

**ENVIRONMENTAL MANAGEMENT PLAN**  
**FOR THE ESTABLISHMENT OF ESTABLISHMENT OF MINING ACTIVITIES OF BASE AND RARE**  
**METALS, INDUSTRIAL MINERALS, PRECIOUS STONES AND SEMI-PRECIOUS STONES ON**  
**MINING CLAIMS; 73291, 73292,73293, 73294, 73295, 73296, 73297, 73298, 73299 & 73300**  
**KHORIXAS DISTRICT, KUNENE REGION.**



**LEAD CONSULTANT:**

**Mr. Gideon Kalumbu**  
**EnvironClim Consulting Services**  
**P O Box 6917**  
**Windhoek**  
**Cell: +264 81 2705001**

**PROPONENT:**

**Ms. Otilie Ndesheetelwa Ndimulunde**  
**P O Box 64223**  
**Windhoek**  
**Cell: +264 813350256**

<b>DOCUMENT INFORMATION</b>	
<b>DOCUMENT STATUS</b>	<b>FINAL</b>
<b>PROJECT TITLE</b>	<b>ENVIRONMENTAL MANAGEMENT PLAN FOR THE ESTABLISHMENT OF MINING ACTIVITIES OF BASE AND RARE METALS, INDUSTRIAL MINERALS, PRECIOUS STONES AND SEMI-PRECIOUS STONES ON MINING CLAIMS; 73291, 73292,73293, 73294, 73295, 73296, 73297, 73298, 73299 &amp; 73300 KHORIXAS DISTRICT, KUNENE REGION.</b>
<b>CLIENT</b>	<b>Ms. Otilie Ndesheetelwa Ndimulunde P O BOX 64223 WINDHOEK CELL: +264 813350253</b>
<b>PROJECT CONSULTANT</b>	<b>MR. GIDEON KALUMBU P O BOX 6917 AUSSPANNPLATZ WINDHOEK CELL: +264 81 2705001</b>
<b>LOCATION</b>	<b>KHORIXAS DISTRICT, KUNENE REGION</b>
<b>DATE</b>	<b>MARCH 2023</b>

## **ABBREVIATION**

<b>DEAF</b>	Department of Environmental Affairs and Forestry
<b>EA</b>	Environmental Assessment
<b>EAP</b>	Environmental Assessment Practitioner
<b>ECC</b>	Environmental Clearance Certificate
<b>ECO</b>	Environmental Compliance Officer
<b>ECS</b>	EnvironClim Consulting Services
<b>EIA</b>	Environmental Impact Assessment
<b>EMA</b>	Environmental Management Act (No. 7 of 2007)
<b>EMP</b>	Environmental Management Plan
<b>MAWLF</b>	Ministry of Agriculture, Water and Land Reforms
<b>MEFT</b>	Ministry of Environment, Forestry and Tourism

## Tables of Contents

<b>1. INTRODUCTION</b>	<b>2</b>
<b>2. PROJECT LOCATION</b>	<b>2</b>
<b>3. PURPOSE OF THE EMP</b>	<b>4</b>
<b>4. COMPLIANCE TO THE EMP</b>	<b>5</b>
<b>5. LEGAL AND POLICY FRAMEWORK</b>	<b>6</b>
<b>6. ROLES &amp; RESPONSIBILITIES</b>	<b>12</b>
6.1. Environmental Compliance Officer (ECO)	12
6.2. The Proponent	12
6.3. Site Manager	12
6.4. Employees and Contractors	13
<b>7. DISCIPLINARY ACTION</b>	<b>13</b>
<b>8. THE ENVIRONMENTAL MANAGEMENT PLAN</b>	<b>13</b>
<b>SECTION A: STAFF INDUCTION</b>	<b>15</b>
<b>SECTION B: HEALTH AND SAFETY</b>	<b>17</b>
<b>SECTION C: POLLUTION CONTROL AND WASTE MANAGEMENT</b>	<b>23</b>
<b>SECTION D: ENVIRONMENT</b>	<b>27</b>
<b>SECTION E: HERITAGE AND ARCHEOLOGICAL SITES</b>	<b>30</b>
<b>SECTION F: SOCIO ECONOMIC</b>	<b>32</b>
<b>9. DECOMMISSIONING PHASE</b>	<b>34</b>
<b>10. CONCLUSION AND RECOMMENDATIONS</b>	<b>35</b>

## List of Figures

Figure 1: The location of mining claims; 73291, 73292,73293, 73294, 73295, 73296, 73297, 73298, 73299 and 73300, Khorixas District, Kunene Region (red pinned) (GPS coordinates - 20.772500 S, 14.459167 E).....	3
Figure 2: The diagonal map of the mining claims; 73291, 73292,73293, 73294, 73295, 73296, 73297, 73298, 73299 and 73300, Khorixas District, Kunene Region, delineated in green.....	4

## List of Tables

Table 1. Legal Requirements for the proposed project	6
Table 2 : Environmental Management Plan (EMP)	13
Table 3. Staff Induction Mitigation Measures	15
Table 4. Health and Safety Measures to be implemented	17
Table 5. Waste Management Mitigation Measures	23
Table 6. Environmental Mitigation Measures to be implemented	27
Table 7. Archaeology and Heritage Mitigation Measures	30
Table 8. Social Economic Mitigation Measures	32

