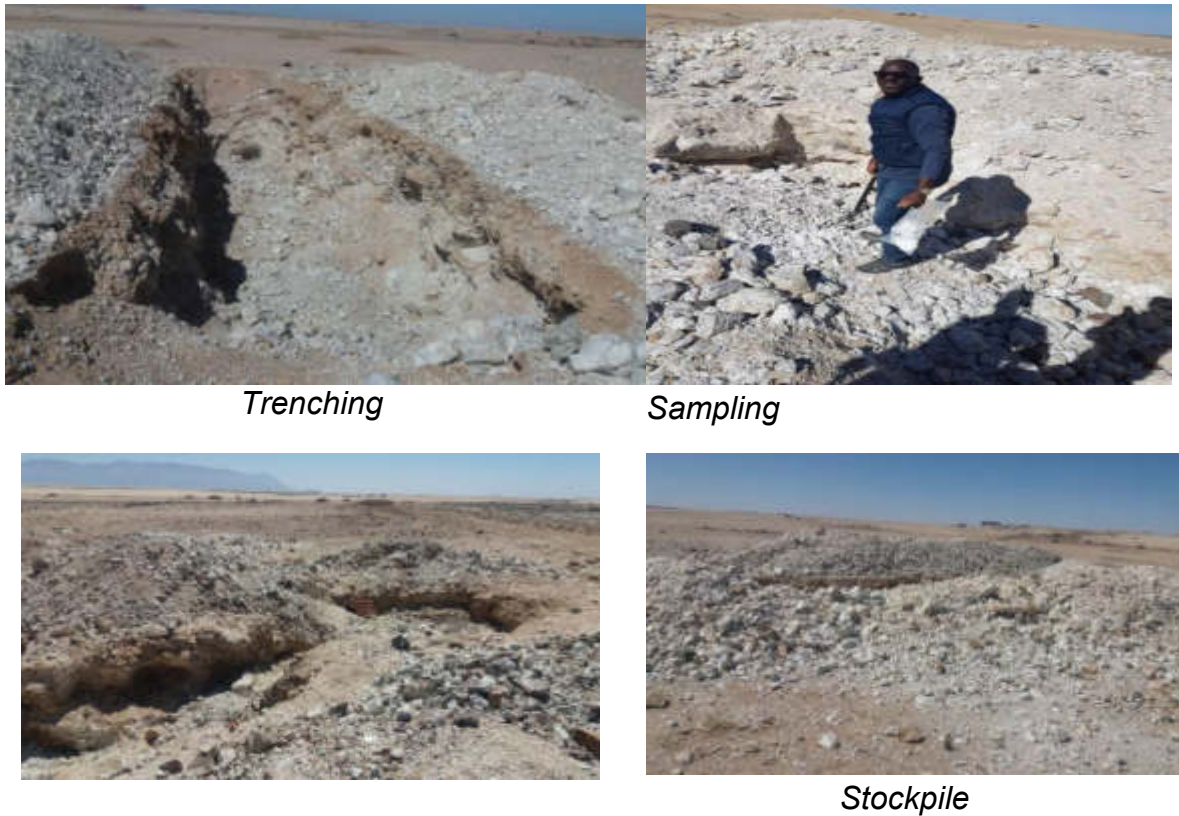


Figure 2-6: Current Biophysical Environment– Claim

2.3. Socio-economic (employment)

The project will provide employment to not more than 50 individuals who will be employed either by the proponent directly or indirectly by contractors. Where possible, the proponent will employ most of the workforce from the nearby settlement of Uis. Many of the employees will be responsible for the ore extraction, sorting of the stones and or operation of the mining machinery and equipment. All employees will be hosted and accommodated onsite for the entire period lifespan.

3 COMPLIANCE AND LEGAL FRAMEWORK

This chapter outlines the regulatory framework applicable to the proposed project. Table 3.2 provides an overview of applicable policies, plans and strategies and Table 3.1 provides a list of applicable national legislation.

3.1. Environmental Management Act (No.7 of 2007)

Section 27 of the Environmental Management Act 2007 (Act No. 7 of 2007) provides a list of activities that may not be undertaken without an Environmental Clearance Certificate (ECC) (herein referred to as: listed activities). The proposed establishment of the small scale mining activities trigger as listed activities.

