

ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR:

**ENVIRONMENTAL SCOPING ASSESSMENT (ESA) OF SMALL-SCALE MINING
ACTIVITIES ON MINING CLAIMS (MCs) No. 71524 - 71533 LOCATED NORTHWEST
OF KHORIXAS, KUNENE REGION**

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Draft

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1 INTRODUCTION

1.1 Project Background

Ebenhaezer Rautenbach (The Proponent) has applied to the Ministry of Mines and Energy (MME) to be granted the Mining Claims (MCs) No. 71524 - 71533 on 04 November 2019. However, the approval of the MCs is subject to a granted Environmental Clearance Certificate (ECC). The 179.4431 hectares (ha) MCs are located about 55 km Northwest of Khorixas in Kunene Region as shown in Figure 1. The MCs cover Farm Mesopotamie No. 504 within the //Huab conservancy as shown on the map in Figure 2. The MCs are for small-scale mining of Base and Rare Metals, Dimension Stone, Industrial Minerals, Precious Metals and Semi-Precious Stones as commodities of interest

All mining and extraction works are among listed activities that may not be undertaken without an Environmental Clearance Certificate (ECC) under the Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations. The relevant listed activities as per EIA regulations are (under):

Mining and Quarrying Activities

- 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 (and Mining Act), 1992.*
- 3.2 *Other forms of mining or extraction of any natural resources whether regulated by law or not.*
- 3.3 *Resources extraction, manipulation, conservation, and related activities.*

Subsequently, the Proponent has appointed Excel Dynamic Solutions (Pty) Ltd (EDS Namibia), an independent team of Environmental Consultants to apply for the project ECC (through the Competent Authority, Ministry of Mines and Energy (MME)), conduct the required Environmental Scoping Assessment process and compile the Scoping Assessment Report and this Draft Environmental Management Plan (EMP) compiled). These two documents together with associated documents are submitted for evaluation and consideration of an ECC to the Environmental Commissioner at the Department of Environmental Affairs and Forestry (DEAF) of the Ministry of Environment, Forestry and Tourism (MEFT).

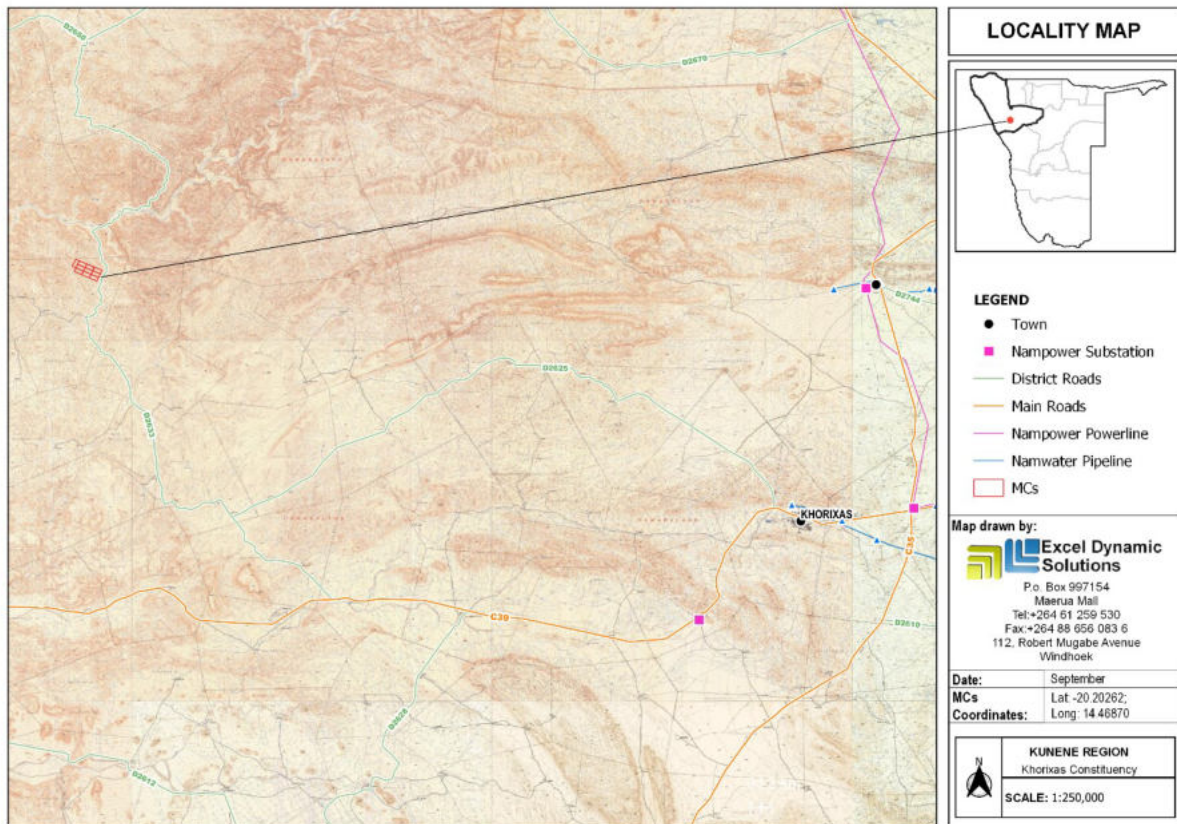


Figure 1: Locality map of MCs 71524 - 71533 near Khorixas, Kunene Region

1.2 Appointed Environmental Consultant and ECC Application

In order to ensure that the proposed activity is compliant with the national environmental legislation the project Proponent had to appoint an independent environmental consultant, Excel Dynamic Solutions (Pty) Ltd to undertake the required Environmental Assessment (EA) process (which entailed the compilation of this EMP) and apply for the ECC on their behalf.

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

1.3 The Aim of the Draft Environmental Management Plan (EMP)

Regulation 8(j) of the EIA Regulations (2012) requires that a draft Environmental Management Plan (EMP) shall be included as part of the Environmental Assessment (EA) scoping report. A 'Management Plan' is defined as:

"...a plan that describes how activities that may have significant environments effects on the environment are to be mitigated, controlled and monitored."

An EMP is one of the most important outputs of the EA process as it synthesizes all the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. It provides a link between the impacts identified in the EA process and the required mitigation measures to be implemented during operation. It is important to note that an EMP is a statutory document and a person who contravenes the provisions of this EMP may face imprisonment and/or a fine. This EMP is a living document and can be amended to adapt to address project changes and/or environmental conditions and feedback from compliance monitoring.

The purpose of the Draft EMP is to ensure that the proposed project activities are undertaken in an environmentally friendly and sustainably manner. This would be done through the effective implementation of recommended environmental management and mitigation measures contained in the EMP, for which the aim is to avoid and or minimize the adverse identified impacts while maximizing the positive impacts.

2 LEGAL OBLIGATIONS GOVERNING THE PROPOSED ACTIVITIES

Upon issuance of the ECC and obtaining any other necessary and required documentation, the Proponent will then prepare for the administrative and technical aspects needed for the actual small scale mining works on the MCs.

