

**ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR THE
PROPOSED SMALL-SCALE MINING ON TEN (10) MINING
CLAIMS IN OTJOKAVARE, KUNENE REGION**

(UPDATED)

Prepared for

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FOR TEN (10) MINING CLAIMS; 70199-70203, 70205, 70207-70210

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DOCUMENT INFORMATION

Project Name	Environmental Management Plan (EMP) for small-scale mining operations on ten (10) Mining Claims (MC) 70199-70203, 70205, 70207-70210.
Location	Otjokavare area, Kunene region
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LIST OF ACRONYMS

BMC	Basin Management Committee
CO ₂	Carbon dioxides
DWSSC	Directorate of Water Supply and Sanitation Coordination
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EMA	Environmental Management Act
EMP	Environmental Management Plan
I&AP	Interested and Affected Parties
MAWF	Ministry of Agriculture, Water and Forestry
MET	Ministry of Environment and Tourism
MME	Ministry of Mines and Energy
MoHSS	Ministry of Health and Social Services
MOL	Ministry of Labour
MWTC	Ministry of Works, Transport and Communication
NACOBTA	Namibia Community-based Tourism Association
NamWater	National Water Cooperation Pty.Ltd
NASCO	Namibia Association of Community Organization
NBSAP	National biodiversity Strategy and Action Plan
NDP	National Development Plan
PPE	Personal Protective Equipment
SHE	Safety, Health and Environment
ToR	Terms of Reference
WRMA	Water Resource Management Act

1. INTRODUCTION AND BACKGROUND

1.1 Introduction

This EMP has been prepared for small-scale mining operations on three mining claims (MC) 70199-70203, 70205, 70207-70210 located at the Otjokavare village in Kunene region. The was prepared in line with Section 8 (j) of the EIA Regulations (GN 30 of February 2012) and will be submitted to the Ministry of Environment, Forestry and Tourism (MEFT) in application for the renewal of the Environmental; Clearance Certificate (ECC). An Environmental Impact Assessment (EIA) was conducted in 2018 and an Environmental Clearance Certificate was granted in June 2019. Mining activities commenced in 2018 but slow down in 2020 due to economic downturn.

The proponent (Kunene Crush Stone cc) wishes to continue with the mining activities on the ten MCs, hence is hereby applying for the renewal of the ECC in compliance with the Environmental Management Act 07 of 2007. The small-scale mining activities will include extraction of base and rare metals, industrial minerals, and precious metals. All mining activities are normally associated with environmental destruction that includes archeologically and cultural heritage sites destruction. Mining waste such as waste rocks, tailings etc. are also expected to be generated.

The EMP is therefore important in ensuring that the management actions arising from EIA processes are clearly defined and implemented through all phases of the project life cycle. It is not a standalone document; however, it must be read in conjunction with the Scoping report. All personnel taking part in the planning, construction, operation, and maintenance of the proposed Outapi WTP should be made aware of the contents of this EMP.

1.2 Objectives of this EMP

The purpose of the Environmental Management Plan (EMP) is to provide measures for the mitigation and management of potential negative impacts and the optimization of potential positive impacts that may be associated with the proposed project during the construction, operational and potential decommissioning phases. The need for compliance and the need for monitoring compliance by inspection are explained as well as various role players and their responsibilities and reporting procedures are contained within this EMP. This is not a stand-alone document but should be read in conjunction with the main report (Environmental Impact Assessment Report). Ones approved by the authority, the EMP shall be a legally binding document.

2. ABOUT THE MINING ACTIVITIES

2.1 Locality

The ten (10) mining claims applied by Kunene Crush Stone cc are located +/-15KM north-west of Otjipawe village within the Ehrovipuka conservancy. Administratively, the proposed area is a communal (state) land which falls under the Muzuma Traditional Authority and under the auspices of the Kunene Regional Land Board under the Ministry of Land Reform (MLR). Politically, the area is within the Sesfontein constituency of the great Kunene region.