3.2. Listed Activities

Listed Activities may not be undertaken without an Environmental Clearance Certificate (ECC), and hence an Environmental Impact Assessment (EIA) is required.

The proposed project triggers a number of Listed Activities as set out in the Environmental Management Act, 2007 (Act No. 7 of 2007) (herein referred to as the EMA) and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) (herein referred to as the EIA Regulations).

Table 3-2: Listed Activities triggered by the proposed project

Listed Activity	Regulation (Activity Description)	Relevance to the Proposed activity
Activity 3 Mining and Quarrying	<p>3.1 The construction of facilities for any process or activities which requires a license, right or other form of authorization, and the renewal of a license, right or other form of authorization, in terms of the Minerals (Prospecting and Mining Act), 1992.</p> <p>3.2 Other forms of mining or extraction of any natural resources whether regulated by law or not.</p> <p>3.3 Resource extraction, manipulation, conservation and related activities.</p>	Mining of diamond and other precious stones
Activity 8 Water Resource Developments	<p>8.1 The abstraction of surface water for industrial or commercial purposes.</p> <p>8.2 The abstraction of water from internationally shared water resources.</p>	Water abstraction 225 000 litres from the borehole aquifer for mining operations

3.3. Water Resources Management Act, (Act No. 11 of 2013)

The application to abstract 225 000 liters of water monthly for tin processing from the aquifer will be launched when a permit has been obtained from Department of Water Affairs in accordance with the provisions of the Water Resources Management Act, 2013 (No. 11 of 2013).

Table 3-3: Policies, Plans and Strategies

Policy / Plan	Relevance	Applicability to the Proposed Project
5th National Development Plan (NDP) and Vision 2030	Outlines the country's National Development Plans (NDPs), in line with the Harambee Prosperity Plan (HPP) and vision 2030	The proposed project is a development that forms part of the bigger picture of achieving economic progression, social transformation and environmental sustainability. Mining as a pillar for social well-being and economic development through household income and improved livelihoods

Table 3.4: Other Legal Instruments / National Statutes

National Statutes	Relevance	Applicability to the Proposed Project
Environmental Assessment Policy (1995)	Promotes Sustainable development and Environmental Conservation emphasize the importance of environmental assessments as a key tool towards environmental sustainability	Environmental Protection
Water Resources Management Act, 2013 (No. 11 of 2013)	Provides a framework for managing water resources based on the principles of integrated water resource management. It provides for the management, protection, development, use and conservation of water resource	Section 44 stipulates the requirements for a license to be held for water abstraction. Section 68 makes provisions for prevention of water pollution.
Forest Act 12 of 2001 Forest Act Regulations 2015	To provide for the protection of the environment and the control and management of forest. Relevant sections:	Forestry permits maybe required for vegetation clearing

National Statutes	Relevance	Applicability to the Proposed Project
	<ul style="list-style-type: none"> - Approval required for the clearance of endemic plants - Tree species and any vegetation within 100m from a water source may not be removed without a permit (Section 22, subsection 1 (b)) 	
Public and Environmental Health Act (Act No. 1 of 2015)	Advocates for Public Health and safety	Protective clothing provision, exposure limits and occupational injuries and disease prevention
National Heritage Act, No. 27 of 2004.	The Act provides provision of the protection and conservation of places and objects with heritage significance.	Refer to handling procedures presented in the Scoping Report
Precautionary Approach Principle	The precautionary principle is a global accepted approach, which states that, when there is a insufficient information about the potential threats / impacts that may arise from the proposed development, precaution (safety) should be applied	Prevention is better the cure
Polluters Pays Principle	This principle ensures that proponent takes responsibility of their actions. Hence in cases of pollution, the proponent bears the full responsibility and cost to clean up the environment	Accountability: The day that the government and authorities start holding people accountable, a new Namibia will be born and socio-economic development will blossom
Human Wildlife Conflict	The refers from the management of conflict arising from damages cause by wildlife	Roles and responsibility of the proponent and compensation from Wildlife related damages

4 ROLES AND RESPONSIBILITIES

This section outlines the roles and responsibilities of the key personnel responsible for the day to day management of activities to ensure effective implementation of the EMP.

