

ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR THE ESTABLISHMENT AND OPERATION OF A COPPER PROCESSING FACILITY ON PORTION A OF FARM VOLUTEER 106 AT KHORIXAS, KHORIXAS DISTRICT, KUNENE REGION.



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ABBREVIATION

DEAF	Department of Environmental Affairs and Forestry
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Compliance Officer
ECS	EnvironClim Consulting Services
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (No. 7 of 2007)
EMP	Environmental Management Plan
GIS	Geographical Information System
HIV	Human Immunodeficiency Virus
MAWLF	Ministry of Agriculture, Water and Land Reforms
MEFT	Ministry of Environment, Forestry and Tourism
PPE	Personal Protective Equipment
SHE	Safety, Health and Environment
WHO	World Health Organization

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1. OVERVIEW

1.1 INTRODUCTION

SRIMEX Metal and Minerals (Pty) Ltd, hereafter referred to as the proponent is of the intention to establish and operate a medium size copper processing facility on Portion A at Farm Voluteer 106. The company had entered into an agreement with the owner of the farm Mr. Esau Somaeb to lease Portion A of Farm Voluteer 106 with an option to purchase. The lease agreement is effective from the 01 December 2023 until 31 May 2024. Thereafter, the company will purchase the farm as per the conditions of the agreement.

The planned project will contribute immensely to the economy of the area. The project will employ about 250 people. These will include; machine operator, engineers, administration and technical and support staff. The lifespan of the project is not yet determined and will rely on the supplies of copper ore to the processing facility. The project is estimated to cost around 300 million Namibian dollars. The proponent will also enter into a long-term agreement with the Vocational Training Centre that is anticipated to opened in Khorixas to offer internship opportunities to apprentices doing relevant courses in relation to the project.

1.2 PROJECT COMPONENTS

The company intends to establish and operate a copper processing facility that employs the copper ore beneficiation process that includes gravity separation and floatation separation. The process will involve the crushing, grinding, sieving as well as floatation separator and dewatering. The project will use limited energy and water, about 100 cubic will be used in the production of one ton of copper and water will be reused and recycle. There is existing power infrastructure where electricity will be sourced. Water will be sourced from existing boreholes on the farm that will be rehabilitated and retrofitted. As an effort to support small scale miners the copper ore will be sourced from some of the local small-scale miners with valid mining claims in the vicinity of Khorixas and Kamanjab and if the demand increase, other areas in the region such as Opuwo will be considered.

2. PROJECT LOCATION

The proposed area is situated on Portion A at Farm Voluteer 106 approximately 65 Km east of Khorixas, Khorixas District, Kunene Region (see **Figure 1** below). The proposed area covers an area of 50 Ha and is accessible via an existing track leading into the Farm that branch out of the C39 main road which stretches from Outjo to Khorixas.