The small-scale mining and associated activities will be required to adhere to certain local, regional, national as well as international legal framework (as detailed in the Scoping Report). The legal requirements provided herein are these in terms of permits or licensing that the Proponent will need to obtain prior to the site works and or renewal of permits throughout the mining phase. These legal requirements are provided under **Table 1**.

Table 1: Applicable and required permits/authorizations/licenses for the proposed small scale mining activities

Legislation/Policy/Guideline	Relevant Provision	Implication for the Project and Contact Institution/Person
Environmental Management Act (EMA) No. 7 of 2007	<p>The Act requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27).</p> <p>The Act details principles which are to guide all EAs.</p>	<p>The EMA and its regulations should inform and guide this ESA process.</p> <p>Should the ECC be issued to the Proponent, it should be renewed every 3 years, counting from the date of issue.</p>
Environmental Impact Assessment (EIA) Regulations Government Notice 28-30 (Government Gazette 4878))	<p>Details requirements for public consultation within a given environmental assessment process (Government Notice 30 Section 21).</p> <p>Details the requirements for what should be included in a Scoping Report (Government Notice 30 Section 8) and an Assessment Report (Government Notice 30 Section 15).</p>	<p>Contact details at the Department of Environmental Affairs and Forestry (DEAF), Ministry of Environment, Forestry and Tourism (MEFT)</p> <p>Office of the Environmental Commissioner (Attention: Mr. Timoteus Mufeti)</p> <p>Tel: +264 (0) 61 284 2701</p>
Minerals (and Mining) Act (No. 33 of 1992)	<p>Section 48 (3): To enable the Minister to consider any application referred to in section 47 the Minister may (b) require the person concerned by notice in writing to (i) carry out or cause to be carried out such environmental impact studies as may be specified in the notice.</p> <p>Section 54(2): details provisions pertaining to the decommissioning or abandonment of a mine.</p>	<p>The Proponent should ensure that all necessary permits/authorization for these MCs are obtained from the Ministry of Mines and Energy (MME).</p> <p>Contact person and details at the MME (Mining Commissioner)</p> <p>Mr. Erasmus Shivolo</p> <p>Tel: +264 61 284 8167</p>

Legislation/Policy/Guideline	Relevant Provision	Implication for the Project and Contact Institution/Person
	Under this Act (Section 51 (1a)), holder of a mineral license cannot exercise any rights on a private land until the holder has entered into an agreement with the owner regarding payment of compensation.	The Proponent should timely enter into and sign access and land use agreement (consent) with respective affected (private) farm owners or representatives of the occupiers of land .
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that “No person shall possess or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area”	The Proponent should obtain the necessary authorisation from the MME for the storage of fuel on-site. Mr. Carlo Mcleod (Ministry of Mines and Energy: Acting Director – Petroleum Affairs) Tel: +264 61 284 8291
Forestry Act 12 of 2001, Amended Act 13 of 2005	Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22 (1)). The Act prohibits the removal of and transport of various protected plant species.	Should there be protected plant species, which are known to occur within the actual project site footprint, and require to be removed, a Permit should be obtained from the nearest Forestry Office (MEFT) prior to removing them. Contact Details at MEFT (Forestry Division Head Office), Director of Forestry: Mr. Johnson Ndokosho Tel: +264 (0) 61 208 7320 johnson.ndokosho@mef.gov.na
National Heritage Act (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	The Proponent is advised to make an application to the National Heritage Council for a Consent to allow Detailed Archaeological and Heritage Assessment Study of the MCs area.

Legislation/Policy/Guideline	Relevant Provision	Implication for the Project and Contact Institution/Person
	<p>procedure for application and granting of permits such as might be required in the event of damage to a protected site occurring as an inevitable result of development. Part VI Section 55 Paragraphs 3 and 4 require that any person who discovers an archaeological site should notify the National Heritage Council. Section 51 (3) sets out the requirements for impact assessment.</p> <p>Should any objects of heritage significance be identified during the site clearing and excavations, the work must cease immediately in the affected sites and the necessary steps taken to seek authorisation from the Council.</p>	<p>Contact: The Director of the National Heritage Council of Namibia (NHC): Mrs. Erica Ndalikokule</p> <p>OR Regional Heritage Officers at the NHC</p> <p>Mr. Manfred Gaeb and Ms. Agnes Shiningayamwe</p> <p>Tel: +264 (0) 61 301 903</p>
<p>The National Monuments Act No. 28 of 1969</p>	<p>The Act enables the proclamation of national monuments and protects archaeological sites.</p>	
<p>The Road Traffic and Transport Act No. 52 of 1999 and its 2001 Regulations</p>	<p>Provides for the control of traffic on public road and the regulations pertaining to road transport, including the licensing of vehicles and drivers.</p>	<p>Mr Eugene de Paauw (Roads Authority- specialist Road legislation), Tel: +264 (0) 61 284 7072</p>

3 DRAFT EMP IMPLEMENTATION, ROLES & RESPONSIBILITIES

As the project Proponent Muriel's Investments CC is ultimately responsible for the implementation of the EMP. However, they may delegate this responsibility at any time, as they deem necessary during the project phases (usually an environmental control officer or safety, health, and environmental person). The roles and responsibilities of all the parties involved in the effective implementation of this EMP are as follows:

3.1 Competent Environmental Monitoring Authorities (DEAF and Others)

The Department of Environmental Affairs and Forestry (DEAF) of the Ministry of Environment, Forestry and Tourism (MEFT) as the environmental custodian is responsible for enforcing compliance with the EMA, its regulations and full implementation of this EMP. The authority is also responsible for the reviewing of bi-annual reports submitted by the Proponent and grant ECC renewal after every 3 years following an environmental audit.

Further Monitoring institutions include but not limited to:

- **The National Heritage Council of Namibia:** for archaeological and heritage resources (sites and objects).
- **Ministry of Mines and Energy:** for compliance to the relevant small scale mining requirements, including petroleum products' storage and handling on site.

3.2 The Small-Scale Mining Manager (or the Proponent)

This Manager who may also be the Proponent, will be responsible for the following:

- Development and management of schedules for daily activities in compliance with the EMP.
- Managing/overseeing the implementation of this EMP and updating and maintaining it when necessary.
- Ensure that relevant commitments contained in the EMP Action Plans are adhered to.
- Ensure the relevant staff is trained in procedures entailed in their duties.
- Through consultations and cooperation with the ECO/SHE officer, issuing fines to individuals who may be in breach of the EMP provision and if necessary, removing such individuals from the site.
- Setting up and managing the schedule for the day-to-day activities.
- Ensuring all incidents are recorded and documented.

- Undertaking an annual review of the EMP and amending the document when necessary.

3.3 Safety, Health and Environmental (SHE) or Environmental Control Officer (ECO)

The SHE or ECO (as appropriate) will be responsible for ensuring that project activities are completed on time, efficiently and sustainably. The ECO/SHE Officer's duties and responsibilities will include:

- The SHE Officer will be responsible for the following activities:
- Planning and carrying out site inductions to the workers on-site and visitors to the worksite(s).
- Ensuring compliance with relevant environmental and related authorisations and license conditions.
- Ensure that the requirements of the EMP are carried out during applicable activities throughout the project life span.
- Monitor the overall implementation of the EMP.
- Identifying and appointing of appropriately qualified specialists (were necessary) to undertake the programmes in a timeous manner and to acceptable standards.