## **1. INTRODUCTION**

**Ms. Otilie Ndesheetelwa Ndimulunde**, hereafter referred to as the proponent intend to carry out mining activities for mining activities of base and rare metals, industrial minerals, precious stones and semi-precious stones on mining claims: 73291, 73292,73293, 73294, 73295, 73296, 73297, 73298, 73299 and 73300, Khorixas district, Kunene Region. The proponent had lodged his application with the Ministry of Mine and Energy (MME) for a block of ten mining claims on the 17 November 2020. The proposed activity is a listed activity as per Environmental Management Act 2007 (Act No. 7 of 2007) (EMA) and an Environmental Clearance Certificate (ECC) is therefore required to commission such as project. In the interim the proponent has secured an off-take agreement with a local mining company and there are possibilities for an international company to partner with the proponent based on the on-going negotiation to developed the project. EnvironClim Consulting Services (ECS) was therefore appointed by the proponent to carry out an Environmental Impact Assessment (EIA) and develop an Environmental Management Plan for the proposed project.

## **2. PROJECT LOCATION**

The mining claims 73291, 73292,73293, 73294, 73295, 73296, 73297, 73298, 73299 and 73300 are situated approximately 58 Km north-west of Uis and 70 Km south-west of Khorixas, in Kunene Region. (see **Figure 1** and **2** below). The mining claims covers an area of 108.9231 Ha.

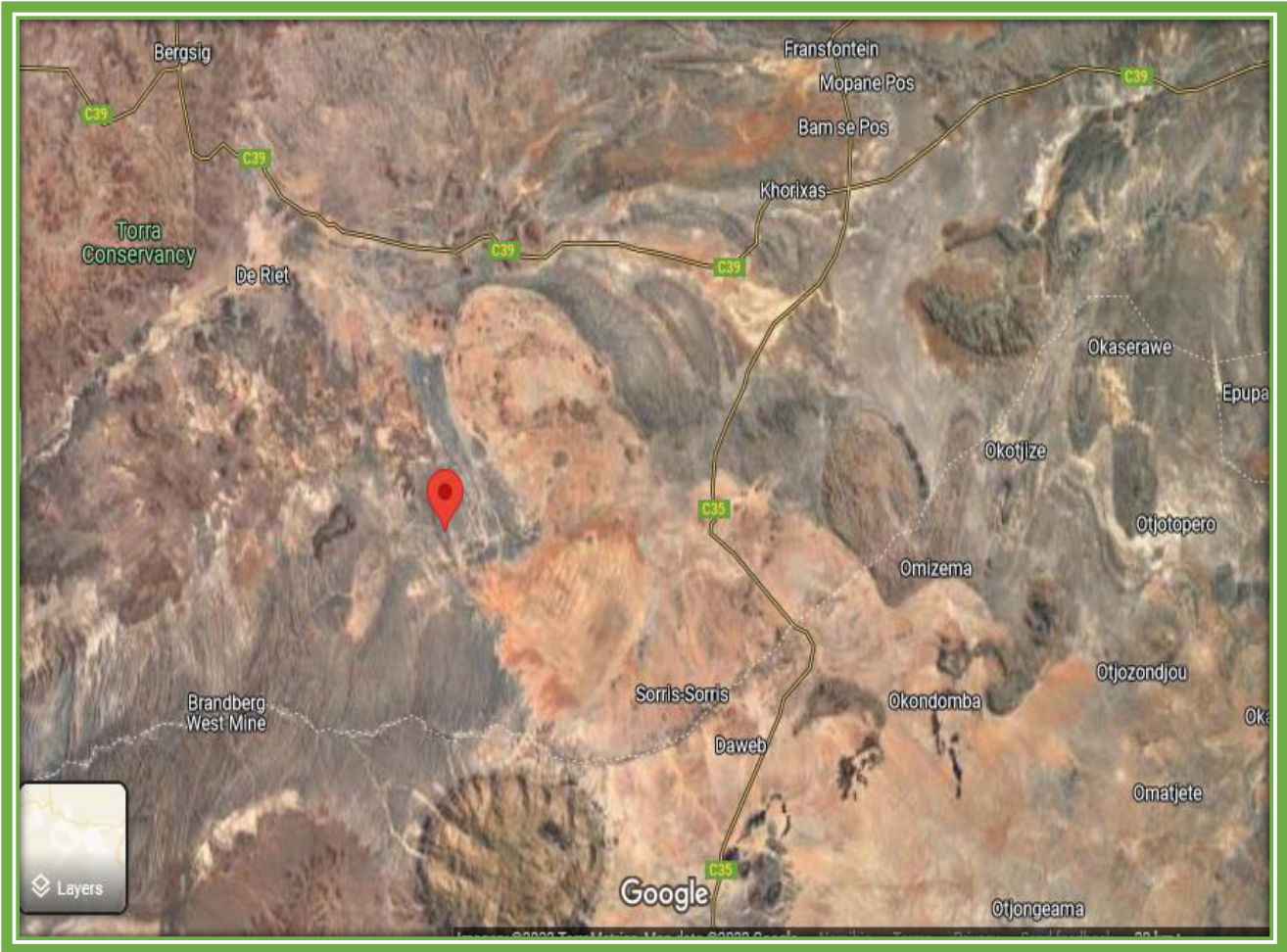


Figure 1: The location of mining claims; 73291, 73292, 73293, 73294, 73295, 73296, 73297, 73298, 73299 and 73300, Khorixas District, Kunene Region (red pinned) (GPS coordinates - 20.772500 S, 14.459167 E).