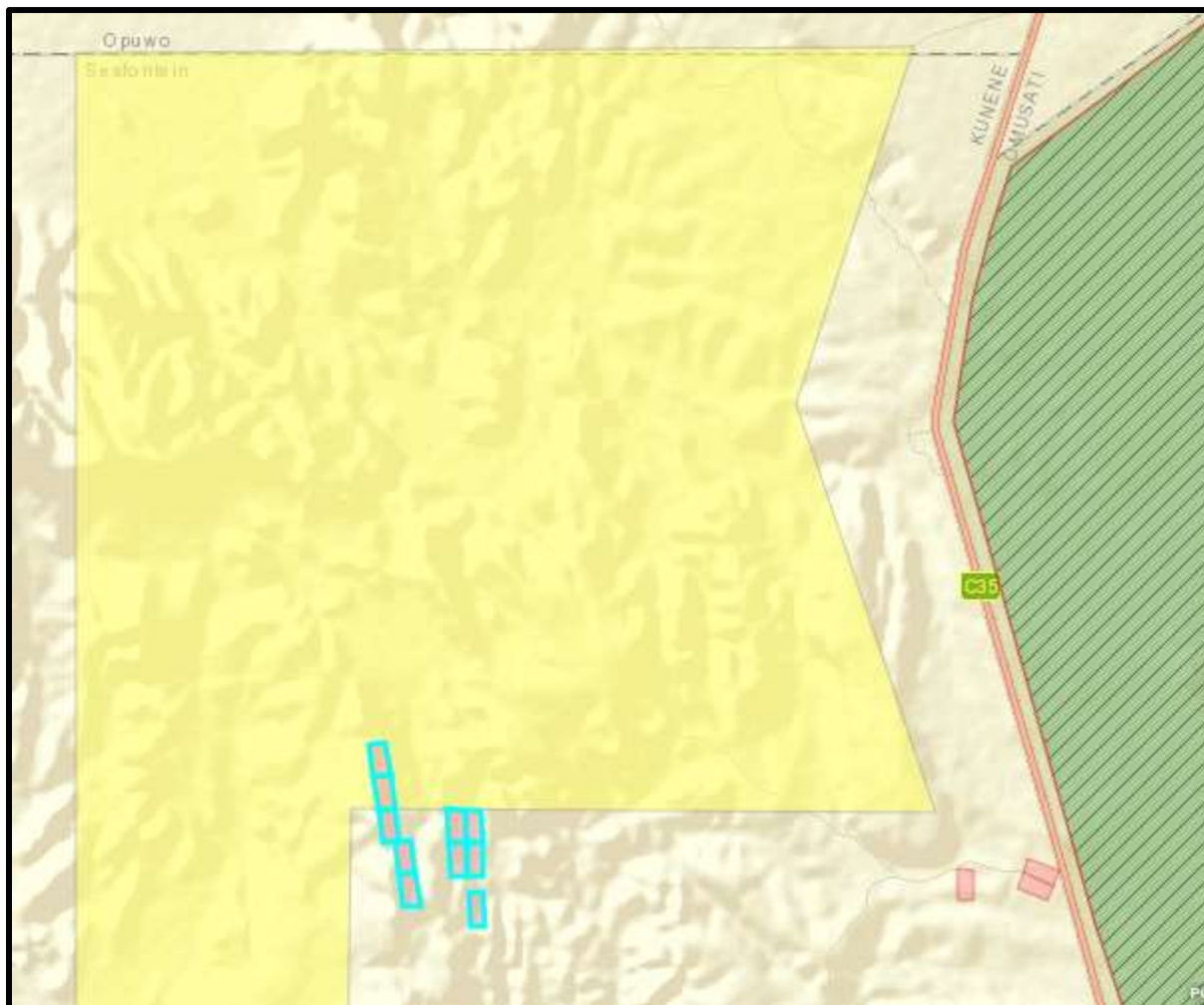


Figure 1: Location of the ten (10) mining claims, north of Otjipawe



Figure 2: MCs layouts

2.2 Land use context

The ten Mining Claims are located about 10 km south-west of Otjipawe village in the Otjokavare area. The area is a communal land (state) under the auspicious of the Muzuma Traditional Authority. Politically, the area falls under the Sesfontein Constituency of Kuene region.