3.4 Public Relation Officer (PRO)

The Public Relation Officer will be responsible for the following tasks:

- Liaison between the affected conservancy members, farmers (property owners) and/or occupiers of land as well, other stakeholders, and Ebenhaezer Rautenbach.
- Ensure effective communication with stakeholders (affected farmers or landowners or occupiers of land), media (if necessary) and the public.
- Managing public relations issues.
- Preparing and submitting public relations reports, if required.
- Collaborating with personnel and maintaining project-related open communication among personnel.
- Cooperate with all relevant interested and affected parties/stakeholders.

3.5 Archaeology: Chance Finds Procedure (CFP) Implementation Roles

The following personnel have been assigned responsibilities as per the Chance Finds Procedure (**Appendix 1**) as per the provided Archaeological and Heritage Assessment Studies conducted for the proposed activities:

A. Operator

To exercise due caution if archaeological remains are found

B. Foreman

To secure site and advise management timeously

C. Superintendent

To determine safe working boundary and request inspection

D. Archaeologist

To inspect, identify, advise management, and recover remains.

The Proponent should assess these commitments in detail and should acknowledge their obligation to the specific management actions detailed in the Tables of the following sections.

4 ENVIRONMENTAL MANAGEMENT & MITIGATION ACTION PLANS

The environmental management and mitigations measures (management plan actions) provided to the potential adverse impacts associated with the proposed project and its activities are presented under this chapter. The aim of these plan actions is to avoid these potential impacts where possible, and where avoidance is impossible, measures are provided to reduce the impacts' significance (as presented under the impacts' assessment chapter of the Scoping Report).

4.1 Key potential Negative/ (Adverse) Impacts

The summary of key identified potential adverse impacts for which the measures have been developed are as follows:

- Potential disturbance of existing pastoral systems,
- Physical land / soil disturbance,
- Impact on local biodiversity (fauna and flora) and habitat disturbance,
- Potential impact on water resources and soils particularly due to pollution,
- Air quality issue: potential dust from surface excavation,
- Potential occupational health and safety risks associated with the movement / operating of machinery and equipment on site,
- Vehicular traffic safety and impact on services infrastructure such as local roads,
- Vibrations and noise associated with mining activities may be a nuisance to locals,
- Environmental pollution through different types of waste generated on the site,
- Impact on archaeological or cultural heritage resources,
- Potential social nuisance and conflicts between affected farmers / landowners and or neighbouring land users and Proponent.

4.2 The Management and Mitigation of Potential Key Negative Impacts

The management and mitigation measures (action plans) for the potential adverse impacts are presented in **Table 2** for the planning, and small scale (operational and maintenance) phases.

The required management and mitigation plan actions have been presented under **Table 2** in terms of (a) Environmental aspect and issues for which management actions are required, (b) proposed impact mitigation measures, (c) key performance indicator (KPI) for monitoring success levels of management actions, (d) responsible person(s) for implementing the proposed management actions, (e) resources required for implementing management actions and monitoring and (f) implementation timeframes for the proposed management actions.

Table 2: Management and Mitigation Measures for the Planning, small scale mining Phases

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
PLANNING PHASE						
EMP implementation and training	Lack of EMP awareness and implications thereof	<p>-A Comprehensive Health and Safety Plan for the project activities should be compiled. This will include all the necessary health, safety, and environmental considerations applicable to respective works on sites.</p> <p>-An EMP non-compliance penalty system should be implemented on site.</p> <p>-The Proponent should appoint an SHE Officer to be responsible for managing the EMP implementation and monitoring.</p>	-All required Plans and systems are compiled and in place Safety, Health and Environmental (SHE) Officer is appointed	-Proponent	-Records of EMP implementation Plans and Systems	Pre-small-scale mining (project activities)
Authorizations	Lack of Agreements, Permits/ Licenses	<p>-All the required agreements and licenses or permits should be applied for and signed, respectively before commencement of work on the MCs, or as required.</p> <p>-The permits, agreements referred to herein include land access & use (by Traditional Authority, //Haud conservancy management and Khorixas</p>	<p>-Applicable permits and licenses to be obtained from relevant authorities and kept on site for records keeping and future inspections</p> <p>-Agreements signed and obtained from landowners or</p>	-Proponent	-Permits and Licenses	Prior to small scale mining

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		Constituency office or property owners or representatives of the occupiers of land) for small scale mining by the landowners/custodian, as well as petroleum storage permits from Ministry of Mines and Energy (MME).	occupiers of land on time, minimum of 2 months prior to planned commencement date of onsite works -Onsite petroleum storage permits obtained		Signed Land Access and Use Agreements	
Communication between the Proponent and landowners or occupiers of land	Lack of communication (proper liaison) between farmers and Proponent with regards to land use	-The Proponent should appoint a Public Relation Officer (PRO) to liaise with the farmers/landowners. -The PRO should be introduced to the farm/landowners and his or her contact details provided to them prior to undertaking activities for easy communication during the small-scale mining activities. -A clear communication procedure/plan which should include a grievance mechanism should be compiled	-A PRO is appointed -Ongoing Stakeholders' and Public Engagement & Consultation throughout the project cycles, when and as required	-Proponent	-Complaint's logbook -PRO contact details to be provided to the affected farmers/landowners -Records of Stakeholders' and Public Consultations	PRO appointment (Prior to project activities) and their responsibilities throughout the rest of the project phases
Employment	Creation of employment opportunities to the locals	-Preference of local people for employment for jobs should be implemented, i.e., permanent residents from the local area (in and around Khorixas) should be employed for the unskilled	-Number of locals employed for small scale mining activities -Consultation with the constituency councillor's office and	-Proponent in collaboration with the small-scale mining Manager (if necessary)	-Record of employees -Constituency Council office to assist in identifying unemployed people	Pre-project activities and when necessary, throughout the small-scale mining phase

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		labour. Out-of-area employment should be justified, for example by the unavailability of local skills only. -Equal opportunity should be provided for both men and women, when and where possible.	local development committee -Notification via the Constituency Office			
Specialised procurement of mining services	Small scale mining contractors and other services providers	-All services related to mining activities that the Proponent may need, preference should be given to local providers of such services. If not available locally, the services search should be extended to a regional level (Kunene Region) and lastly, nationally, or international, if all efforts truly yield no success. -Opportunities such as small tenders for instance should be awarded through the established committee.	-Number of hired contractors	-Proponent	-Record of hired or contracted companies or services providers -Local Development Committee -Office of the Constituency Councillor	Pre-project activities and when necessary, throughout