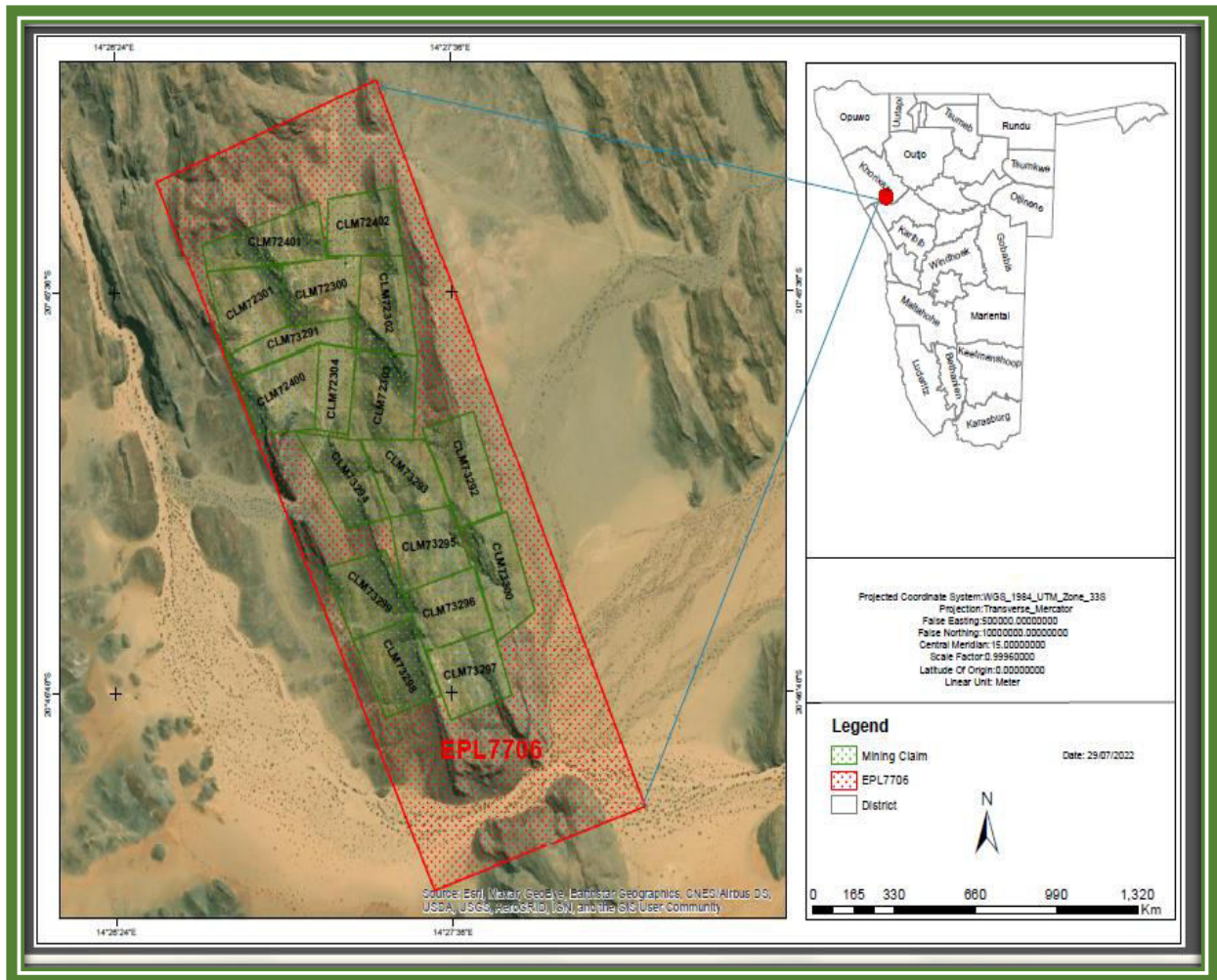


Figure 2: The diagonal map of the mining claims; 73291, 73292, 73293, 73294, 73295, 73296, 73297, 73298, 73299 and 73300, Khorixas District, Kunene Region, delineated in green.

### 3. PURPOSE OF THE EMP

This Environmental Management Plan (EMP) is a risk strategy that outline logical and empirical framework, monitoring programs, mitigation measures, and management control strategies to minimise potential environmental impacts to a marginal level. Furthermore, it outlines the roles and responsibility of persons involved in the proposed mining project. This EMP include formulated mitigation measures for the proposed mining activities for base and rare metals, industrial minerals, precious stones and semi-precious stones on mining claims 73291, 73292, 73293, 73294, 73295, 73296, 73297, 73298, 73299 and 73300, Khorixas district, Kunene Region.

#### **4. COMPLIANCE TO THE EMP**

This EMP is a legally binding document as given under the provisions of the Environmental Management Act, 2007 (Act No. 7 of 2007). The project proponent and its contractors must therefore adhere to the framework of this document. It should be noted further that the EMP is a living document and is subjected to amendments depending on the changing environments and new information that may be available in the future, hence it must be revised accordingly with the provision of the EMA.



## 5. LEGAL AND POLICY FRAMEWORK

The proposed project shall be established and operated under the provision of the relevant statutory framework of Namibian and international laws of which Namibia is signatory.