4.3 Roles and Responsibilities

To ensure accountability, it is necessary to assign responsibilities. The key role-players for project implementation are;

- a) The **Environmental Compliance Officer (ECO)** representing the Ministry of Environment and Tourism (MET), or an appointed independent environmental officer, who is responsible for monitoring and auditing.
- b) **The Proponent**: Owner / Project Manager (**Marlowa Mining Enterprise Pty Ltd**).
- c) **The Site Manager** the person responsible for the day-to-day management of the project.

4.3.1 The Environmental Compliance Officer (ECO):

The ECO refers to the party responsible for the environmental monitoring and auditing to ensure that the provisions of the EMP are complied with.

The ECO shall have adequate environmental knowledge to understand and interpret the EMP and pertaining environmental aspects associated with the project. The specific tasks of the ECO are as follows:

- To undertake all monitoring and auditing activities in-order to ensure compliance with the EMP.
- Conduct site inspection prior to the commencement of activities; and at reasonable intervals (e.g. every month, quarterly or annually), throughout the duration of the project. Depending on the risks, some projects may be inspected more frequently (e.g. every month).

- Conduct regular inspections (unannounced spot checks) and shall submit compliance or non-compliance reports to the respective authorities (MET or any other relevant authority).
- Compile Progress Reports immediately after site inspections, Compliance Reports, pertaining to any non-compliance incident/s, and a Rehabilitation Report following the conclusion a specific activity.
- The ECO shall liaise closely with all key stakeholders i.e. the Site Manager and the Environmental Commissioner.
- Shall provide guidance on any environmental management issues, incidents or emergencies that may arise throughout the project lifespan.
- Shall assist in providing recommendations for remedial action in the event of non-compliance.
- Auditing or monitoring activities may involve investigation, as well as structured observation, measurement, and evaluation of environmental data over a period of time.

4.3.2 The Proponent:

The specific responsibilities of The Proponent are as follows:

- Appoint a Site Manager (SM) to oversee the daily onsite activities.
- Liaise closely with the SM and ECO on any environmental management issues, incidents or emergencies.
- Ensure that all activities on and around the site are conducted in accordance with the requirements of the EMP at all times.
- Ensure that all sub-contractors and visitors to the site are conversant with the requirement of the EMP, relevant to their roles on site.
- Shall develop a **communication strategy** between The Proponent, Site Manager, workers, the ECO and any other relevant stakeholder.
- Shall develop an **organisational structure** to ensure that:
 - There are clear channels of communication;
 - There is an organisational hierarchy for effective implementation of the EMP; and

- Conflicting or contradictory instructions are eliminated;
- Ensure that all instructions and official communications regarding environmental matters shall follow the organisational structure as determined
- Ensure that those EMP requirements are assigned to specific people / positions with the capacity and experience required for implementation.

4.3.3 The Site Manager:

The **Site Manager (SM)** should:

- Ensure that each team recruited to work at the sites, adheres to the EMP;
- Ensure that a **copy of the EMP is kept on site at all times and as it may be requested by authorities conducting spot checks at any time.**
- Ensure that all staff attend an induction session before commencement of any work on site and that they are adequately informed of the requirements of the EMP;
- Shall take special care to prevent irreversible damage to the environment;
- Ensure that activities are within the boundaries of the proposed zones as specified Site Map and boundary markings (visible pegs, tape etc).

4.4 Instructions

All instructions and official communications regarding environmental matters shall follow the organisational structure as determined by the Proponent. Based on the adopted structure, it is essential that responsibilities outlined are assigned to specific parties with adequate capacity and experience required to implement the EMP.

4.5 EMP Implementation Context

Environmental management is not only concerned with the final results of The Proponent's operations, but also with how such operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standards of the day-to-day operations required to complete the Works.

The EMP is an important tool and necessary to mitigate / counter negative environmental or social impacts that may arise from the project. However, in the absence of audits and monitoring, it will become ineffective.

5 POTENTIAL IMPACTS AND MITIGATION MEASURES

5.3 Impact Themes and Recommended Mitigation Measures

The EMP has been categorized into different themes, which serve as a quick guide to the recommended EMP remedial actions during the construction, Operation and rehabilitation stages (Table 6.1 to 6.7).