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
Corporate Social Responsibility (CSR)	Social commitment failures	<p>-Consider providing and or donating services such as water supply boreholes to the community they are operating in through the identification of people in need.</p> <p>-Infrastructure should be donated to the community through the Traditional Authority or the Regional Council to the needy communities.</p> <p>-The project owner (Proponent) should fulfil their promises of CSR, upon proper consultation with the local development committees to establish what the community really needs.</p>	-Visible commitment to ensure that the local community is benefitting from the project	-Proponent	<p>-Office of the Constituency Councillor</p> <p>-Local Development Committee to monitor implementation of the CSR</p>	Throughout the small-scale mining phase
SMALL SCALE MINING PHASE						

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
EMP implementation and training	Lack of EMP awareness and implications thereof	<p>-EMP trainings should be provided to all new workers on site and to old workers (as a refresher) every 6 months.</p> <p>-All site personnel should be aware of necessary health, safety, and environmental considerations applicable to their respective work</p> <p>-The implementation of this EMP should be monitored.</p> <p>-The site should be inspected, and a compliance audit done throughout <u>the project activities, monthly and compliance monitoring reports submitted to the DEAF bi-annually.</u></p> <p>-An EMP non-compliance penalty system should be implemented on site.</p>	<p>-Compliance monitoring conducted monthly for the small-scale mining phase and should be recorded</p> <p>-EMP Refresher training for employees/workers every 6 months</p> <p>-Timely renewal of the Environmental Clearance Certificate (ECC) every 3 years</p>	-SHE Officer	<p>-Monitoring reports by the SHE Officer or ECO</p> <p>-ECC renewed on time</p> <p>-Records of EMP training conducted</p>	Throughout the mining phase
Pastoral land	Impact on grazing areas	<p>-Any unnecessary removal or destruction of grazing land, due to mining activities should be avoided.</p> <p>-Vegetation found on the site, but not in the targeted mining</p>	<p>-Little damage on grass cover and vegetation</p> <p>-Maximum effort implemented to curb</p>	<p>-Small scale mining Manager</p> <p>-SHE Officer</p>	-None	Throughout the phases

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>areas should not be removed but left to preserve biodiversity and grazing land.</p> <p>-Workers should refrain from driving off road and creating unnecessary tracks that may contribute to soil erosion and loss of grazing land.</p> <p>-Environmental awareness on the importance of the preservation of grazing land for local livestock should be provided to the workers</p>	<p>loss of grazing areas with the MCs.</p>			
<p>Land use (physical soils)</p>	<p>Land degradation</p>	<p>-Overburden should be handled more efficiently during small scale mining works to avoid erosion when subjected erosional processes.</p> <p>-Prevent creation of huge piles of waste rocks by performing sequential backfilling.</p> <p>-Stockpiled topsoil and overburden waste rocks should be used to backfill the explored and disturbed site areas/spots.</p> <p>-Soils that are not within the intended and targeted footprints of the site areas should be left undisturbed and</p>	<p>-No proliferation of informal vehicle tracks.</p> <p>-No new erosion gullies.</p>	<p>-small scale mining Manager</p> <p>-SHE Officer</p>	<p>-Complaint's logbook</p>	<p>Throughout the small-scale mining phase</p>

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>soil conservation implemented as far as possible.</p> <p>-Project vehicles/machinery should stick to access roads provide and or meant for the project operations but not to unnecessarily create further tracks on site by driving everywhere resulting in soil compaction</p>				
Water resource	Over-abstraction (Water demand and availability)	<p>-When necessary, make provision for water carting to site to augment onsite water supplies for small scale mining.</p> <p>-Water should be efficiently used by implementing water saving measures such as recycle and re-use where necessary and possible. This includes using water for cooling o equipment for the cleaning of project equipment.</p> <p>-Water conservation awareness and saving measures training should be provided to all the project workers so that they understand the importance of</p>	<p>-Proof/ recording/ quantification of water saving efforts</p> <p>-No complaints of water level drops and short in supply from local water users</p>	<p>- small scale mining Manager</p> <p>-SHE Officer</p>	-Permit issuance (or water purchasing agreements for carting to site)	<p>Water supply agreements to be obtained prior to small scale mining phase</p> <p>Throughout the phases</p>

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		conserving water and become accountable.				
Soil and water resources	Soil and water resources pollution	<p>-Spill control preventive measures should be in place on site to management soil contamination, thus preventing and or minimizing the contamination from reaching water resources bodies. Some of the soil control preventive measures that can be implemented include:</p> <p>(a) Identification of oil storage and use locations on site and allocate drip trays and polluted soil removal tools suitable for that specific surface (soil or hard rock cover) on the sites.</p> <p>(b) Maintain equipment and fuel storage tanks to ensure that they are in good condition thus preventing leaks and spills.</p> <p>(a) The oil storage and use locations should be visually inspected for container or tank condition and spills.</p> <p>(b) Maintain a fully provisioned, easily accessed spill kit. Spill kits should be located throughout the active project</p>	<p>-No complaints of pollutants on the soils and eventually in the water due to small scale mining activities</p> <p>-No visible oil spills on the ground or contaminated/polluted spots.</p>	-SHE Officer	<p>-Complaint's logbook</p> <p>-Waste containers</p> <p>-Non-permeable material to cover the ground surface at areas where hydrocarbons and potential pollutants are utilized.</p>	Throughout small-scale mining phase

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>sites contain the floor dry absorbent material and absorbent booms, pads, mats. These would be suitable for ground surface areas that are covered mainly by hard rocks.</p> <p>-All project employees should be sensitized about the impacts of soil pollution and advised to follow appropriate fuel delivery and handling procedures.</p> <p>-The Proponent should develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible.</p> <p>-Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training and mentor new workers as they get hired.</p> <p>-Small-scale mining site areas where hydrocarbons will be utilized, the surface should be covered with an impermeable plastic liner (e.g., an HDPE liner), carefully placed to minimize risk of puncturing, to</p>				

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>prevent any spillages from getting into direct contact with the soils and prevent eventual infiltration into the ground.</p> <p>-Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated on site.</p> <p>-In cases of accidental fuel or oil spills on the soils from site vehicles, machinery and equipment, the polluted soil should be removed immediately and put in a designate waste type container for later disposal as per the preceding bullet point. The removed polluted soil should either be completely disposed of or cleaned and returned to where it was taken from on site or can be replaced with a cleaner soil.</p> <p>-Although fuel (diesel) required for small scale mining equipment will be stored in a tank mounted on a mobile trailer, drip trays must be readily available on this trailer and monitored to ensure that accidental fuel spills along the</p>				

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>tank trailer path/route around the small-scale mining sites are cleaned on time (soon after the spill has happened).</p> <p>-Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility.</p> <p>-Washing of equipment contaminated hydrocarbons, as well as the washing and servicing of vehicles should take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources.</p> <p>-Toilet water should be treated by discharging into chemical toilets and periodically emptied out before reaching capacity and transported to a wastewater treatment facility.</p>				
Biodiversity	Loss of Fauna and Flora	<p>Flora:</p> <p>-No onsite vegetation should be cut or used for firewood related to the project's operations. The Proponent should provide firewood for his onsite camping</p>	-Incident reports of illegal hunting of wildlife by the project crew/workers.	-SHE Officer	-Complaint's logbook	During site set up, and throughout the small-scale mining phase