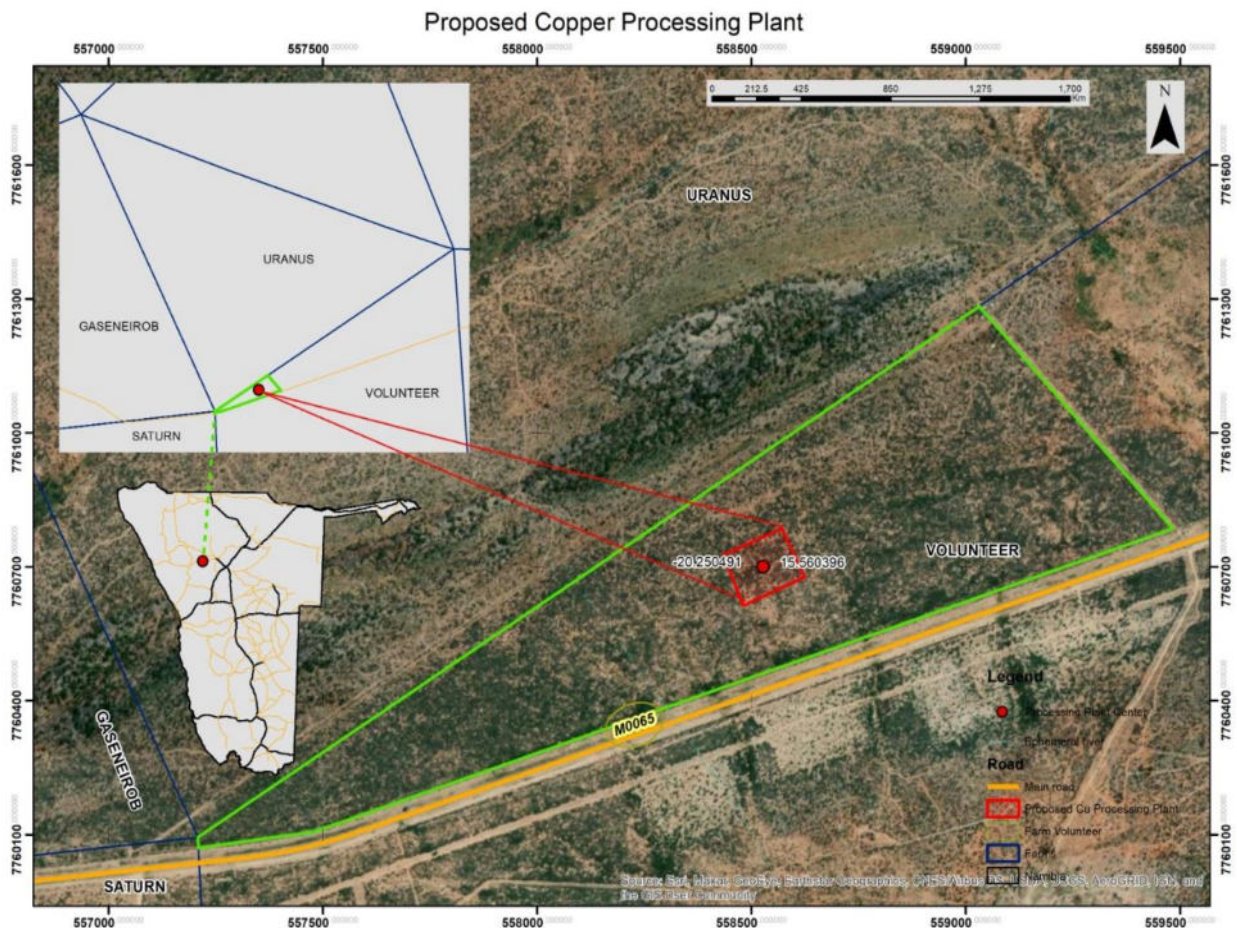


Figure 1: Location of proposed copper processing facility on Portion A at Farm Volunteer 106, Khorixas District, Kunene Region (geo-reference point; **-15.564167S, 20.245556 E**).

3. PURPOSE OF THE EMP

This Environmental Management Plan (EMP) is a live document that provide the mitigation strategy that outline rational and practical context, monitoring programs, mitigation measures, and management control approaches to reduce probable environmental impacts to a negligible level. Furthermore, it details the roles and responsibility of the persons responsible for the

establishment and operation a medium size copper processing facility on Portion A at Farm Voluteer 106.

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 based on the modification made towards the 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
The Namibian Constitution	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.
The Environmental Management Act	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.	Generation of Greenhouse Gases by the copper processing facility.

Legislation	Summary	Applicability
	<p>Further, the Act ensures that;</p> <p>Further, the Act ensures that;</p> <ul style="list-style-type: none"> (a) Potential threats are considered timeously (b) A comprehensive stakeholder’s consultation is conducted, and all Interested and affected parties are given an opportunity to comment on the project (c) Decision are robust by considering the above-mentioned activities. 	
Atmospheric Pollution Prevention Ordinance Act (No.11 of 1976)	<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 by the copper processing facility.</p>
Draft Pollution Control and Waste Management Bill	<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</p>	<p>Possible fuel spill and leakages may pollute ground and surface water.</p>

Legislation	Summary	Applicability
	waste management licence for any activity relating to waste or hazardous waste management.	
Environmental Policy framework (1995)	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.	Provision of the EIA and guidelines
The Occupational Safety and Health Act No. 11 of 2007;	<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>Establishment and operation of the copper processing facility has the potential risk of injuries.</p> <p>Provision of clean ablution facility, routine health check-ups for employees, HIV/AIDS awareness etc.</p>
Public Health Act No. 36 of 1919	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	Ensure public safety from noise, dusts, and air pollution.