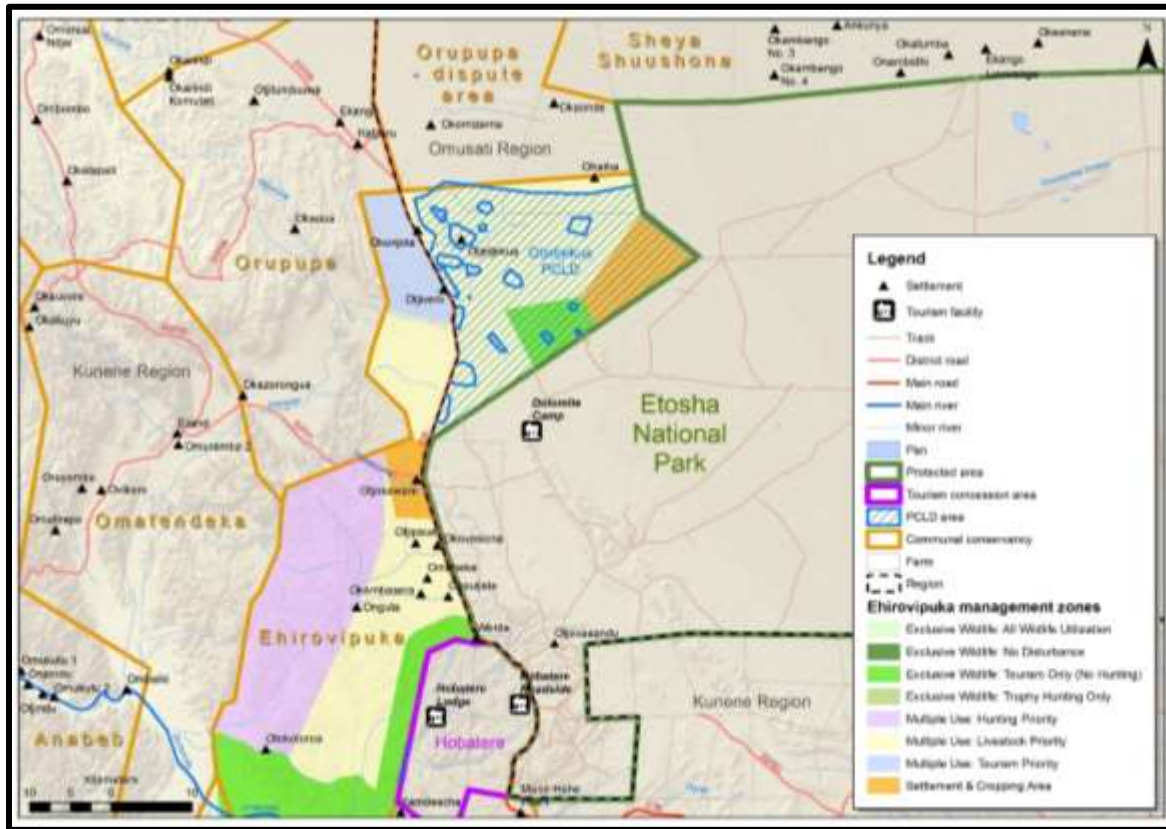


Figure 3: land use of the area

The area covered by the ten MCs measures a total of 180 hectares or 18ha per claim approximately

Livestock farming, especially for own use purpose of emerged as the most important livelihood activity for the community members of Ehrovipuka. One of the unique features in Kunene is open grazing land which means livestock and wildlife freely move from places in search for good pastures. According to the 2012 Namibia Labour Force Survey, unemployment in the Kunene Region stood at 27.0%.

3. SCALE AND METHOD OF MINING USED

Artisanal methods will be used which includes removal of the overburden material, rock breaking to extract the ore and manually separation and sorting of the ore. The good quality ores will be further crushed into market required aggregates, bagged, and send for market while low quality ores are to be stockpiled for future use. After extraction, the resources, good quality ore is taken to the Copper-waste separation plant located about 10 KM west of the MCs in the Okozondje area. The small-scale mining process that is used is explained below.

Stage 1: Loosening of ground

Remove the overburden, breaking of ground by means of a Hydraulic Rock hammer on TLB and use Excavator or Rock bucket to liberate the valuable minerals.

Stage 2; Ore Extraction

Hand picking of ore (separating high grade from lower grade ore). High grade ore will be send for crushing while low grade ore will be stockpiled. Ones the ore has been extracted, the trenches will be refilled and leveled.

Stage 3: Crushing and refining

High grade ore will be crushed into marked required sizes by means of a Jaw Crusher. The lower grade ore will be upgraded by means of an Environmental friendly SG plant (Specific Gravity) with a capacity of 15tons per hour.

Stage 4: Storage and Marketing

Crushed products will be stored in one-ton bags and will be sold to Tsumeb (Smelter) or send to Walvis Bay harbor for international markets. The tailings from the crusher plant will be moved to the settling pond to obtain more products

4. IMPLEMENTING THE EMP

4.1 Role Players and Responsibility

The overall implementation of this EMP remains the responsibility of the project proponent and partners. However, different stakeholders will also have roles to play in order to ensure proper project management. These are as follows.

- a. (Proponent; Kunene Crush Stone (KCS) cc)**
 - Ensure that the employees and the sub-contractor (if necessary) are aware of all specifications, legal constraints as well as procedures pertaining to the project specifically with regards to the environment.
 - Ensure that all stipulations within the EMP are communicated and adhered to by employees, contractor(s) and sub-contractors.
 - Monitor the implementation of the EMP throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes.
 - Be fully conversant with the Environmental Impact Assessment for the project, and all relevant environmental legislation
 - Above all, appoint a responsible official to oversee the implementation of the EMP, conduct environmental monitoring and prepare and submit environmental report to the MET

- b. Contractor and sub-contractors (When necessary)**

The Contractor(s) Managers will be contractually required to comply with the various commitments in this EMP. In the event of nonconformance, the contractor will be required to take corrective action according to the requirements of the EMP. Clean up may be done on their behalf, and if so, the contractor will be back-charged accordingly.

- c. Environmental Assessment Practitioner (EAP)**

The service of an independent Environmental Consultant/specialist will be required for the monitoring, reviewing and verifying of compliance with the EMP and conditions of the environmental authorization by the Contractor.

- d. Ministry of Agriculture Water and Forestry**

MAWF will play a supervisory role to ensure that the project adheres to the conditions of the Forest Permit and Water Abstraction permits (all to be obtained) as well as to monitor water utilizations at the site in accordance with the contractual agreement. This can be done by means of regular site inspections and assessments.