EMP Phase	Specific Aspects
A. Socio economic	Employment opportunities for Locals
	Alcohol and Drug abuse
	HIV / AIDS
B. Pollution and Waste Management	General waste categorized into: Material waste (off cuts) and domestic waste
	Oil and Lubricant Spills
	Industrial waste such as tailings
C. Environment	Water
	Ecology
	Visual Environmental
	Rehabilitation
Cultural Heritage	Heritage resources / artefacts
Health and Safety	General safety at work place & Visitor Safety
	Ablution facilities

SECTION A: SOCIO ECONOMIC

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Responsibility
Employment opportunities from the mining activity	Promote benefits to the local community	<ol style="list-style-type: none"> 1. Recruit locals for unskilled labour 2. Where possible, procure materials from local suppliers 	Employee structure and proportion of local employment	Proponent
Alcohol and Drug use	Prevent alcohol and drug use at the mining site	<ol style="list-style-type: none"> 1. Provide awareness on the dangers and health impacts of alcohol and drug use 2. All employees must be screen with the breathalyser to avoid intoxicated personnel on site 3. Prohibit use of alcohol and drugs on site 	<p>Breathalyser report</p> <p>Monitor presence of alcohol at work place</p>	Proponent through the site manager
Working hours	Adhere to the Labour Act No. 11 of 2007	Operate within the prescribed working days and hours as per the Namibian Labour laws and regulations.	Verification of working hours against the labour Act,	Proponent
HIV / AIDS	Provide HIV / AIDS awareness to employees	<ol style="list-style-type: none"> 1. Provide HIV / AIDS awareness at induction 2. Avail Condoms at on site 	Availability of condoms at Mining site	Proponent
Security	Provide a secured environment and prevent unauthorized	<ol style="list-style-type: none"> 3. Have available security officer on site 247. 4. Demarcate and shield all the dug holes to prevent people and animals from falling into the holes. 	<p>Presence of security service onsite.</p> <p>Barricade ropes around the site and</p>	Proponent

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Responsibility
	entry	5. No unauthorized individuals should be allowed onsite and every employees will be given a permit as required by the park	holes. Provision of access cards with cards/permits for the employees Implement proper signage	

SECTION B: POLLUTION CONTROL AND WASTE MANAGEMENT

Environmental / Social Impact	Objective	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Oil and sewage Spills	<p>Manage oil spills and leak from vehicles and Machinery.</p> <p>Prevent waste water from seeping in the ground</p>	<ol style="list-style-type: none"> 1. There must be an immediate spill response kit on site 2. Ensure all vehicle and machinery must be well serviced and leak inspections are done. 3. Provide drip trays to stationary vehicle and machinery 4. The onsite re-fuelling area must be on concrete bund 5. Storage of fuel, oil and lubricants must be kept on bonded structure 6. If an oil spill occurs, collect the contaminated soil, store in drums and dispose at appropriate waste disposal site (e.g. Municipal disposal site). 7. The septic tanks must be properly lined according to the Act to prevent it from pollution the ground and waste water should be pumped out and taken to the local waste water treatment facility. 	Physical verification and routine monitoring, documentation of incident investigations and corrective actions reports.	Proponent
Solid Waste Management	To manage solid waste,	<ol style="list-style-type: none"> 1. All waste produced on site should be contained and disposed as required by management of UIS 	Scattered waste, Littering and any other unsightly waste at the	Proponent

Environmental / Social Impact	Objective	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
	To prevent littering, pollution, contamination of water and general environmental health hazards	<p>settlement or conservancy.</p> <p>2. There must be sufficient temporally ablution facility at the site for designated for males and female.</p> <p>3. The proponent shall erect mobile ablution facility at each claim. The toilet facility should be moved and located at the claim where the team is working</p> <p>4. There must be provision of secure waste bins on site and should be disposed of in a safe way.</p>	site (eyesore), clean environment status	

SECTION C: ENVIRONMENT

Aspect	Objective	Action Required	Monitoring Indicator	Party responsible
Surface Water	To avoid any potential water contamination or pollution of the Orange River	<ol style="list-style-type: none"> 1. Refer to the adequate handling of oil and fuel above. 2. Ensure no mining activities within 100 meters from the river. 	Oil and grease trace in surface water	Proponent
Water abstraction	To preserve the borehole aquifer water resources	<ol style="list-style-type: none"> 1. Do not abstract more than the approved allocation as indicated in the permit 2. Install automatic measuring gauge to monitor abstraction 3. Carry out periodic pumping yield to assess aquifer sustainability. 4. Adhere to the conditions set in the reports 	Abstraction reports	Proponent
Visual Environment	<p>To ensure that the infrastructure development is blending with the current environment.</p> <p>To ensure minimal visual impacts on the existing environment</p>	<ol style="list-style-type: none"> 5. Use materials that are environmentally friendly and blend with the existing environment. 6. Restore the environmental to its original state where applicable by minimizing visual impacts 	Visual and physical monitoring	Proponent