Legislation	Summary	Applicability
	<p>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>Water Resources Management Act (2013)</p>	<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 water sources such as river systems are not polluted and implement pollution control mechanism to avoid water pollution.</p>
<p>Water Act No, 54 of 1956</p>	<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"> (a) Discharge of contaminants into water sources such as pipe, sewer, canal, sea outfall and (b) Disposal of water in a manner that may cause detrimental impact on the water resources 	<p>Contaminated water, such as sewage sludge must not be dumped into the water's sources such as river.</p>

Legislation	Summary	Applicability
Petroleum Product and Energy Act No, 13 of 1990 Explosive Act No 26 of 1956	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.
Labour Act No. 11 of 2007	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.
Regional Council Act, 1992 (Act No. 22 of 1992)	The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning and coordination of regional policies and development. The main objective of this Act is to initiate, supervise, manage and evaluate development at regional level.	Observe the regional by laws
Soil Conservation Act No. 76 of 1969	This act promotes the conservation of soil, prevention of soil erosion.	Coordinate movement of copper ore delivery trucks to prevent soil erosion. Ensure conservation of topsoil.

Legislation	Summary	Applicability
Hazardous Substances Ordinance No. 14 of 1974	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 chemicals, fire and explosion risks.
National Heritage Act No. 27 of 2004	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	The construction of the copper processing facility may unearth archaeological material.
Word's Best Practises	<p><i>Precautionary Approach Principle</i></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><i>Polluter Pays Principle</i></p>	The construction and operation of the copper processing facility particularly in the area with biodiversity and underground water can be detrimental to the ecosystem and underground water resource. Therefore, precaution must be taken into consideration when crushing and waste disposal are taking place.

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 designated to enforce 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 proposed for the establishment and operation of a medium size copper processing facility on Portion A at Farm Voluteer 106 at whatever time for the purpose of environmental inspection and monitoring.

6.2. The Proponent

SRIMEX Metal and Minerals (Pty) Ltd shall commence the inclusive obligation of environmental management through durable execution of the environmental management plan. Additionally, the company shall be utterly accountable for the 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 related to the establishment and operation of a medium size copper processing facility on Portion A at Farm Voluteer 106.
- Ensure a safe and healthy working environment;
- Monitor the employees works with regard to safety;
- Provide workers with appropriate Personal Protective Clothing (PPE);
- 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 **SRIMEX Metal and Minerals (Pty) Ltd** and will be in charge for monitoring the day-to-day operations of the copper processing facility and ensure acceptable adherence of workers and contractors to the EMP. The Site Manager must ensure that a copy of the EMP is accessible to all the employees at the site at all times and all employees are accustomed with the EMP.

6.4. Employees and Contractors

All stakeholders, especially employees and contractors must;

- Comply with the EMP;
- Ensure all employees are wearing personal protective clothing at all time when they are at work;
- 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 magnitude of this EMP is with reference to the establishment and operation of a medium size copper processing facility on Portion A at Farm Voluteer 106 and ultimately the decommissioning phase of the proposed development. This EMP is formulated taking into

account the Social, Environmental, Safety and Occupational Health aspects related to the proposed development as detailed 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
C – Pollution and Waste Management	Material waste, domestic waste
	Emission from crusher and vehicle as well as dust and noise
	Fuel spillage and leakages Oil and lubricant leakages
D – Environment	Soil
	Water
	Biodiversity
	Rehabilitation
E – Cultural Heritage	Archaeological and Heritage
F – Socio- Economic	Employment
	Alcohol and drug abuse
	Working hours
	Capacity building
	HIV / AIDS
	Traffic

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 accustomed with the requirements of the EMP	<ul style="list-style-type: none"> • All employees and contractors must go through an intensive induction course on all the provisions of the EMP. • There must be an annual induction course for all the employees. • New recruit must not commence work without going through the induction course. 	<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"> • Company must adopt a disciplinary system to discipline staff for non-compliance, for instance disposing off waste in an unacceptable environmental manner etc. 	Disciplinary meetings and actions	Management or Site Manager

Environmental or Social Aspects	Objective	Proposed Mitigation Measures	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> Stringent measures must be in place, any employee found contravening the provisions of the EMP, must be granted a warning letter. 	Disciplinary letters / Warnings	
	Availability of the EMP on site for ease of reference	<ul style="list-style-type: none"> Ensure that a copy of the EMP is kept on site at all time and must be accessible 	Physical view of the EMP	Management or Site Manager
Communication	To ensure effective communication	<ul style="list-style-type: none"> The project must develop a communication strategy Correspondences must be in writing. The contact numbers for the Site Manager must be available and must be displayed on the emergency sign boards and at evacuation point in case of emergencies. 	Communication Strategy Letters, e-mail, notices, minutes Display of site manager number and emergency numbers.	Management or Site Manager

Environmental or Social Aspects	Objective	Proposed Mitigation Measures	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> • There must be an emergency alert system in place for emergency communication. 		