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>workers from authorized firewood producer or seller.</p> <p>-Even if a certain shrub or tree is found along small-scale mining sites, this does not mean that it should be removed. Therefore, care should be taken when exploring without destroying the site vegetation.</p> <p>-Design access roads appropriately in a manner that disturbs minimal land areas and vegetation as possible.</p> <p>-Make use of the existing road network as much as possible and avoid off-road driving.</p> <p>-Vegetation clearing to be kept to a minimum. The vegetation of the site is largely low and open and therefore whole-sale vegetation clearing should only be applied where necessary and within the development footprint.</p> <p>-Formulate and implement suitable and appropriate operational management guidelines for the cleared areas. Incorporated in the guidelines are the progressive</p>	<p>-No complaints of livestock theft, snaring or killing of livestock and wildlife by the project personnel</p> <p>-No disturbance to unmarked areas.</p> <p>No complaints from locals regarding unauthorised vegetation removal or cutting down of trees</p>			

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>rehabilitation measures. These should consider:</p> <p>(a) Post closure land-use measures and/or establishment of self-sustaining indigenous vegetation</p> <p>(b) Erosion management measures</p> <p>-Vegetate the top surface of the cleared areas as soon as it is practicably possible.</p> <p>-Cleared areas should be revegetated with seed or plants of locally occurring species.</p> <p>-Regular monitoring for alien plants within the project's footprint during operations.</p> <p>-No muddy and dirty equipment should be brought onto site as this is likely to carry seed of alien species.</p> <p><u>Fauna (domestic and wild)</u></p> <p>-Workers should refrain from disturbing, killing or stealing domestic and wild animals and killing small soil and rock outcrops' species found on site.</p>			<p>-Anti-poaching unit of the Namibian Police Force</p> <p>-MEFT's Wildlife Protection Unit</p>	

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>-Poaching (illegal hunting) of wildlife from the area is strictly prohibited.</p> <p>-Environmental awareness on the importance of biodiversity preservation should be provided to the workers.</p>				
Air Quality	Air quality (dust)	<p>-Small scale mining vehicles should not drive at a speed more than 40 km/h to avoid dust generation around and within the site area.</p> <p>-The Proponent should ensure that the small-scale mining schedule is limited to the given number of days of the week, and not every day. This will keep the vehicle-related dust level minimal in the area.</p> <p>-Dust control measures such as reasonable amount of water spray should be used on gravel roads and near the small-scale mining site to suppress the dust that may be emanating from certain mining -areas on the MCs.</p> <p>-Dust masks, eye protective glasses and other respiratory personal protective equipment</p>	<p>-Dust suppression measures implemented</p> <p>-Visible efforts to curb dust</p>	<p>-Small scale mining Manager</p> <p>-SHE Officer</p>	<p>-Grievance logbook</p> <p>-Dust suppression water tanks</p>	Throughout the phases

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>(PPE) such as face masks should be provided to the workers on site, where they are exposed to dust.</p> <p>-The impact mitigation measures should be covered in the relevant farm access agreement as required by law on commercial farms. This should also apply to resettled/communal farms, if any.</p> <p>-Excavating equipment should be regularly maintained to that excavation efficiency and so to reduce dust generation and harmful gaseous emissions.</p>				
Waste management	Environmental pollution	<p>-Workers should be sensitized to dispose of waste in a responsible manner and not to litter.</p> <p>-All domestic and general operational waste produced daily should be contained until such that time it will be transported to designated waste sites.</p> <p>-No waste may be buried or burned on site or anywhere</p>	<p>-A register of all waste generated on site is kept on site.</p> <p>-All waste disposal permits from relevant authorities are available on site.</p> <p>-No littering on and around the project site</p>	<p>-Proponent</p> <p>-Small scale mining Manager</p> <p>-SHE Officer</p>	<p>-Funds to acquire waste storage bins/ drums; and transport all waste from the site.</p> <p>-Waste storage containers</p>	Throughout the phases.

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>else and no wastes left on the sites.</p> <p>-The small-scale mining site should be equipped with separate waste bins for hazardous and general/domestic waste.</p> <p>-Hazardous waste, including emptied chemical containers should be safely stored on site where they cannot be accessed and used by uniformed locals for personal use. These containers can then be transported to the nearby approved hazardous waste sites for safe disposal. No waste should be improperly disposed of on site or in the surroundings, i.e., on unapproved waste sites.</p> <p>-Oil spills should be taken care of by removing and treating soils affected by the spill.</p> <p>-A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented.</p>				

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>-Careful storage and handling of hydrocarbons on site is essential.</p> <p>-Potential contaminants such as hydrocarbons and wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater.</p> <p>-An emergency plan should be available for major/minor spills at the site during operation activities (with consideration of air, groundwater, soil and surface water) and during the transportation of the products(s) to the sites.</p>				
	<p>Wastewater generated by small scale mining workers living on-site.</p>	<p>-Washing of hydrocarbon contaminated equipment, as well as the washing and servicing of vehicles should take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources.</p> <p>-Sewage waste should be stored as per the portable chemical toilets supplied on site</p>	<p>-Adequate toilet facilities on site.</p>	<p>-Small scale mining Manager</p> <p>-SHE Officer</p>	<p>-Chemical toilets, waste treatment agents/chemicals</p> <p>-Wastewater discharge permits</p>	<p>At site setup and throughout small-scale mining phase</p>

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>and regularly disposed of at the nearest wastewater treatment facility.</p> <p>-Emptying of chemical toilets according to the manufacturer's specifications.</p> <p>-All wastewater and hydrocarbon substances and other potential pollutants associated with the project activities should be contained in designated containers on site and later disposed of at nearby approved waste sites in accordance with MAWLR's Water Environment Division standards on wastewater discharge into the environment. This is to ensure that these hazardous substances do not infiltrate into the ground and affect the local groundwater quality.</p>				
Noise	Noise	<p>-Noise from project vehicles and equipment on the working sites of the MCs should be at acceptable levels.</p> <p>-Small scale mining hours should be restricted to between 08h00 and 17h00 to avoid noise and vibrations generated</p>	<p>-Noise generating activities are limited to weekdays only.</p> <p>-PPE provided to workers operating noisy equipment and in noisy site areas.</p>	<p>-Small-scale mining manager</p> <p>-SHE Officer</p>	<p>-Clearly written placards with operational hours in a day placed at one of the visible access roads to sites</p>	Throughout the project phases

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>by small scale mining equipment and the movement of vehicles before or after hours, thus disturbing the tranquillity in the area during the night or early morning hours.</p> <p>-When operating the machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.</p> <p>-The transportation of small-scale mining materials, equipment and machinery should be limited to once or twice a week only, but not every day.</p> <p>-Target small scale mining sites that may be found to be within less than 1 km from the residences (farmhouses) should be avoided at all costs. This is done to preserve tranquillity of the residents.</p>				
Health and Safety	Occupational & Community Health and Safety	-The Proponent should commit to and make provision for bi-annual full medical check-up for all the workers at site to monitor	-Compilation of Comprehensive Health and Safety Plan	-Small scale mining Manager	-Health and Safety Policies -Funds to acquire health and safety	