Aspect	Objective	Action Required	Monitoring Indicator	Party responsible
Ecology	Rangeland Management	<ol style="list-style-type: none"> 1. Endemic vegetation should be taken to the Namibia Botanical Garden (NBG) to be preserved and replanted during rehabilitation. 2. Create a tree database for monitoring 3. Create a complain register from other land use. 4. Clear the vegetation only where the ore deposit is. 	<p>Inspection report</p> <p>Trees log at the NBG.</p> <p>Geo-physical monitoring</p>	Proponent
Human Wildlife	To prevent human-Wildlife conflicts particularly between human and baboons.	<ol style="list-style-type: none"> 5. Secure area around the site and put security light. 6. Maintain quiet time in the evening 7. Prohibit illegal hunting by employees. 8. No fire permitted on the mining facility. 9. All entertainment to be held and permitted 10. Demarcated areas within the park. 	Complaint cases, routine monitoring, cases of wildlife human conflict	Proponent
	Baboon Management	<ol style="list-style-type: none"> 11. Make use of baboon-proof dustbin onsite and ensure that rubbish securely stored. 12. Practice good waste management. 13. Ensure that food for the stuff is securely stored and not accessible to baboons. 14. Refrain from feeding the baboons and engaging in activities that will attract them. 15. Do not try to get food back from a baboon as it may trigger a fight with them. 16. Educate employees on baboon 		

Aspect	Objective	Action Required	Monitoring Indicator	Party responsible
		management, raise awareness on avoiding conflict with baboons.		
Rehabilitation	To ensure that all disturbed areas are rehabilitated	<p>17. All areas disturbed as a result of the mining activities should be cleaned up and rehabilitated. Backfilling of all voids caused by excavation by placing of topsoil on backfill.</p> <p>18. Tailing waste and other waste materials should be removed from the sites and disposed of or used for backfilling.</p> <p>19. Re-vegetation of exposed soil surfaces to ensure no erosion in these areas with the endemic plants.</p>	Physical & visual verification	Proponent

SECTION D. HERITAGE AND ARCHAEOLOGY

Aspect	Objective	Action Required	Monitoring Indicator	Party responsible
Heritage Resources / artefacts	Reduce the impacts associated earthworks, increase traffic on heritage resources / artefacts	<ol style="list-style-type: none"> Heritage remains or artefacts discovered on site must be reported to the National Museum (+264 61 276800) or the National Forensic Laboratory (+264 61 240461). No artefacts must be removed or be interfered with prior to authorization from the Namibian National Heritage Council (NHC). Recovery of heritage remains or artefacts discovered and removal thereof should be directed by the National Museum. Return the area to its normal nature by having minimum impacts on the visual environment No mining activities shall take place with one kilometre from the edge of MC 70014. All mining activities shall adhere and comply with the conditions stated in HC Consent letter. See Appended Consent letter. 	Sighting report/s of heritage resources / artefacts	Site Manager Proponent

SECTION E. HEALTH AND SAFETY

Aspect	Objective	Action Required	Monitoring Indicator	Party Responsible
General Safety at Work Place	Ensure that the safety of workers is not compromised and adhere to the Health and Safety Regulations, Government Notice 156/1997 (GG 1617)	<ol style="list-style-type: none"> 1. Develop a Health and safety Plan 2. Train staff/employees on personnel safety and how to handle equipment and machinery 3. Provide protective gear (helmets, safety straps, first-aid kits etc.) 4. Only qualified personnel must be allowed to operate special machine/instruments 5. No employee must be allowed to be onsite without PPE; 6. Adequate safety signs must be displayed on site. 7. No unauthorized people onsite. 	<p>Health and Safety included and reflected in the Induction Minutes</p> <p>adequate protective gear for all staff</p> <p>Availability of the first aid kit onsite</p> <p>Registry of personnel's onsite</p>	Site Manager
Ablution	Reduce health risks and environmental pollution	<ol style="list-style-type: none"> 1. Ensure adequate, hygienic (clean) and user friendly ablution facilities for all staff. 2. Provision of separate Male and female toilets. 3. Inspect ablution facilities regularly 4. Ensure that the septic tank is securely lined 	<p>availability, cleanliness and hygienic ablution facilities</p> <p>Incidents or complaints of waste discharge into the environment</p>	Site Manager
Dust and	Mitigate dust and noise impacts to	<ol style="list-style-type: none"> 1. Determine both entry and exit medical fitness of each employee 	Incident Report	Site Manager