Table 1. Legal Requirements for the proposed project

Legislation	Summary	Applicability
<b>The Namibian Constitution</b>	The Namibian constitution is the supreme law of the country which is committed to sustainable development. Article 95(1) of the Constitution of Namibia states that: - "The State shall actively promote and maintain the welfare of the people by adopting policies aimed at ... The maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future".	To undertake the EIA in order to maintain the ecological process and diversity of ecosystem.
<b>The Environmental Management Act</b>	The Environmental Management Act No 7 of 2007 aims to promote the sustainable management of the environment and the use of natural resources and to provides for a process of assessment and control of activities which may have significant effects on the environment; and to provide for incidental matters. The acts provide a list of activities that may not be undertake without an environmental clearance certificate.  Further, the Act ensures that;  Further, the Act ensures that;  (a) Potential threats are considered timeously	Legal requirement to undertake an EIA

Legislation	Summary	Applicability
	<p>(b) A comprehensive stakeholder's consultation is conducted, and all Interested and affected parties are given an opportunity to comment on the project</p> <p>(c) Decision are robust by considering the above-mentioned activities.</p>	
<b>Atmospheric Pollution Prevention Ordinance Act (No.11 of 1976)</b>	<p>This Ordinance serves to control air pollution from point sources, but it does not consider ambient air quality. This ordinance is being repealed by the proposed Pollution Control and Waste Management Bill. Any person carrying out a 'scheduled process' which are processes resulting in noxious or offensive gases typically pertaining to point source emissions have to obtain a registration certificate from the Department of Health.</p>	<p>Generation of greenhouse gases from emission from vehicles and mining equipment.</p>
<b>Draft Pollution Control and Waste Management Bill</b>	<p>This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill will repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) when it comes into force. The Bill also provides for noise, dust or odour control that may be considered a nuisance. Further, the Bill advocates for duty of care with respect to waste management affecting humans and the environment and calls for a waste management licence for any activity relating to waste or hazardous waste management.</p>	<p>Possible fuel spill and leakages may pollute ground and surface water.</p>
<b>Environmental Policy framework (1995)</b>	<p>This policy subjects all developments and project to environmental assessment and provides guideline for the Environmental Assessment. Its provision mandate that Environmental Assessment take due consideration of all possible impacts and incorporate them in the development or planning stages.</p>	<p>Provision of the EIA and guidelines</p>

Legislation	Summary	Applicability
<b>The Occupational Safety and Health Act No. 11 of 2007;</b>	<p>Safety: A safety risk is a statistical concept representing the potential of an accident occurring, owing to unsafe operation and/or environment. In the working context “SAFETY” is regarded as “free from danger” to the health injury and to properties.</p> <p>Health: Occupational Health is aimed at the promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations. This is done by ensuring that all work-related hazards are prevented and where they occur, managed.</p>	<p>Operating mining equipment has the potential risk of injuries.</p> <p>Provision of clean ablution facility, routine health check-ups for employees, HIV/AIDS awareness etc.</p>
<b>Public Health Act No. 36 of 1919</b>	<p>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.</p>	<p>Ensure public safety from noise, dusts, and air pollution.</p>
<b>Water Resources Management Act (2004)</b>	<p>This Act provides a framework for managing water resources based on the principles of integrated water resources management. It provides for the management, development, protection, conservation, and use of water resources. Furthermore, any watercourse on/or in close proximity to the site and associated ecosystems should be protected in alignment with the listed principles.</p>	<p>Ensure that the riverine systems are not polluted and implement pollution control mechanism to avoid water pollution.</p>

Legislation	Summary	Applicability
<b>Water Act No, 54 of 1956</b>	<p>This act states that, all water resources belong to the State. It prevents pollution and promotes the sustainable utilization of the resource. To protect these resources, this act requires that permits are obtained when activities involve the following;</p> <ul style="list-style-type: none"> <li>(a) Discharge of contaminants into water sources such as pipe, sewer, canal, sea outfall and</li> <li>(b) Disposal of water in a manner that may cause detrimental impact on the water resources</li> </ul>	Contaminated water, such as sewage sludge must not be dumped into the riverbeds.
<b>Petroleum Product and Energy Act No, 13 of 1990</b>	This Act provides a framework for handling and distribution of petroleum products which may include purchase, sale, supply, acquisition, possession, disposal, storage or transportation thereof.	Safe handling of the petroleum products such as fuel and lubricants.
<b>Labour Act No. 11 of 2007</b>	This Act aims to regulate labour in general and includes the protection of the health, safety and welfare of employees. The 1997 Regulations relating to the Health and Safety of employees at work sets out the duties of the employer, welfare and facilities at the workplace, safety of machinery, hazardous substances, physical hazards, medical provisions, construction safety and electrical safety.	Follow legal labour requirements such as safety, remuneration etc.
<b>Regional Council Act, 1992 (Act No. 22 of 1992)</b>	<p>The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning and coordination of regional policies and development.</p> <p>The main objective of this Act is to initiate, supervise, manage and evaluate development at regional level.</p>	Observe the regional by laws

Legislation	Summary	Applicability
<b>Soil Conservation Act No. 76 of 1969</b>	This act promotes the conservation of soil, prevention of soil erosion.	Coordinate movement of mining equipment to prevent soil erosion. Ensure conservation of topsoil.
<b>Hazardous Substances Ordinance No. 14 of 1974</b>	This ordinance gives provision to control the handling of hazardous substance in all circumstances, such as manufacturing, imports and exporting of these to ensure human and environmental safety.	Handling of fuel, fire and explosion risks
<b>National Heritage Act No. 27 of 2004</b>	The Act makes provision for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. Part V Section 46 of the Act prohibits removal, damage, alteration or excavation of heritage sites or remains, while Section 48 sets out the procedure for application and granting of permits such as	Mining activities such excavation and trenching may unearth archaeological material.
<b>Word's Best Practises</b>	<p><b><i>Precautionary Approach Principle</i></b></p> <p>This principle is worldwide accepted when there is a lack of sufficient knowledge and information about the possible threats to the environment. Hence if the anticipated impacts are greater, then precautionary approach is applied. In this project, there are no eminent uncertainty however in cases when they arise, this approach should be applied.</p> <p><b><i>Polluter Pays Principle</i></b></p>	Mining mineral particularly in the area with biodiversity and underground water can be detrimental to the ecosystem and underground water resource. Therefore, precaution must be taken when doing excavation and trenching during mining.