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>the impact of project related activities on them (workers).</p> <p>-As part of their induction, the project workers should be provided with an awareness training of the risks of mishandling equipment and materials on site as well as health and safety risk associated with their respective jobs.</p> <p>-When working on site, employees should be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc.</p> <p>-Heavy vehicle, equipment and fuel storage site should be properly secured, and appropriate warning signage placed where visible.</p> <p>-Drilled boreholes that will no longer be in use or to be used later after being drilled should be properly marked for visibility and capped/closed off.</p> <p>-Ensure that after completion of small-scale mining holes, drill cuttings are put back into the</p>	<p>-Regular health screening of workers</p> <p>-Bi-annual health and safety audits done.</p> <p>-All onsite workers and visitors equipped with PPE.</p>	<p>-Proponent</p> <p>-SHE Officer</p>	<p>related equipment. and to pay for employee medical services</p> <p>-First Aid training for at least 1 personnel at each work site</p>	

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>hole and the holes filled and levelled.</p> <p>-An emergency preparedness plan should be compiled, and all personnel appropriately trained.</p> <p>-Workers should not be allowed to drink alcohol prior to and during working hours nor allowed on site when under the influence of alcohol as this may lead to mishandling of equipment which results into injuries and other health and safety risks.</p> <p>-The site to be equipped with "danger" or "cautionary" signs for any potential danger or risk area identified on site.</p>				
Fires	Accidental fire outbreak	<p>-Portable fire extinguishers should be provided on site.</p> <p>-No open fires to be created by project personnel.</p> <p>-Potential flammable areas and structures should be marked as such with clearly visible signage.</p>	-No Fires recorded (due to presence of workers)	-Small scale mining Manager -SHE Officer	-Fire extinguishers (1 per vehicle) and 1 per working site	Throughout the phases
Archaeology and heritage	Accidental disturbance	-The management and mitigations or recommendation	-Preservation of all artefacts that are	-Small-scale mining Manager	-Technical Consultant	-Archaeologist to be present on-

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
	<p>and destruction of archaeological or heritage objects and sites</p>	<p>to minimize impact on archaeological and heritage resources are not available, pending a Detailed/Comprehensive Specialist' Study. The only provisional recommendation to the proposed Detailed Study hereto is that:</p> <p>The Proponent is advised to make an application to the National Heritage Council for a Consent to allow a Detailed Assessment of the area in relation to the proposed activity believed to be an archaeological or heritage site.</p>	<p>discovered around project area</p> <ul style="list-style-type: none"> -Cessation of work upon discovery/unearting of unknown objects 	<ul style="list-style-type: none"> -SHE Officer -Archaeologist 	<p>(Archaeologist to help identify and advise on heritage object discovery)</p> <ul style="list-style-type: none"> -Salvage equipment -Flag tapes -GPS (site marking) 	<p>site during excavations</p>
<p>Social conflicts</p>	<p>Job seeking, and differing norms and cultures</p>	<ul style="list-style-type: none"> -The Proponent should prioritize the employment of more local people, and only if necessary and due to lack of skills in the area, out-of-area people can be given some of the work. This is to avoid the influx of outsiders into the area for works that can be done the locals. -The locals to be employed during the project phases should be provided with the necessary training of skills 	<ul style="list-style-type: none"> -No complaints of property theft or damage related to project workers -More local workers who are familiar with the values, and way of living in the area 	<ul style="list-style-type: none"> -Small scale mining Manager -SHE Officer 	<ul style="list-style-type: none"> -Grievance logbook -Employment Code of Conduct 	<p>Throughout the phases</p>

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>required for the project to avoid bringing in many out-of-area employees. This way, skills development and transfer is ensured in the nearby communities.</p> <p>-The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections.</p> <p>-Out-of-area workers that may be employed (due to their unique work skills) on site should be sensitized on the importance of respecting the local values and norms, so that they can co-live-in harmony with the local communities during the duration of their employment on site.</p>				
	Property intrusion and disturbance	-The Proponent should inform their workers on the importance of respecting the locals' properties by not intruding or damage their homes, fences or snaring and killing their livestock.	-Project workers are educated on what is expected of them while on site in relation to the private and public properties -No complaints of damage to private or	-Small scale mining Manager -PRO -SHE Officer	-Anti-property intrusion or damage pamphlets or placards placed at every small-scale mining site	Throughout the phases

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>-Any workers or site employees that will be found guilty of intruding peoples 'privately owned properties should be called in for disciplinary hearing and/or dealt with as per their employer' (Proponent)'s code of employment conduct</p> <p>-Site workers should be advised to respect the community and local's private properties, values, and norms.</p> <p>-No worker should be allowed to wander in people's private yards or fences without permission.</p> <p>-Site workers are not allowed to kill or in any way disturb local livestock.</p> <p>-No worker should be allowed to, without permission cut down or damage trees belonging either the farm owner, the neighbouring farms or in the already scarce community vegetation.</p>	<p>public properties by project workers or activities</p>		<p>-Fines for any intentional damage or disturbance of private or public property</p>	
<p>Vehicular Traffic</p>	<p>Traffic safety</p>	<p>-The transportation of small-scale mining materials, equipment and machinery should be limited to once or</p>	<p>-Site access road permits obtained, and requirements fulfilled</p>	<p>-Small scale mining Manager -SHE Officer</p>	<p>-Vehicular traffic compliance to be included in the annual</p>	<p>Throughout the phases.</p>

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>twice a week only, but not every day to reduce the pressure on local roads.</p> <p>-The heavy truck loads should comply with the maximum allowed speed limit for respective vehicles while transporting materials and equipment/machinery on the public and access roads (40km/h).</p> <p>-The potential carted water to the site (from other source of water supply) should be done once or twice a week in container that can supply and store water for most of the week, thus reducing the number of water-carting trucks on the road daily.</p> <p>-Drivers of all project phases' vehicles should be in possession of valid and appropriate driving licenses and adhere to the road safety rules.</p> <p>-Drivers should drive slowly (40km/hour or less) and be on the lookout for livestock and wildlife as well as residents/travellers.</p>	<p>-No complaints from members of the public regarding vehicular traffic issues related to the project</p> <p>-All personnel operating the project vehicles and machinery are appropriately licensed and possession of valid driving licenses.</p> <p>-The vehicles are driven at the recommended speed.</p> <p>-Demarcated areas for parking, offloading, and loading zones are on sites</p>		<p>environmental audit reporting</p>	

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>-The Proponent should ensure that the site access roads are well equipped with temporary road signs conditions to cater for vehicles travelling to and from site throughout the project's life cycle.</p> <p>-Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents owing to mechanical faults.</p> <p>-Vehicle drivers should only make use of designated site access roads provided and as agreed.</p> <p>-Vehicle's drivers should not be allowed to operate vehicles while under the influence of alcohol.</p> <p>-Sufficient parking area for all project vehicles should be provided for and clearly demarcated on sites.</p> <p>-The Proponent should make provision for safe materials and equipment offloading and loading areas on sites.</p> <p>-No heavy trucks or project related vehicles should be</p>				