- e. Ministry of Environment and Tourism**

MET, through the office of Environmental Commission are the regulating authority and thus responsible for the approval/disapproval of this EMP. Moreover, MET are responsible to issue the Environmental Clearance Certificate and impose conditions that need to be complied with. Finally, MET may conduct monthly inspections as well as review project environmental and incidental reports.

4.2 Awareness and Training

It is important to ensure that all personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimization of environmental harm.

To achieve effective environmental management, it is important that employees, Contractors and Subcontractors are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMP. This can be achieved through training. The environmental training should typically include the following:

- Employees must have a basic understanding of the key environmental features of the site and the surrounding environment
- The significant environmental impacts, actual or potential, as a result of their work activities
- The environmental benefits of improved personal performance.
- Their roles and responsibilities as well as importance in achieving conformance with the environmental policy and procedures, and with the requirement of the Agency's environmental management systems, including emergency preparedness and response requirements.
- The potential consequences of departure from specified operating procedures.
- The mitigation measures required to be implemented when carrying out their work activities.
- The importance of not littering and the need to use water sparingly.
- Details of, and encouragement to, minimize the production of waste and re-use, recover and recycle waste where possible.
- Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should these be encountered?
- Details regarding fauna and flora of special concern

5. LEGAL REQUIREMENTS

The following is narrative of some applicable laws and regulations that needs to be complied with. More information on this section can be obtained from the main report (EIA Report).

Regulatory Instrument	Legislative Requirements
a) Forestry Act No 27 of 2004.	The act affords protection to certain indigenous plant species and any intention to remove such species would have to be legalised through a permit from the same ministry. The following protected species were identified at the project site; <ul style="list-style-type: none"> • <i>Boscia foetida</i> • <i>Commiphora species</i> • <i>Colosphermum mopane</i>
b) Water Resources Management Act 2004	This act provides provision for the control, conservation and use of water for domestic, agricultural, urban and industrial purposes.
c) Nature Conservation Ordinance (Ordinance 4 of 1975).	Conservation of indigenous Species
d) United Nation Convention on Biological Diversity (UNCBD) (1992).	Conservation of biological diversity
e). National Heritage Act 27 of 2004	Any material of cultural, archaeological importance found must be reported to the National Heritage Council
f). Public Health and Environmental Act, 2015	Prohibition of nuisance in terms of dust, noise, pollution etc.
g). National Labour Act	Working hours, condition and remuneration of employees
h). Affirmative Action (Employment Act, No.29 of 1998)	Implementation of Affirmative action policy i.e. right of women and disabled people
i). Regulations relating to the Health and Safety of Employees at Work, 1996	Employee's working environment and the use of protective measures
j). Minerals (Prospecting and Mining) Act of 1992	Rights in relation to the minerals as well as transportation or exportation of such resources
k). Atmospheric Pollution Prevention Ordinance no. 11 of 1976	Prevention of atmospheric pollution
l). Communal Land Act, of 2015	Consent letter from Traditional Authority is already obtained Obtain Leasehold from the Ministry of Land Reform (MLR)
m). National Labour Act	-All employees must be registered with Social Security Commission -Remuneration should be based on the Act -Employee safety must ensured

6. MANAGEMENT AND MITIGATION MEASURES

Significant impacts	Source of impacts	Mitigation measures	Monitoring actions	Responsibility
a) No-compliance				
<ul style="list-style-type: none"> Lack of implementation of this EMP result into various environmental risks arising from project activities 	<p>Non-compliance to this EMP could cause various negative impacts as identified.</p> <p>Lack of commitments toward the environment.</p> <p>Lack of knowledge or limited capacity to implement the EMP</p>	<p>The Proponent must appoint a responsible person who should spearhead the implementation of the EMP and conduct regular monitoring</p> <p>The proponent should establish a SHE policy in order to determine their commitments toward environmental sustainability</p> <p>All employees must be trained on the content of this EMP.</p>	Annual Reports	Proponent
b) Impact on biodiversity				
<ul style="list-style-type: none"> Loss of Vegetation habitants 	<p>Open pit mining disturbs larger areas compare to other methods, thus has larger visual and physical impacts</p> <p>Vegetation clearance, removal of top soil, habitants destruction</p>	<p>-Minimize vegetation clearance and avoid damage to sensitive areas.</p> <p>-Only vegetation that are directly affected by the mining activities can removed.</p> <p>-Mining activities should not be allowed in the "No-go-zones"</p> <p>-Ensure rehabilitation of the mined area</p> <p>-Implementing the Rehabilitation Plan</p>	Regular inspection around the mined area	Proponent
<ul style="list-style-type: none"> Impact on protected and Red-data species 	<p>-Disturbance on</p> <p>-Illegal harvesting</p>	<p>-All large indigenous trees should be marked and left out</p> <p>-Obtain Tree removal permit from MAWF</p>	Regular inspection at project site	Proponent MAWF; Forestry Department