Legislation	Summary	Applicability
	<p>This principle ensures that proponents take responsibility of their actions. Hence in cases of pollution, the proponent bears the full responsibility to clean up the environment.</p>	<p>In the event of any damage of biodiversity and pollution of underground water, the proponent must be responsible to compensate for the damages.</p>

## 6. ROLES & RESPONSIBILITIES

### 6.1. Environmental Compliance Officer (ECO)

The Ministry of Environment, Forestry and Tourism is the custodian of environmental protection. The Environmental Compliance Officer shall be an appointed Environmental Officer from the Directorate of Environmental Affairs delegated to impose compliance as per the provision of the EMA. The ECO may carry out inspection at any given time to enforce compliance. Depending on his/her work schedule, the ECO shall visit the site at any time for environmental inspection and monitoring.

### 6.2. The Proponent

**Ms. Otilie Ndesheetelwa Ndimulunde** shall resume the overall responsibility of environmental management through acceptable implementation of the environmental management plan. Furthermore, it shall be a full responsibility of the proponent to implement the following activities.

- Appoint a site Manager;
- Ensures that all workers and contractors are conversant with the Environmental Management Plan (EMP) and are inducted on safety measures pertaining to mining of base and rare metals, industrial minerals, precious stones and semi-precious stones on mining claims; 73291, 73292, 73293, 73294, 73295, 73296, 73297, 73298, 73299 and 73300 , Khorixas district, Kunene Region;
- Ensure a safe and healthy working environment;
- Provide workers with appropriate Personal Protective Clothing (PPE);
- Monitor the employees works with regard to safety;
- Ensure good environment performance and compliance;
- Appoint an environmental officer or Environmental Practitioner to carry out environmental audits.

### 6.3. Site Manager

The Site Manager shall represent **Ms. Otilie Ndesheetelwa Ndimulunde**. He/she will be responsible for monitoring daily operations and ensure acceptable adherence of workers and contractors to the EMP. The Site Manager must ensure that a copy of the EMP is available on site at all times and every worker is acquainted with the EMP.

## 6.4. Employees and Contractors

All stakeholders, especially employees and contractors must;

- Adhere to the EMP;
- Ensure to wear personal protective clothing at all time when working;
- Report worn out PPE and request for replacement;
- Adhere to the company rules and policies.

## 7. DISCIPLINARY ACTION

The EMP is a legally binding document. Non-compliance to the EMP must result in punishable legal action against the proponent such as;

- Suspension of work;
- Financial penalties.

The disciplinary action shall be determined as per the provision of EMA and relevant statutory framework. Under Section 27 (4), *Any person who contravenes subsection (3) commits an offence and is on conviction liable to a fine not exceeding N\$500 000 or to imprisonment for a period not exceeding 25 years or to both such fine and such imprisonment*".

## 8. THE ENVIRONMENTAL MANAGEMENT PLAN

The scope of this EMP is with reference to the EIA of the mining activities for base and rare metals, industrial minerals, precious stones and semi-precious stones on mining claims 73291, 73292, 73293, 73294, 73295, 73296, 73297, 73298, 73299 and 73300 and decommissioning phase of the planned project. This EMP is structured by considering Social, Environmental, Safety and Occupational Health aspects associated with this project as summarised in **Table 2** below.

Table 2 : Environmental Management Plan (EMP)

Activity	Objectives
A – Staff Induction	Induction
	Communication
B – Health and Safety	General safety at workplace
	Ablution facilities
	Dust and Noise Exposure



<b>C – Pollution and Waste Management</b>	Material waste, domestic waste
	Mining equipment and vehicle emissions, dust and noise
	Fuel spillage and leakages Oil and lubricant leakages
<b>D – Environment</b>	Soil
	Water
	Biodiversity
	Rehabilitation
<b>E – Cultural Heritage</b>	Archaeological and Heritage
<b>F – Socio- Economic</b>	Employment
	Alcohol and drug abuse
	Working hours
	Capacity building
	HIV / AIDS

## SECTION A: STAFF INDUCTION

Table 3. Staff Induction Mitigation Measures

Environmental or Social Aspects	Objective	Proposed Mitigation Measures	Monitoring Indicators	Responsibility
Staff Induction	To ensure that all staff / employees are familiar with the requirements of the EMP	<ul style="list-style-type: none"> <li>All employees and contractors must go through an intensive induction course on all the provisions of the EMP.</li> <li>There must be an annual induction course for all the workers.</li> <li>New employees must not start work without going through the induction course.</li> </ul>	<p>Induction minutes and attendance register signed by each staff member.</p> <p>Induction report</p>	Management or Site Manager
	Disciplinary	<ul style="list-style-type: none"> <li>Company must adopt a disciplinary system to discipline staff for non-compliance, such as not using ablution facilities and disposing off waste uncontrollably etc.</li> <li>Strict measure must be put in place, any employee found contravening</li> </ul>	<p>Disciplinary meetings and actions</p> <p>Disciplinary letters / Warnings</p>	Management or Site Manager