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>parked outside the project site boundary or demarcated areas for such purpose.</p> <p>-To control traffic movement on site, deliveries from and to site should be carefully scheduled. This should optimally be during weekdays and between the hours of 8am and 5pm.</p> <p>-The site access road(s) should be upgraded to an unacceptable standard to be able to accommodate project related vehicles and access permits obtained from the Roads Authority.</p>				
Local resources and services infrastructure	Overuse of existing roads and water resources	<p>-The Proponent should consider re-using and recycling water on site to reduce the abstraction of fresh water from the local sources.</p> <p>-The heavy trucks transporting materials and services to site should be scheduled to travel at least twice or thrice a week to avoid daily travelling to site, unless on cases of emergencies.</p> <p>-The Proponent should consider frequent maintenance</p>	<p>The local roads are frequently maintained by the Proponent and movement of heavy trucks is limited</p> <p>-Water saving measures are implement</p>	<p>-Proponent</p> <p>-Small scale mining Manager</p>	<p>-Road maintenance excavator/bulldozer</p> <p>-onsite water storage tanks</p>	Throughout the phases

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		of local roads around their operations to ensure that the roads are in a good condition for other roads users from and outside the area				

4.3 Rehabilitation and Decommissioning measures

Successful rehabilitation requires careful consideration of the local ecological context in combination with rehabilitation goals. The most important steps in undertaking a successful rehabilitation are planning and environmental awareness (environmental education) on the importance of progressive rehabilitation (or post-activity rehabilitation) and its importance to the environment. Furthermore, to successfully implement the planned rehabilitation, practically, this will depend on a few factors, namely the rehabilitation program, characteristics of the site, nature of disturbance, rehabilitation methods, as well as resources availability.

Rehabilitation of the MCs site may include the re-vegetation of areas with species consistent with surrounding vegetation; refilling of trenches in such a way that subsoil is replaced first and topsoil replaces last. The management and mitigation measures (action plans) for the rehabilitation and decommissioning of explored sites and site works, respectively are presented in **Table 3**.

Table 3: Management and Mitigation Measures to rehabilitate the explored sites and decommissioning of the site works

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
Rehabilitation	Explored and damaging of site land and soils	-All small-scale mining boreholes related to the project activities and no longer needed should be capped and backfilled if this is what the farm owners prefer.	-Capped boreholes and backfilled pits -No stockpiled topsoil (topsoil is levelled after completion of each work)	-Proponent	-Record pits excavated (if any)	Pre-site abandonment

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		<p>-Utilize stockpiled subsoil and topsoil to fill the excavated pits/trenches progressively back, i.e., stockpiled topsoil should be levelled during small scale mining activities.</p> <p>-Backfilling of all excavated pits and trenches with loose materials but not only be filled with sand alone, as wind will scours the sand and re-establish the holes.</p> <p>-Provision of both financial and technical resources for progressive rehabilitation and post-small scale mining activities should be made.</p>	<p>-Visible signs of stockpiled topsoil</p> <p>-Annual update of finances reserved for decommissioning and rehabilitation</p>		<p>-Waste containers on sites</p> <p>-Photo records of backfilled sites</p> <p>-Records of campsite and other structures onsite</p> <p>Records of finances set aside for decommissioning activities</p>	
Decommissioning	Structures and infrastructure	<p>-All accumulated waste (hazardous, solid, and general) up until the cessation of small-scale mining activities will be removed site and transported to designated off site waste management facilities</p> <p>-Removal of project vehicles and equipment from the site and taken to designated parking facility off site.</p> <p>-All project support structures such as ablution facility (toilet and washroom system), campsites, temporary field</p>	<p>-No sign of waste or littering seen on site and around site areas</p> <p>-project structures and infrastructure Campsite dismantled, and materials taken away from site</p>	-Proponent		

Aspect	Impact	Management & Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		offices and storage containers/tanks shall be demolished, and the waste taken to designated sites. The site areas on which these structures were set up will be rehabilitated to pre-operational state.				

4.4 Environmental and Social Monitoring

To support and ensure that the proposed management and mitigation measures are achieving the desired results throughout the project phases, a monitoring plan must be implemented alongside the mitigation plan. **Table 4** presents the required environmental and social monitoring in terms of each potential impact, parameters to be monitored and monitoring objective. Included in the same Table is the reporting structures for monitoring, frequency, methods to be used, reporting structure, any thresholds that apply and relevant recommended actions (OMAVI, 2020).

The same Table also presents the monitoring implementation for the small-scale mining phase, given the similarity in activities, hence the “reporting structure” column presented as “Small-scale mining manager”. Therefore, the monitoring exercise will be done according to the relevant project stage or phase. In other words, for monitoring of mitigation implementation in the small-scale mining phase, the reporting structure ends with the small-scale mining Manager.

Table 4: Monitoring requirements to manage and mitigate the potential adverse impacts (updated after Resilient Environmental Solutions, 2019)

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Water and soil pollution									
Soil pollution by hydrocarbon (fuel and lubricant spills)	Complaints from farmers or occupiers of land within the project sites	To prevent contamination of site soils	No complaints from farmers about visible oil spills	Inspection of complaints logbooks	Weekly	SHE officer	SHE Officer> Small scale mining Manager	A logged complaint	Further consultations with the farm/landowners or custodians
Wastewater generated by small scale mining workers living on-site.	Open defecation and urination.	To prevent environmental pollution	Adequate toilet facilities on site. Complaints from the public about open defecation and urination.	Visual observation. Inspection of complaints logbook.	Weekly	SHE Officer	SHE Officer> Small scale mining Manager	A logged complaint	Clean-up of affected areas.
Soils									
Loss of topsoil	Increased loss of soil	To prevent loss of topsoil	No proliferation of informal vehicle tracks. No new erosion gullies	Visual observation	Weekly	SHE Officer	SHE Officer> Small-scale mining Manager	Proliferation of new vehicle tracks Formation of new gullies in work areas	Rehabilitation of affected explored areas
Air quality									
Increase in dust generation, which might negatively affect occupational and residential	Complaints from public about increased in dust generation.	To reduce public complaints and prevent negative changes in air quality due to	No complaints from the public about increased dust generation.	Inspection of complaints logbook.	Weekly	SHE Officer	SHE Officer> Small scale mining Manager	A logged complaint	Dust suppression around working areas to reduce fugitive dust