SECTION B: HEALTH AND SAFETY

Table 4. Health and Safety Measures to be implemented

Environmental / Social Aspects	Objective	Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
<p>Safety</p>	<p>Adhere to the Health and Safety Regulations, Government Notice 156/1997 (GG 1617).</p>	<ul style="list-style-type: none"> • The proponent must develop a health and safety plan; • A compulsory safety induction course must be given to all employees. • Each employee must be provided with personal protective equipment (PPE) and must be worn at all time during working and when on site. • Ensure all workers are inducted on the dangers of risks of chemicals and the emergency response; 	<p>Health and safety included and reflected in the induction minutes</p> <p>Visual Inspection</p> <p>Visual Signs available</p>	<p>Certification of completion by approved personnel</p> <p>Visual Inspection</p> <p>Availability of fire extinguishers and evidence on training (e.g. minutes, training pictures etc.).</p>	<p>Management or Site Manager</p>

Environmental / Social Aspects	Objective	Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> • There must be clear health and safety signs at designated sites such as, ASSEMBLY POINT, NO SMOKING “DANGER”, “ENTRANCE PROHIBITED” etc. • Employees must NOT be exposed to noise levels above the required -85dB limit over a period of 8 hours. Should the noise level be higher than 85dB, the employer must implement a hearing conservation program such as noise monitoring; 	Record of hearing loss	<p>Visible signs</p> <p>Report of health check ups</p>	

Environmental / Social Aspects	Objective	Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
Health		<ul style="list-style-type: none"> • Worker must be provided with appropriate PPE such as industrial earmuffs; • Ensure provision of safe drinking water. • Construct and maintain adequate, hygienic and user-friendly ablution facilities for all staff; • Separate male and female toilets with a ration of 1:30 and 1:15 for male and females respectively. • Appoint cleaners from the local community and rotate cleaning responsibilities. 	<p>Clean tap water</p> <p>Clean toilets at all time</p>	<p>Laboratory analysis report</p> <p>Clean toilets at all time</p>	

Environmental / Social Aspects	Objective	Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> • Inspect ablation facilities regularly. • Supervisors must undergo an occupational health and first training. • Maintain levels of copper dusts in the work environment at concentrations below the recommended 44 micrometer (μm) to 149 μm. • Develop and implement work practices to reduce the discharge of contaminants into the work environment: 	Proof of Certification		

Environmental / Social Aspects	Objective	Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> • Provide appropriate PPE to all the personnel as well as providing training on wearing PPE including maintaining PPE; • Encompass operations which may result in direct release of copper dust into areas where people work such as the crusher; • Ensure that all areas at the facility are well ventilated; 			
Noise	To reduce noise in the surrounding environment	<ul style="list-style-type: none"> • Ensure that the copper ore crusher engine must be off when not in use; 	Record of public complaints	Record of public complaints	Management / Site Manager

Environmental / Social Aspects	Objective	Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> • Purchase/hire copper ore crushing equipment with low noise emission; • Where possible, fit silencers on vehicle equipment; • Operation must be limited to daytime only (08h00-17h00); 			
Dust / Air Pollution	Reduction of copper dust from the processing facility.	<ul style="list-style-type: none"> • Avoid crushing of copper ore during heavy windy conditions. • The crushing area and its immediate surrounding must be entirely interlocked to avoid wind condition; 		Record of public complain	Management / Site Manager

Environmental / Social Aspects	Objective	Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> • Heap of crushed copper ore must be covered; • Workers must not be exposed to excess dust and should be provided with appropriate PPE such as dust mask and earmuffs; • Adhere to the Labour act, non-toxic human dust exposure levels may not exceed 5mg/m³ for respiratory dust and 15mg/m³ for total dust; • Use Phyto-remedial measures to reduce copper dust as practically as possible. 			