<ul style="list-style-type: none"> Impacts on wildlife 	<p>Mining operations in sensitive site could cause large habitant fragmentation and loss of fauna.</p> <p>-Mining and other anthropogenic activities in wildlife zones may cause conflicts with wildlife.</p> <p>-Settlement in wildlife areas may also lead to illegal poaching</p>	<p>-All "No-go-zone areas" as identified must be avoided.</p> <p>-Ensure speed limit within the conservancy area.</p> <p>-Reduce noise generation</p> <p>-Mining should be done strictly during day time and no operation during night times.</p> <p>-Employee camps must not be placed in wildlife zones.</p> <p>-The proponent must take note of the legal requirements in the Human-Wildlife Policy as all cases are handled in accordance with this Act.</p>	<p>Record number of Human-Wildlife conflicts incidences.</p> <p>-All human-wildlife conflicts (if happen) must be dealt with in accordance with the existing Policy.</p> <p>-Provide and Support Community Group against crime to assist NAMPOL and Conservancy in dealing with all crime related issues</p>	<p>Proponent</p>
<p>c) Water availability and quality</p>				
<ul style="list-style-type: none"> Over abstraction 	<p>Water usage may lead to over abstraction and degradaton of the water sources.</p>	<p>Water should only use for domestic purpose. Recycle water for mining activities.</p>	<p>Keep record of Water usage for the project.</p>	<p>Proponent MAWF-DWSSC</p>
<ul style="list-style-type: none"> Contamination of water sources through Rock mine drainage 	<p>Pollution of fresh water sources (river) from mining activities.</p> <p>Poor handling of mine waste could result in pollution of groundwater sources</p>	<p>-Avoid mining in slope, drainage areas or riverbeds.</p> <p>-No waste should be discharged directly in the environment.</p> <p>-Tailings and Settling ponds should be far away from water sources. These facilities must also be secured in such a way that no contact with drainage or freshwater.</p>	<p>Regular inspection. Testing of water quality may also be required, especially in case of any spillage.</p>	<p>Proponent MAWF-DWSSC</p>
<p>d) Impacts on Groundwater</p>				
<ul style="list-style-type: none"> Contamination/Pollution Depletion of Water table 	<p>Groundwater sources could be easily contaminated from poor waste handling.</p> <p>Over-abstraction of groundwater could cause a decline in quality.</p>	<p>Waste handling ponds should be lined to avoid seepage. These facilities must also be reclaimed and rehabilitated before mine closure.</p>	<p>Monitor groundwater quality every (3) three years during the life mine span</p>	<p>Proponent, MAWF-DWSSC</p>

e) Impacts on Topography and drainage				
<ul style="list-style-type: none"> • Visual and aesthetical • Slope stability and Erosion 	<p>Open pit mining disturbs larger areas thus decreasing the sense of place and aesthetical value.</p> <p>Mining on slope areas and major drainage lines may affect stability of the slope and increase erosion.</p>	<p>Rehabilitate the mined area by filling all trenches and open pits.</p> <p>-Avoid mining on slope areas and major drainage lines.</p> <p>-Mining should be confined to flat areas.</p> <p>-Erect erosion works on major gullies</p>	Regular inspections	Proponent
f) Impacts on local ecology				
<ul style="list-style-type: none"> • Loss of topsoil during mining 	<p>Mining operation will expose the topsoil making it vulnerable for erosion by wind or water. This will disrupt the ecosystem functioning.</p>	<p>Top soil must be replaced after mining</p> <p>-Provide protective mechanism to prevent soil erosion by water.</p>	Regular inspection	Proponent
<ul style="list-style-type: none"> • Habitant fragmentation 	<p>Mining activities may cause fragmentation of natural habitants</p>	<p>Minimize movements in natural habitats.</p>	Regular inspection	
g) Impact on local Geology				
<ul style="list-style-type: none"> • Disturbance of geotechnical stability 	<p>Disturbance of geotechnical of the soil during mining.</p>	<p>Mining plan should be prepared to avoid sensitive sites and ensure site slope stability.</p>		Proponent
h) Impact on land use				
<ul style="list-style-type: none"> • Degradation 	<p>Land degradation would be one of the most significant impacts arising from mining activities.</p>	<p>It is expected that the area will return to its close natural states, thus its natural function has not total deteriorate as it can still be used for other purposes.</p>	Monthly report	Proponent
<ul style="list-style-type: none"> • Conflict with other land users 	<p>Mining activities are likely to compete with other land</p>	<p>Ensure effective communication with the community</p>	Annual stakeholder meetings	Proponent, TA, Conservancy