Aspect	Objective	Action Required	Monitoring Indicator	Party Responsible
Noise	both employees and the public	2. Provide dust masks and ear muffs to all employees operating in a dusty or noisy environment. 3. Use dust suppression system to prevent accidents related to poor visibility. 4. Monitoring of both environmental and occupational noise and dust	Public Complains Employee medical records	
	Dust Management	5. See recommendations under Section 6.1.		

6. RECOMMENDATIONS

- a) The proposed water abstraction from the borehole aquifer should be approved by the Department of water affairs and permit should be obtained;
- b) All the mining activities should be conducted at least 100 meters away from the road reserves;
- c) All structures to be erected as part of the mining activities on the Claims should be environmentally friendly and in sync with the existing environment.
- d) All aspects related to environmental and occupational hazards should be monitored and mitigated accordingly.

a. **Dust Management**

The site Manager shall ensure that:

- a) A compulsory speed limit of 30km/h is introduced within the boundary of the site and ensures that it is adhered to by both the public and employees.
- b) Introduce dust hazard warning (at least 1 km away from the site) for both on-going and coming traffic.
- c) Where applicable; close the road before blasting and until the dust cloud is cleared.
- d) Make use of non-portable water and ensure there an adequate water supply the site for effective dust suppression/mitigation particularly on windy and dry days.
- e) Use fine water sprays on conveyors, loading shovels, hoppers and wherever appropriate to minimize dust generation. Also ensure stockpiles of waste or materials are covered to reduce potential for fugitive dust emissions.
- f) Both employees and visitors are provided with dust masks while on site to prevent them from dust exposure.

7. CONCLUSION

The proposed mining activities have been in existence since the approval of the EPL 70013, 70014, 70015 and 70016 by the Ministry of Mines and Energy in 2017 as well as cleared by the Ministry of Environment and Tourism. This EMP submission is to validate the mining activities on the proposed site and update the relevant authorities on the activities that took place to date. Trenching, sampling are some of the main activities that took place on site and have minimally affected the environment. The activities were to confirm the mineral deposits on the four claims. Therefore with the project renewal, the proponent proposes to extend the mining activities and become fully operational. The proponent further assures the stakeholders that the mining of base and rare metals and industrial minerals present on site will be conducted in a manner that protects natural biodiversity along with its underlying ecological structure (as recommended by this EMP) and supporting environmental processes.

Any impact resulting from the project activities will be managed as recommended in the report. The proponent will ensure that the EMP recommended mitigation measures are implemented in a friendly manner and in accordance with the provisions of the Environmental Management Act and EIA regulations

Non-compliance against the EMP is punishable and specific responsibilities have been assigned to role players' in-order to ensure that the EMP is implemented. The key role-players (Proponent, Contractor, and Site Manager) as defined under section 4 should:

- **Read** the EMP (particularly the Site Manager) and ensure that they are fully conversant with provisions of the EMP,
- If need be, **Ask for clarity** from the Environmental Assessment Practitioner (EAP), Environmental Compliance Officer (ECO) or relevant authority,
- Ensure implementation of the recommended mitigation measures, and
- Communicate defaults / challenges to the ECO as soon as possible.

The ECO should monitor (conduct periodic and unannounced EMP audits) in-order to ensure compliance against the recommended mitigation measures.

8. REFERENCES

- Christelis G. and Struckmeier W. (2015). Groundwater in Namibia, an explanation to the Hydrogeological Map. Windhoek, Namibia
- Ministry of Environment and Tourism. (2013). Management Plan //Ai-/Ais Hot Spring Game Park.
- NACOMA. (Undated). Namibia Coast Conservation and Management Project
- Tordif E. (2009). Notes on Hydrogeology Training for Ministry of Agriculture, Water and Forestry, Department of Water Affairs and Forestry. Windhoek, Namibia