Environmental / Social Aspects	Objective	Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> • A copper dust deposition monitoring network must be established to monitor the copper dust deposition due to routine operations, as well as dust deposition during high-wind periods. • Dust monitoring should be established before operations commence to measure baseline conditions. It should remain active throughout the life of the copper processing facility as well as for a few years post closure to determine the 			

Environmental / Social Aspects	Objective	Mitigation Measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		effectiveness of the mitigation measures.			

SECTION C: POLLUTION CONTROL AND WASTE MANAGEMENT

Table 5. Waste Management Mitigation Measures

Environmental / Social Aspect	Objectives	Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
Emissions	Reduce greenhouse gas (GHG) emissions from crusher and vehicles	<ul style="list-style-type: none"> The crusher must be kept in good working condition and serviced frequently to prevent leakage and emission of noxious smoke etc. Switch off crusher as well as vehicle engines when they are not operating. 	<p>Vehicle servicing records books</p> <p>Reports of smoke emissions from machinery</p> <p>Visible signs</p>		Management / Site Manager

Environmental / Social Aspect	Objectives	Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • The copper ore crusher and vehicle fleet should be carefully selected to include the latest technology that would ensure low carbon emissions. • Preventative controls for vehicle tailpipe PM10 emissions: <ul style="list-style-type: none"> - minimization of vehicle idling times, - regular maintenance of vehicles according to manufacturer's guidance - use of best available technologies such as the installation of selective catalytic reducers, oxidation catalysts 			

Environmental / Social Aspect	Objectives	Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<p>and diesel particulate filters to reduce PM10 emissions.</p> <ul style="list-style-type: none"> • Uses of low sulphur content fuels are recommended to minimise SO2 emissions from both vehicle tailpipe emissions. 			
Waste Generation	To prevent littering	<ul style="list-style-type: none"> • The processing facility site must have adequate wheelie bins and skip containers for onsite waste disposal; • The waste must be segregated and be disposed of at an approved disposal site in Khorixas; 	Waste bins and skip containers	Waste bins and skip containers	Management / Site Manager

Environmental / Social Aspect	Objectives	Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • No waste should be buried on site or anywhere in the surrounding; • Provide temporarily toilets to workers in a ration a 1:15 and 1:30 for male and female respectively. • Effluent from these toilets must be disposed of at the nearest and approved waste treatment plant of oxidation ponds at Khorixas. • Acts of secretion in the open must never be allowed. • No waste may be buried, burned or disposed to land onsite, outside of the 	<p>Visible temporarily ablution facility</p> <p>Record of effluent disposal</p>		

Environmental / Social Aspect	Objectives	Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<p>approved waste disposal facility.</p> <ul style="list-style-type: none"> • Waste containers (bins) should be emptied regularly and removed from site to a recognized (municipal) waste disposal site at Khorixas. • Enough separate waste containers (bins) for hazardous and domestic/general waste must be provided on site. The waste bins should be clearly marked as such. • The copper processing facility employees as well as contractors should be 			

Environmental / Social Aspect	Objectives	Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<p>sensitized to dispose of waste in a responsible manner and not to litter.</p> <ul style="list-style-type: none"> No waste may remain on scattered at the site. 			
<p>Surface and ground water contamination / pollution</p>	<p>To prevent soil and water pollution</p>	<ul style="list-style-type: none"> The crusher and vehicle including the machinery used for copper processing and transportation purposes must be in good condition and well serviced to avoid leakages of oils and lubricants; All stationary vehicles and machinery must have drip trays to collect leakages of oils and lubricant; 	<p>Service records</p> <p>Visible drip trays</p>		<p>Management / Site Manager</p>

Environmental / Social Aspect	Objectives	Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • Oils, lubricants and hydrocarbons must be stored in a proper storage facility with concrete bunds or impermeable lined materials. • Although not expected to be significant, i.e oil drops of less than 500ML, if it occurs, and happened to contaminate soils must be collected and treated with bioremediation waste. • Performance of the seepage control measures are to be evaluated with monitoring of water levels and water balance of the operations. 	<p>Proper storage with concrete bund surface</p> <p>Bioremediation chamber</p>		

Environmental / Social Aspect	Objectives	Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<p>The indication of higher seepage rates than expected would require the following:</p> <ul style="list-style-type: none"> • Installation of recovery boreholes for retrieval of the effluent without affecting downstream groundwater. • Wastewater may only be disposed of in the natural environment unless the effluent quality guidelines are met. 			
Oil Spillages	To prevent oil spill from tanks and during re-fuelling	<ul style="list-style-type: none"> • Refuel vehicles at designated areas that has protected surface covering /geomembrane lining and use drip trays for 	Place warning signs	Site inspection and record keeping	Management / Site Manager

Environmental / Social Aspect	Objectives	Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		stationary equipment and vehicle. <ul style="list-style-type: none"> Engage the suppliers of consumable such as grease and lubricants upon used to collect and dispose of such waste in an eco-friendly manner. 			