	users for resources, land, water etc.	Respect local cultural, heritage or political status of the people.		
i) Impacts on Human Health and Safety				
• Noise and vibrations	Running generator, crushing units and Moving heavy vehicles may raise noise level and cause earth vibration	-keep noise level within permissible limits 75dB -Avoid operating too many machineries at once -Apply soundproof to running machineries/equipment -Minimum driving speed -Protective gears for all employees (ear plugs) and reduce exposure time of workers to the higher noise level by shift management	-Regular monitoring of ambient noise level at the project site -Ensure that all Employees/drivers are informed. -Regular meeting with employees to address matters of concerns.	Proponent
• Air quality	-Mining operation will create dust that will reduce air quality. -Heavy vehicles may increase concentration of CO ₂ in the air -Waste rock consist of sulfide which if react with air form <i>iron oxide</i> which is toxic.	-Regular water spraying on access roads and crushing sites -Crusher must be fitted with a bag filter to arrest dust emission -Soil and Stones mixture must be sieved before crushing to reduce dust generation -Protective gear (dust masks) for all employees working at site	-Regular observatory monitoring of dust level at site. -Regular check-ups of workers	
j) Waste Management				
• Sewage waste	Poor sanitation will result in various environmental risks.	-Proper sanitation, avoid discharge in river streams by using proper latrine or septic system - Awareness among workers	Regular check for any leakages or accidentals	Proponent
• Solid waste	Generation of general waste i.e. plastic, food items, supplies etc.	-All waste should be contained and properly dumped at nearby municipal dumping sites -Provide proper recycle bins at site -Develop waste collection program -Create awareness among employees	Regular update of the waste collection program	

<ul style="list-style-type: none"> HIV and AIDs 	-Higher risks of HIV transmission as migrant construction workers are more likely to ignore the consequences of casual sexual relationships.	Recruit people from local community to avoid migrant workers	-Regular health check ups	
<ul style="list-style-type: none"> Access road 	Plying of trucks and tractor trolleys from public road to the site may cause damage to environment and also inconveniences to the public	-Limit speed limit (40KM) within the conservancy area. -Avoid creating too many roads -Access road crossing over the river bank should be placed at site of least steepness of river bank	Develop a Site Access plan	Proponent
k) Positive impacts				
<ul style="list-style-type: none"> Local employment 	Direct project employment	-Local people should be given preferences	Train local to build capacity	Proponent
<ul style="list-style-type: none"> Business prosperity 	Sourcing of supplies i.e.	-The project should buy from local stores/shops in order to contribute to the local economy	Make research of local supplies and capacity	

7. ENVIRONMENTAL COMPLIANCE AND MONITORING: OPERATIONAL PHASE

In order to ensure adherence to this EMP, it is advisable to keep monitoring of certain environmental elements. This monitoring is ultimate responsibility of the proponent. Monitoring activities should be done at different interval/frequencies as indicated in the table below and should be done throughout the project life span. The monitoring report should be prepared and submitted to the Environmental Commissioner every year. It would be advisable that the EMP be revisited at intervals of 3 years or less to ensure that changes in site conditions or operation are addressed, as well as to incorporate any new or amended legislation that may be applicable.

Issue to be monitored	What need to be monitored	Monitoring frequency	
<i>Water quality</i>	Since the project will make use of borehole, it is very important to monitor Water quantity and quality overtime.	Every three years	The p w
<i>Soil Erosion</i>	The project activities will require removal of top soil, leaving the topsoil vulnerable to wind or water erosion. This impact needs to be closely monitored and any incident must be addressed as fast as possible.	Every after rainy season	
<i>Protected species and Red-Data species</i>	Damages to any of these species or illegal harvesting during mining. Record the number of protected species damaged through the process.	Regularly	Prop
<i>Alien invasion</i>	Monitor the presence of any new plant species at the mined area and removal of any alien species	Annual (after growing season)	Prop
<i>Air quality</i>	Monitor the quality of air by monitoring CO ₂ and Dust level.	Every day	
<i>Noise level</i>	Monitor ambient noise level at project site (must be kept within the standard 75dB)	Every day	
<i>Implementation of Mitigation measures</i>	Ensure total compliance to this EMP and adherence to the regulative measures	Annual reports	

8. MITIGATION MEASURES: DECOMMISSIONING PHASE

8.1 Mine closure and land Rehabilitation

Mine closure occurs once the mineral resource at a working mine is exhausted, or operations are no longer profitable. For any mining activities, whether small or large scale, there is great disturbance to be expected at the mined area such as destruction of the natural vegetation and creation of open trenches leaving the area prone to soil erosion. This may result in further degradation of the environment if left un-rehabilitated. One of the major concerns of open mining activities mining is land degradation resulting from deforestations and topsoil disturbances. Moreover, abandoned mines have the potential to be safety or environmental hazards where infrastructure is left (buildings, open mine shafts), contamination is not addressed, or acid rock drainage is being formed.