Environmental or Social Aspects	Objective	Proposed Mitigation Measures	Monitoring Indicators	Responsibility
		provisions of the EMP, must be granted a warning letter.		
	Availability of the EMP on site for ease of reference	<ul style="list-style-type: none"> <li>• Ensure that a copy of the EMP is kept on site and accessible</li> </ul>	Physical view of the EMP	Management or Site Manager
<b>Communication</b>	To ensure effective communication	<ul style="list-style-type: none"> <li>• The project must develop a communication strategy</li> <li>• Correspondences must be in writing</li> <li>• The contact numbers for the Site Manager must be available displayed onsite in case of emergencies.</li> <li>• There must be an alarm bell for emergency communication</li> </ul>	Communication Strategy  Letters, e-mail, notices, minutes Display of site manager and emergency numbers on site	Management or Site Manager

**SECTION B: HEALTH AND SAFETY**

Table 4. Health and Safety Measures to be implemented

Environmental / Social Aspects	Objective	Mining PHASE Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
<p><b>Safety</b></p>	<p>Adhere to the Health and Safety Regulations, Government Notice 156/1997 (GG 1617).</p>	<ul style="list-style-type: none"> <li>• All light vehicle should have a 2-meter-high red flag mounted on the vehicle</li> <li>• All mining vehicle should be branded.</li> <li>• The proponent must develop a health and safety plan;</li> <li>• A compulsory safety induction course must be given to all employees.</li> <li>• Each employee must be provided with personal protective equipment (PPE) and must be worn at all time during working and when on site.</li> </ul>	<p>2-meter red flags on vehicles</p> <p>Vehicles branded</p> <p>Health and safety included and reflected in the induction minutes</p> <p>Visual Inspection</p>	<p>Visual inspections</p> <p>Certification of completion by approved personnel</p>	<p>Management or Site Manager</p>

Environmental / Social Aspects	Objective	Mining PHASE Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
Health		<ul style="list-style-type: none"> <li>• Ensure all workers are inducted on the dangers of risks of explosions, chemicals and the emergency response;</li> <li>• There must be clear health and safety signs at designated sites such as, ASSEMBLY AREA, NO SMOKING “DANGER”, “ENTRANCE PROHIBITED” etc.</li> <li>• Employees must NOT be exposed to noise levels above the required -85dB (A) limit over a period of 8 hours. Should the noise level be higher than 85dB (A), the employer must</li> </ul>	Visual Signs available	<p>Visual Inspection</p> <p>Availability of fire extinguishers and evidence on training (e.g. minutes, training pictures etc.).</p> <p>Visible signs</p>	

Environmental / Social Aspects	Objective	Mining PHASE Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<p>implement a hearing conservation program such as noise monitoring;</p> <ul style="list-style-type: none"> <li>• Worker must be provided with appropriate PPE such as industrial earmuffs;</li> <li>• Supply safe drinking water.</li> <li>• Ensure adequate, hygienic and user-friendly ablution facilities for all staff;</li> <li>• Separate male and female toilets with a ration of 1:30 and 1:15 for male and females respectively.</li> <li>• Appoint cleaners from the local community and rotate cleaning responsibilities.</li> <li>• Inspect ablution facilities regularly.</li> </ul>	Record of hearing loss	Report of health check ups	

Environmental / Social Aspects	Objective	Mining PHASE Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> <li>Supervisors must undergo an occupational health and first aid course.</li> </ul>	Clean tap water Clean toilets at all time  Proof of Certification	Laboratory analysis report  Clean toilets at all time	
<b>Noise</b>	To reduce noise in the surrounding environment	<ul style="list-style-type: none"> <li>All mining vehicle and machinery engines must be off when not in use;</li> <li>Adhere to minimum speed limit of 40km</li> <li>Purchase/hire MINING equipment with low noise emission;</li> <li>Where possible, fit silencers on vehicle exhaust;</li> </ul>	Record of public complaints	Record of public complaints	Management / Site Manager

Environmental / Social Aspects	Objective	Mining PHASE Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> <li>• Operation must be limited to daytime only (08h00-17h00);</li> </ul>			
<b>Dust / Air Pollution</b>	The reduce fugitive dust from project operation	<ul style="list-style-type: none"> <li>• Movement of heavy mining vehicles must be restricted to the mining site;</li> <li>• Only use a one-way lane to access the site;</li> <li>• Adhere to the minimum speed limit of 30 or 40km/hour;</li> <li>• Do not excavate or make excavation during heavy winds;</li> <li>• Sand and/or gravel heaps must be covered or regularly water sprayed;</li> <li>• On site where soil is loosened by vehicle</li> </ul>		Record of public complain	Management / Site Manager



Environmental / Social Aspects	Objective	Mining PHASE Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<p>movement, apply dust suppression method such as water spraying;</p> <ul style="list-style-type: none"> <li>Workers must not be exposed to excess dust and should be provided with appropriate PPE such as dust mask and earmuffs;</li> <li>Adhere to the Labour act, non-toxic human dust exposure levels may not exceed 5mg/m<sup>3</sup> for respiratory dust and 15mg/m<sup>3</sup> for total dust;</li> </ul>			