<p>Oil leakage</p>	<p>To prevent fuel leakages</p>	<ul style="list-style-type: none"> • All stationary vehicles and machinery must have drip trays to collect leakages of oils and lubricant; • The workshop area should be lined with concrete. • The workshop should have an oil-water separator for collection of run-offs from washing. • Oil filters should be stored in marked containers that allow oil to drain but not escape from storage. • Any spills should immediately be contained and cleaned up and the contaminated soil appropriately disposed of. The receiving environment 		<p>Visible monitoring</p>	<p>Management and Site Manager</p>
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Environmental / Social Aspect	Objectives	Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		should then be remedied where necessary to prevent the spill from entering the storm water drainage system.			

SECTION D: ENVIRONMENT

Table 6. Environmental Mitigation Measures to be implemented

Aspect	Objective	Mitigation Measure	Monitoring Indicator	Responsibility
Biodiversity	To protect the flora and fauna	<ul style="list-style-type: none"> • The targeted site for the establishment and operation of the copper processing facility must be barricaded to avoid safety risk to animals. • Prevent the destruction of protected species such as <i>Sterculia africana</i>. • Prevent the employees from collecting firewood. 		Management / Site Manager

Aspect	Objective	Mitigation Measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • No workers should be permitted to collect plant materials, hunt or snare to capture wild animals. • Provide electricity or gas for cooking and heating in order to discourage fire wood harvesting. • No poaching of wild animals including reptiles such as tortoise. • Any suspicious activities pertaining to illegal hunting should be reported to the nearest police in Khorixas or the Anti-poaching unit with the MEFT. • No killing of animals including crawling animals unless it poses danger to human life. • No domestic animals are allowed at the site. 		
Soil Erosion	To prevent soil erosion	<ul style="list-style-type: none"> • The copper processing activities should be confined to targeted sites only. • Movement of all vehicles and delivery trucks must strictly be within the project site; • Heaps of crushed materials should be placed in designated areas. 		Management / Site Manager

Aspect	Objective	Mitigation Measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> Plant indigenous vegetation in one or more rows to act as wind-breaker. 		
Soil Compaction	To prevent soil compaction at the surrounding areas.	<ul style="list-style-type: none"> Delivery tucks as well as support service vehicles should be confined to existing roads and tracks. Implement a road and track management. 		Management / Site Manager
Topsoil	Avoid keeping the copper ore for an extended period on the ground.	<ul style="list-style-type: none"> Do not allow copper ore to be on the ground for a period of more than a one year, the priority should be given to allow natural grass to grow over the area. This will keep the soil biologically active. 	Trial sites	Management / Site Manager
Water Resource	Conservation of water resource	<ul style="list-style-type: none"> A valid water abstraction permit should be obtained from the MAWLR and maintain its validity. No pollution or contaminant should be allowed to enter the water ecosystem. Recycle water and encourage the re-use of water. Monitor and control water usage and minimise if possible. 	Valid water abstraction permit.	Management / Site Manager

Aspect	Objective	Mitigation Measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • Monitoring points and parameters are recommended for providing an early warning system. • Monitoring of groundwater levels from the construction as well as operations phases are recommended for an understanding of the expected seasonal fluctuations and recharge. • Storm/rainwater harvesting methods should be considered for use on the copper processing facility. 		
Visual and Sense of Place	Maintain aesthetic value	<ul style="list-style-type: none"> • The copper processing facility must blend in with the natural environment. • Keep the site visual clean. • Landscape the facility to increase its aesthetic value. 		
Alien Invasive	Maintain natural ecosystem	<ul style="list-style-type: none"> • No planting of alien plant is permitted. • Put measure in place to control any alien infestation in the area. 		

Aspect	Objective	Mitigation Measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> Implement an alien clearing policy and awareness campaign. 		