Mine closure planning is relatively new to the mining industry and has evolved since it was first developed as understanding and awareness of mining's environmental legacy increased, more stringent regulations were introduced, and mining companies became financially liable for reclamation. According to the Environmental Management Act 7 of 2007 and the Minerals (Prospecting and Mining) Act 33 of 1992, the Mining Claim holder must take the responsibility to reclaim and rehabilitate the disturbed land at the end of prospecting and mining operations. The mine closure in terms of small-scale mining operations will occur whenever a mining claim is suspended, cancelled, lapsed or the site has been abandoned and/or the holder does not wish to renew the right. The abandonment of mining claims shall be done in accordance with Section 43 (1) of the Minerals (Prospecting and Mining) Act 33 of 1992.

8.2 Closure plan

The objective of rehabilitation with respect to the area where mining/prospecting has taken place is to leave the area level and even, and in a natural state containing no foreign debris or other materials. The following actions should be implemented by the MC holders at the decommissioning and closure of their mining activities.

- All trenches shall be filled and levelled properly as far as possible.
- Where possible, the area should be re-vegetated/re-planted with local vegetation. Where re-vegetation is not possible, the area shall be re-seeded with local adapting species under the supervision of the DoF in the MEFT.
- All structures constructed by the miner, and which will no longer be required by the conservancy, TA or landowner shall be removed and the area should be rehabilitated to the satisfaction of the Conservancy Management Committee and TA.
- The areas shall be cleared of any contaminated soil, which must be disposed of properly.
- As outlined in the monitoring Section, the MC holders is required to keep an effective control programme for the eradication of invading species and other exotic plants on a regular basis over the prospecting/mining area. The action should be repeated at the abandonment or closure of the mining operations.

- On completion of operations, all infrastructure, equipment, plant, temporary housing, and other items used during the mining period must be removed from the site.
- All buildings, structures or objects on the vehicle maintenance yard and secured storage areas shall be dealt with in accordance with the Minerals (Prospecting and Mining) Act 33 of 1992.
- General waste of any description, including scrap, rubble and tyres, should be removed entirely from the mining area and disposed of at the nearest municipal disposal site. It is not permitted to be buried or burned on the site.
- Finally, rehabilitation shall be completed within a period specified by the Ministry of Mines and Energy.
- Photographs of the campsite, before and during the mining/prospecting operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the MME.

8.3 Post closure

The main aim of post closure rehabilitation is to establish an acceptable and sustainable post-mining land use. Given the nature of the affected environment and the adjacent land uses (conservancy, open grazing, tourism), the most suitable post-mining land use will be open grazing and browsing area mainly by the desert wildlife and domestic animal. The other objective should also be to restore the natural attractiveness and aesthetic views of the area for tourist attraction.

To achieve the above objectives, all mining structures, temporary accommodation, and maintenance workshop should be removed from the site by the respective operators or claim owner. Other permanent infrastructures such as roads, boreholes should be reserved for the community and conservancy as public infrastructures.

ANNEXURE A ENVIORNMENTALCHECKLIST

The following checklist should be used during the monitoring program. The checklist will enable the project to cope with new circumstances and/or requirements of community or other Authorities as they arise. The checklist should be filled in regularly as per monitoring schedule outlined in the table in the previous section.

	<i>KEPT AT STANDARD LEVEL?</i>		Comments
	YES	NO	
<i>Water quality (Boreholes)</i>			
<i>Erosion</i>			
<i>Protected species and Red-Data species</i>			
<i>Alien Invasive</i>			
<i>Air quality</i>			
<i>Noise level</i>			

This information is true and correct to the best of my knowledge

Name of person inspecting site: _____

Signature: _____

Date of site inspection: _____

**ANNEXUE: B: MINE CLOSURE AND REHABILITATION PLAN (MCRP)
FOR THE PROPOSED SMALL-SCALE MINING ACTIVITIES IN
OTJOKAVARE
(PRELIMINARY)**



1. The need for a MCRP


1.1 Introduction

For any mining activities, whether small or large scale, there expected to be great disturbance to the mined area such as destruction of the natural vegetation and creation some open trenches leaving the area prone to soil erosion and may result to further degradation if left un-rehabilitated. It thus imperative to rehabilitate the disturbed area to its natural or close to its natural state. This can be achieved through a structured mine rehabilitation plan or programme. Furthermore, it is required by legislations (EMA, MPA etc.) that mining rehabilitation programme be implemented for every disturbed area.

The land rehabilitation is the process of returning the land in a given area to some degree of its former state, after some process has resulted in its damage. This reclamation and closure/decommissioning plans would be periodically updated to reflect current changes in operational aspects that may affect reclamation of Project components.