**SECTION C: POLLUTION CONTROL AND WASTE MANAGEMENT**

Table 5. Waste Management Mitigation Measures

Environmental / Social Aspect	Objectives	MINING PHASE Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
<b>Vehicle Emissions</b>	Reduce greenhouse gas (GHG) emissions from vehicles / machinery	<ul style="list-style-type: none"> <li>All vehicles and equipment must be kept in good working condition and serviced frequently to prevent leakage and emission of noxious smoke etc.</li> <li>Switch off engines when vehicle is not operations</li> </ul>	Vehicle servicing records books  Reports of smoke emissions from machinery  Visible signs		Management / Site Manager
<b>Waste Generation</b>	To prevent littering	<ul style="list-style-type: none"> <li>The mining site must have sufficient wheelie bins and skip containers for onsite waste disposal;</li> <li>The waste must be segregated and be disposed of at an approved disposal site in Khorixas;</li> </ul>	Waste bins and skip containers	Waste bins and skip containers	Management / Site Manager

Environmental / Social Aspect	Objectives	MINING PHASE Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> <li>• No waste should be buried on site or anywhere in the surrounding;</li> <li>• Provide temporarily toilets to workers in a ration a 1:15 and 1:30 for male and female respectively.</li> <li>• Effluent from these toilets must be disposed of at the nearest and approved waste treatment plant of oxidation ponds at Khorixas.</li> <li>• Acts of secretion in the open must never be allowed.</li> </ul>	<p>Visible temporarily ablution facility</p> <p>Record of effluent disposal</p>		
<b>Surface and ground water contamination / pollution</b>	To prevent soil and water pollution	<ul style="list-style-type: none"> <li>• Vehicle and machinery to be used must be in good condition and well serviced to avoid leakages of oils and lubricants;</li> </ul>	Service records		Management / Site Manager

Environmental / Social Aspect	Objectives	MINING PHASE Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> <li>• All stationary vehicles and machinery must have drip trays to collect leakages of oils and lubricant;</li> <li>• Oils, lubricants and hydrocarbons must be stored in a proper storage facility with concrete bunds. Or impermeable lined materials</li> <li>• Although not expected to be significant, i.e oil drops of less than 500ml, if it occurs, contaminated soils must be collected and treated with bioremediation waste</li> </ul>	<p>Visible drip trays</p> <p>Proper storage with concrete bund surface</p> <p>Bioremediation chamber</p>		
<b>Oil Spillages</b>	To prevent oil spill from tanks and during re-fuelling	<ul style="list-style-type: none"> <li>• Refuel vehicles at designated areas that has protected surface covering /geomembrane lining and use</li> </ul>	Place warning signs	Site inspection and record keeping	Management / Site Manager

Environmental / Social Aspect	Objectives	MINING PHASE Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		drip trays for stationary equipment and vehicle. <ul style="list-style-type: none"> <li>Engage the suppliers of consumable such as grease and lubricants upon used to collect and dispose of such waste in an environmentally friendly manner.</li> </ul>			
Oil leakage	To prevent fuel leakages	<ul style="list-style-type: none"> <li>All stationary vehicles and machinery must have drip trays to collect leakages of oils and lubricant;</li> </ul>		Visible monitoring	Management and Site Manager

## SECTION D: ENVIRONMENT

Table 6. Environmental Mitigation Measures to be implemented

Aspect	Objective	Mining Mitigation Measure	Monitoring Indicator	Responsibility
<b>Biodiversity</b>	To protect the flora and fauna	<ul style="list-style-type: none"> <li>• The targeted mining site must be cordoned off to avoid safety risk to animals.</li> <li>• Prevent the destruction of protected species.</li> <li>• Prevent the employees from collecting firewood.</li> <li>• No workers should be permitted to collect plant materials, hunt or snare to capture wild animals.</li> <li>• Provide electricity or gas to staff for cooking and heating in order to discourage fire wood harvesting.</li> <li>• No poaching of wild animals</li> <li>• Any suspicious activities pertaining to illegal hunting should be reported to the nearest police in Khorixas.</li> <li>• No killing of animals including crawling animals unless it poses danger to human life.</li> <li>• No domestic animals are allowed at the site.</li> </ul>		Management / Site Manager
<b>Soil Erosion</b>	To prevent soil erosion	<ul style="list-style-type: none"> <li>• Mining should be limited to targeted sites only.</li> </ul>		Management / Site Manager

Aspect	Objective	Mining Mitigation Measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> <li>• It is highly recommended that mining must not take place during heavy winds;</li> <li>• Excavated topsoil from mining trenches must be well compacted to avoid wind erosion;</li> <li>• Movement of all vehicles must strictly be within the project site;</li> <li>• Sand and gravel heaps from the excavated pit should be placed in designated areas.</li> <li>• Rehabilitate all sites upon completion of the project.</li> </ul>		
<b>Soil Compaction</b>	To prevent flooding at the surrounding areas.	<ul style="list-style-type: none"> <li>• Vehicle and mobile mining equipment should be confined to existing roads and tracks.</li> <li>• Implement a road and track management.</li> </ul>		Management / Site Manager
<b>Water Resource</b>	Conservation of water resource	<ul style="list-style-type: none"> <li>• A valid water abstraction permit should be obtained from the MAWLR.</li> <li>• No pollution or contaminant should be allowed to enter the water ecosystem.</li> <li>• Recycle water and foster the re-use of water.</li> </ul>	Valid water abstraction permit.	Management / Site Manager