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
respiratory health.		small scale mining activities							
Hydrocarbon emissions from vehicles	Complaints from the public about increased vehicles fumes	Same as above.	No complaints from the public about increased vehicle emissions	Inspection of complaints logbook.	Weekly	SHE Officer	SHE Officer> Small scale mining Manager	A logged complaint	Servicing of vehicles and machinery by a certified service provider
Poaching (Illegal hunting)									
Illegal hunting of wildlife	Reported poaching incidents by projects team	To prevent illegal hunting of wildlife	Incidents reports of illegal hunting of wildlife by small scale mining workers.	Consultation with the local Police Service for reported incidents of poaching.	Weekly	SHE Officer	SHE Officer> Small scale mining Manager> local Police Service (Anti-poaching Unit)	An incidents report logged with the local Police Service	Appropriate action will be decided by the local Police Service
Habitat loss (Biodiversity)									
Localised loss of habitat and vegetation	Loss of habitat	To prevent loss of habitat outside areas of interest	No disturbance to unmarked areas within the project area	Visual observation	Weekly	SHE Officer	SHE Officer> Small scale mining Manager	Vegetation clearance outside of marked areas.	Rehabilitation of affected areas to the satisfaction of the SHE Officer
Occupational and Community Health and Safety									
No health and safety plan for small scale mining activities.	Compiled health and safety plan for small scale mining activities.	To prevent health and safety impacts	No significant health and safety incidents (i.e., serious injuries or loss of life)	Visual observation Inspection of complaints logbooks	Daily/ weekly	SHE Officer and Small scale mining Manager	SHE Officer> Small scale mining Manager	Health and safety incident	Remedy the consequences

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Potential increase in outbreak of wildfires due to project activities	Occurrence of wildfires	To prevent environment damage caused by wildfires	No wildfires recorded (due to presence of small-scale mining workers)	Visual observation	Daily	SHE Officer	SHE Officer> Small scale mining Manager > local police service	Outbreak of wildfires due to the small-scale mining workers	Rehabilitation of affected areas
Archaeology and cultural heritage (to be updated upon completion of the required Detailed Archaeological and Heritage Assessment Study)									
Potential disturbance of archaeological and cultural heritage resources	Presence or unearthing of archaeological or cultural heritage resources	To prevent destruction of artefacts and sites	Preservation of all artefacts and sites that are discovered within the site boundary or around the project site area	Inspection of records of findings	Daily	SHE Officer Operator	Operator>Foreman> Superintendent>SHE Officer>Project Archaeologist>National Heritage Council (NHC)	Unearthing of archaeological or cultural heritage resources	Cease all activities on site and wait for NHC to inspect site and give further instructions / actions
Employment creation and Corporate Social Responsibility (CSR)									
Creation of employment	Creation of employment opportunities	To ensure that locals benefit from the project	Number of locals employed during small scale mining activities	Inspection of employment records	Monthly	Small scale mining Manager	Small scale mining Manager or Proponent	Number of those employed	None
Noise									
Potential increase in noise	Above ambient noise levels.	To ensure that generated noise does not disturb residents.	Complaints from residents about noise generated.	Inspection of complaints logbook	Weekly	SHE Officer	SHE Officer> Small scale mining Manager	A logged complaint about above normal noise levels	Revision of site activities
Vehicular Traffic									

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Increase in traffic density on declared Roads Authority (RA) roads or damage to these.	Complaints from the public about increase in traffic on the roads. Complaints about damage to RA roads caused by movement of project vehicles and machinery.	To ensure continued ease of access to RA roads by residents	No complaints from the public about increase of traffic due to small scale mining activities	Inspection of logbooks	Weekly	SHE Officer	SHE Officer> Small scale mining Manager > Roads Authority	A logged complaint about traffic increase or damage to RA roads	Find alternative access roads for the workforce. Rehabilitation of affected roads
HIV and AIDS									
Potential increase in HIV and AIDS prevalence.	New HIV or sexually transmitted infections (STIs)	To prevent new infections in the area	No new HIV or STIs infections recorded	Liaison with local health facilities	Monthly	SHE Officer	SHE Officer> Small scale mining Manager > Ministry of Health and Social Services	Recorded new HIV or STIs linked to the small-scale mining workers	Continued sex education and provision of condoms
Social nuisance: Property invasion or disturbance and damage									
Potential intrusion or damage/destruction of private or public properties	Unauthorized intrusion and or damage to properties	To prevent crashes and tensions between the Proponent and the land/property owners	No complaints of property damage or intruding by project personnel	Liaison with property owners or occupiers of land	Monthly	PRO	Small scale mining Manager (or Proponent)>PRO>Landowner s/Occupiers of land or custodian (Traditional Authority)	Arising new complaints	PRO to warn the personnel on respecting people's properties. If persists then Code of Conduct to be implemented

Impact	Parameter to be Monitored	Monitoring Objective	Key Performance Indicator (KPI)	Methods of Monitoring	Frequency	Responsible Party	Reporting structure	Threshold	Action if threshold is exceeded
Environmental Pollution (Littering)									
Environmental pollution from solid waste during small scale mining activities.	Scattered litter	To prevent littering of the general project area	No visible litter around the project area	Visual observation	Daily	SHE Officer	SHE Officer > Small scale mining Manager	Visible littering around project site	Clean-up of the affected areas and ensuring small scale mining workers utilise waste containers provided.
Site Rehabilitation									
Soil and land disturbance because of small scale mining activities.	Abandoned and stockpiled topsoil as well as very disturbed land surface	To prevent major soil and land damage by project activities	No major soil and land disturbance	Visual observation	Daily	SHE Officer	SHE Officer > Small scale mining Manager	Visible soil and land disturbance	Effective progressive backfilling of topsoil and rocks

APPENDIX 1: CHANCE FINDS PROCEDURE (AFTER KINAHAN, 2020)

Areas of proposed development activity are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found during development work. The procedure set out here covers the reporting and management of such finds.

Scope: The “*chance finds*” procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The “chance finds” procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): “*a person who discovers any archaeological objectmust as soon as practicable report the discovery to the Council*”. The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

Responsibility:

- Operator:** To exercise due caution if archaeological remains are found.
- Foreman:** To secure site and advise management timeously.
- Superintendent:** To determine safe working boundary and request inspection.
- Archaeologist:** To inspect, identify, advise management, and recover remains.

Procedure:

Action by person identifying archaeological or heritage material

- a) If operating machinery or equipment stop work
- b) Identify the site with flag tape
- c) Determine GPS position if possible
- d) Report findings to foreman

Action by foreman

- a) Report findings, site location and actions taken to superintendent
- b) Cease any works in immediate vicinity

Action by superintendent

- a) Visit site and determine whether work can proceed without damage to findings
- b) Determine and mark exclusion boundary

c) Site location and details to be added to project GIS for field confirmation by an archaeologist

Action by Archaeologist

a) Inspect site and confirm addition to project GIS

b) Advise NHC and request written permission to remove findings from work area

c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains

a) Actions as above

b) Field inspection by archaeologist to confirm that remains are human

c) Advise and liaise with NHC and Police

d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.

The competent authorities' contact details to report archaeological sites or objects (Small scale mining Manager and contractor) are as follows:

- National Heritage Council (NHC) of Namibia (061 244 375) or direct contact with the Regional Heritage Officers at the NHC 061 301 903
- National Museum (+264 61 276800),
- National Forensic Laboratory (+264 61 240461).