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"> The management should be made aware of the provision of the National Heritage Act regarding prompt reporting of any archaeological findings. Workers must be trained on the possible find of archaeological material in the area; 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 during the construction of the processing facility. Stopping the activity immediately Informing the site manager or supervisor 	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"> • Cordoned of the area with a danger tape and the manager shall take appropriate pictures. • Site manager must report the finding to the nearest Namibian police or alternatively the National Forensic Laboratory (+264 61 240461). 		

SECTION F: SOCIO ECONOMIC

Table 8. Social Economic Mitigation Measures

Environmental / Social Aspects	Objectives	MINING PHASE Mitigation Measures	Monitoring Indicator	Responsibility
Employment	Promote benefits to the local resident	<ul style="list-style-type: none"> • Adopt a local first policy to ensure that all general work is reserved for local people unless in circumstances where specialised skills are required. • Employ local contractors • Fair compensation and labour practise as per Namibian Labour Laws must be followed. • The recruitment process must be formal and organised. • Preference should be given to recruit those who live closest to the project area particularly from Khorixas and surrounding villages and settlements. • Recruitment should not take place at the copper processing facility. 	Employee structure and proportion of local employment	Management or Site Manager

Environmental / Social Aspects	Objectives	MINING PHASE Mitigation Measures	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside the agreed upon process. • Contractors should give preference in terms of recruitment of sub-contractors and individual labourers to those from the local community. • Clearly explain to all job seekers the terms and conditions of their respective employment contract (e.g. period of employment etc.) – make use of interpreters when necessary. • Secure accreditation for in-house skills transfer which recognizes and certifies any training courses. 		
HIV/AIDS	To prevent the spread of HIV/AIDS	<ul style="list-style-type: none"> • Provide HIV / AIDS awareness at induction. • Avail condoms at site. 		

Environmental / Social Aspects	Objectives	MINING PHASE Mitigation Measures	Monitoring Indicator	Responsibility
Alcohol and Drug use	Prevent alcohol and drug use	<ul style="list-style-type: none"> Ban the use of alcohol and drugs at workplace Teach employees about dangers of alcohol and substance abuse. All employees must be screen with the breathalyser on daily basis to avoid intoxicated personnel on site. 	Drunk / Misbehaving employees Breathalyser report Monitor presence of alcohol at the construction site	Management or Site Manager
Working hours	Adhere to the Labour Act No. 11 of 2007	<ul style="list-style-type: none"> Operate within the prescribed working days and hours as per the Namibian Labour laws and regulations 	Labour unrest / Demonstration	Management or Site Manager
Traffic	Adhere to Traffic Rules and ease traffic flow	<ul style="list-style-type: none"> A logbook should be kept at the gate of the farm indicating the time of entrance or exit, the type of vehicle, and its destination. By doing so, traffics can be monitored. Should the product be transported via the C39 main road, the traffic department in Khorixas should be informed of the intended road use from Khorixas to Outjo. 	Gate sheet/Correspondence to Traffic Department	Management or Site Manager

9. DECOMMISSIONING PHASE

The proposed development will play an integral role livelihood of many small-scale miners in the Kunene region and attribute to the value addition of mineral processing in the country which is also a call from the government. Therefore, the decommissioning of the proposed development is farfetched at this stage of the project. In the event where the proposed development has to be decommissioned, all the necessary applications mandatory from the relevant authorities will be applied for. The decommissioning plan must be developed by a competed person with the necessary experience on the project and all relevant authority should be consulted. 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 engineer must be hired to oversee the project decommissioning
- Hire environmental specialist to monitor possible contamination during decommissioning;
- Ensure that entire area is 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 completely rehabilitated and blend in with its natural state and indigenous plant should be restored in the area;

10. CONCLUSION AND RECOMMENDATIONS

The proposed development will have a localised impact, however, with the appropriate implementation of the suggested mitigation measures the impacts will be reduced to negligible significance. The responsible personnel should ensure that eco-friendly approaches are considered to safeguard the environment. Therefore, stringent conditions should be realized at all time to avoid any environmental damage. The information provided and environmental set up for establishment and operation of a medium size copper processing facility on Portion A at Farm Voluteer 106 are adequate. Therefore, it's advisable that protected species occurring in the area should be conserved and copper dust short be constantly monitored to avoid any potential contamination. If the Environmental Clearance Certificate is issued unremitted monitoring and adherence to the EMP should be stringently imposed.