1.2 Mine closure activities typically consist of several steps:

- **Shut down:** Once production stops, the number of workers is reduced, and only a small labour force is retained to permanently shut down the mining equipment. In some cases, the mining company may provide re-training or early retirement options to their workers before the mine is closed.
- **Remediation/reclamation:** The objective of reclamation is to return the land and watercourses to an acceptable standard of productive use, ensuring that any landforms and structures are stable, and any watercourses are of acceptable water quality. Reclamation typically involves a number of activities such as removing any hazardous materials, reshaping the land, restoring topsoil, and planting native grasses, trees, or ground cover. This activity will be done concurrent with the mining operations.
- **Decommissioning:** Small crews or contractors decommission or take apart the mining processing facilities and equipment. Pipelines are drained, equipment and parts are cleaned and sold, buildings are repurposed or demolished, warehouse materials are recovered, and waste is disposed of.
- **Post-closure:** Monitoring programs are used to assess the effectiveness of the reclamation measures and to identify any corrective action that may be needed. In addition, mines may require long-term care and maintenance after mine closure such as ongoing treatment of mine discharge water, periodic monitoring and maintenance of tailings containment structures, and monitoring any ongoing remediation technologies used such as constructed wetlands.



Although the mine closure steps are listed above in a linear fashion, mining operations often begin closure and remediation during active operations. During post mining period, all disturbed areas in the mining site must be reclaimed before decommissioning/abandoning the mine, excluding the permanent infrastructures such as office buildings, fences etc. which should donate to the community for social use i.e. school, health etc. Other infrastructures, such as crushing plants, Vehicles, equipment, stockpiles and material handling systems should be dismantled and reclaimed, and no such items should be abandoned at the site. In case of abandoning of sites and projects, the mineral rights shall be ceased by the relevant authority (MME) as per the Mineral Act and the leasehold (land rights) shall be returned to the community. Any items left or abandoned the site can be reclaimed by the relevant local authority with or without the proponent's consent.

1.2 Objectives of MCRP

The Company has established general planning and development objectives that would meet or exceed international environmental guidelines and best management practices for reclamation and mine closure including:

- Adhere to all statutory requirements,
- Provide long-term stable site configuration to attain beneficial post-mining land use,
- Rehabilitate mine related disturbances to obtain post-mining land use compatible with prevailing conditions in the area,
- Eliminate public safety hazards,
- Perform reclamation activities concurrent with the mining operations
- Allocate sufficient funds to implement these objectives.

2. Land Reclamation/Rehabilitation

The rehabilitation of disturbed area will be conducted concurrent with the mining operations. These includes; refilling of trenches and open pits with topsoil, leveling and removal of waste materials. The effectiveness of the rehabilitation is based on the following principles.

- Conservation of topsoil
- Prevention of soil erosion
- Afforestation and new plant community
- Maintaining a sustainable plant community

2.1 Conservation of top soil

Conservation of top soil is very important thus it helps to reduce erosion and stabilization of slopes. The top soil is also crucial to the re-establishment of plant community thus it contains nutrients to support plant growth. Top soil and subsoil will be is replaced back in the trenches and excavations soon after sieving. Sediment controls structures will be installed during the initial stages mining process to ensure that any increased sedimentation resulting from site disturbance is captured and managed. No mining activities is done on the hilltops or slope areas to avoid soil erosion. No contaminated soil or water should be used in the rehabilitation process.

2.2 Prevention of soil erosion

The following measures must be used to prevent soil erosion

- Replace and properly spread the soil over the pit holes after mining
- Provide some protective garland drains around the mining site wherever required to arrest soil from carried away by running water
- Erosion gullies should be filled with local stones and soil
- Throw stones around the soil dumps to prevent soil from being carried away.

2.3 Afforestation plan and new plant community

The afforestation plan entails the establishment of new plant community in order to avoid land degradations. The re-establishment of will help to stabilize the soil of the area by protecting it from erosion by means of rain and wind. It is expected that some plant species such mopane, commphira and grasses species will re-geminate on their own or with little support.

In order to accelerate the regeneration of plant community at the disturbed area, the proponent must consider other mechanisms such as re-seeding program. This can be done by spreading or broadcasting seeds of local indigenous plants over the area and ensure the re-establishment of new plant community. This can be done during the replacement of the topsoil during the rainy season to enable fast growth. This method can only be used if there is observed to be slow or no re-germination of local vegetation after growing season.

2.4 Maintaining a sustainable plant community

The establishment of new plant community will be greatly affected by natural factors such as water availability and soil conditions. The proponent will ensure to limit movements (i.e. vehicles, animals etc.) and disturbances in the new plant communities. The proponent should also provide necessary support to the new plant community such as watering, mulching (i.e. cover with dead tree branches), erosion control in order to enable the establishment of a stabilized new plant community. The proponent's with the help of the Environmental Assessment Practitioner will conduct regular monitoring to inspect growth of invasive plant species. In case of any invasive plant observed it shall be reported to the Ministry of Agriculture, Water and Forestry for remedial actions. Furthermore, the MAWF (Forestry) shall conduct regular inspection to the mining area to observe the project activities as per the National Forestry Act. To this end, this Rehabilitation Plan shall form part of the EMP and thus it's a legal obligation for the proponent to implement the outlined actions and ensure sustainable reclamation of the disturbed area. The Plan is to be reviewed annually to include new issues that may arise during the course of the mining operation or accommodate any climatic changes that may prevail at time.