Aspect	Objective	Mining Mitigation Measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> <li>• Monitor and control water usage and minimise if possible.</li> </ul>		
<b>Visual and Sense of Place</b>	Maintain aesthetic value	<ul style="list-style-type: none"> <li>• Pit and excavated area should be levelled upon completion.</li> <li>• Care must be taken to ensure that rehabilitated area blend in with the natural environment.</li> <li>• Overburdens must be placed in trenches and pits as part of rehabilitation.</li> <li>• Keep site visual clean.</li> </ul>		
<b>Alien Invasive</b>	Maintain natural ecosystem	<ul style="list-style-type: none"> <li>• All alien invasive occurring in the area should be cleared.</li> <li>• Place measures in place to eradicate any alien infestation in the project area.</li> <li>• Adopt an alien clearing policy and awareness campaign.</li> </ul>		



**SECTION E: HERITAGE AND ARCHEOLOGICAL SITES**

Table 7. Archaeology and Heritage Mitigation Measures

Environment / Social Aspect	Objectives	Mining PHASE Mitigation Measure	Monitoring Indicator	Responsibility
Heritage Resources / Artefacts	Preserve Heritage and Archaeological materials	<ul style="list-style-type: none"> <li>• The management should be made aware of the provision of the National Heritage Act regarding prompt reporting of any archaeological findings.</li> <li>• Workers must be trained on the possible find of archaeological material in the area;</li> <li>• Implement a chance find and steps to be taken when archaeological material finding (Heritage e.g. rock painting and drawings), human remains or artefacts) are unearthed</li> <li>• Stopping the activity immediately</li> <li>• Informing the site manager or supervisor</li> <li>• Cordoned of the area with a danger tape and the manager shall take appropriate pictures.</li> </ul>	Sighting report/s of heritage resources / artefacts	Management / Site Manager

Environment / Social Aspect	Objectives	Mining PHASE Mitigation Measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> <li>Site manager must report the finding to the nearest Namibian police or alternatively the National Forensic Laboratory (+264 61 240461).</li> </ul>		

**SECTION F: SOCIO ECONOMIC**

Table 8. Social Economic Mitigation Measures

Environmental / Social Aspects	Objectives	MINING PHASE Mitigation Measures	Monitoring Indicator	Responsibility
<b>Employment</b>	Promote benefits to the local resident	<ul style="list-style-type: none"> <li>• Adopt a local first policy to ensure that all general work is reserved for local people unless in circumstances where specialised skills are required.</li> <li>• Employ local contractors</li> <li>• Fair compensation and labour practise as per Namibian Labour Laws must be followed.</li> </ul>	Employee structure and proportion of local employment	Management or Site Manager
<b>HIV/AIDS</b>	To prevent the spread of HIV/AIDS	<ul style="list-style-type: none"> <li>• Provide HIV / AIDS awareness at induction.</li> <li>• Avail condoms at site.</li> </ul>		
<b>Alcohol and Drug use</b>	Prevent alcohol and drug use	<ul style="list-style-type: none"> <li>• Ban the use of alcohol and drugs at workplace</li> <li>• Teach employees about dangers alcohol and substance abuse</li> <li>• All employees must be screen with the breathalyser on daily basis to avoid intoxicated personnel on site</li> </ul>	Drunk / Misbehaving employees  Breathalyser report  Monitor presence of alcohol at the construction site	Management or Site Manager

Environmental / Social Aspects	Objectives	MINING PHASE Mitigation Measures	Monitoring Indicator	Responsibility
<b>Working hours</b>	Adhere to the Labour Act No. 11 of 2007	<ul style="list-style-type: none"> <li>Operate within the prescribed working days and hours as per the Namibian Labour laws and regulations</li> </ul>	Labour unrest / Demonstration	Management or Site Manager

## 9. DECOMMISSIONING PHASE

Decommissioning of the project is not envisaged at this stage of the project. However, in the event where the project has to be decommissioned, all the necessary application required from the relevant authority will be applied for. A qualified personnel must be appointed to study and develop a decommissioning plan. Therefore, the project owners must implement the following mitigation measures;

- The proponent must submit a decommissioning plan to the office of the Environmental Commissioner for approval;
- Install signs to inform the public about the decommissioning of the project;
- Access to the areas must be controlled;
- A qualified project geologist must be hired to oversee the project decommissioning
- Hire environmental specialist to monitor possible contamination during decommissioning;
- Ensure that all the pits and excavated areas are rehabilitated;
- Ensure that all topsoil is levelled;
- Provide workers with all necessary PPE;
- Generated waste must be disposed of at approved sites;
- When contamination is detected, the soil must be removed and treated before disposing it off to an approved site;
- The site must be rehabilitated and flattened to its natural state;

## **10. CONCLUSION AND RECOMMENDATIONS**

Mining project in general poses a significant impact to the environment. The proposed mining project will have an impact to the receiving environment; therefore, mitigation measures should be applied to ensure that environment receive the highest priority. The impacts associated with mining of base and rare metals, dimension stone, industrial minerals and precious metals had been identified and appropriate mitigation measure were suggested. The information provided and environmental set up of the proposed mining project are sufficient. It is therefore recommended that due to the presence of critical endangered species believed to occur in the area a consensus between the Directorate of Environmental Affair and Directorate of Wildlife and National Parks should be made on whether an Environmental Clearance Certificate shall be issued to necessitate the commencement of the intended mining project. If the Environmental Clearance Certificate is issued continuous monitoring and adherence to the EMP should be strictly enforced.