

UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR

FOR THE RENEWAL OF THE ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) FOR THE CONTINUOUS MINING OPERATION OF DIMENSION STONE AND SEMI PRECIOUS STONES ON MINING CLAIMS; 68462 AND 68763, OROUTUMBA VILLAGE, OPUWO DISTRICT, KUNENE REGION, NAMIBIA.



May 2026



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ABBREVIATION

DEAF	Department of Environmental Affairs and Forestry
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Compliance Officer
ECS	EnvironClim Consulting Services
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
GIS	Geographical Information System
HIV	Human Immunodeficiency Virus
MAFWLF	Ministry of Agriculture, Fisheries, Water and Land Reforms
MEFT	Ministry of Environment, Forestry and Tourism
MIME	Ministry of Industries, Mine and Energy
PPE	Personal Protective Equipment
SHE	Safety, Health and Environment
WHO	World Health Organization

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1. OVERVIEW

1.1 INTRODUCTION

Mr. Phillipus Shipanga is the holder of the mining claims; 68462 & 68763 is of the intention to continue mining dimension stone and semi-precious stones on the above-mentioned mining claims. The targeted dimension stone is primarily sodalite which is widely used as ornamental gemstone. The mine will operate as an open cast mine in order to extract the required dimension stone. The excavation will involve making drilling holes using Makita heavy-duty drills and then apply crack powder in the drilled holes to expedite the excavation using hand-held gasoline powered rock drill petrol jack-hammer. The dimension stone (sodalite boulder) will be cut as per the dimensions using automated diamond wire cutting machines after preloaded into the machine and loaded on flat-bed truck using a heavy-duty front-end forklift for export purposes. The medium size off-cut boulders will also be packed into one-ton bags and loaded onto truck for export to international market via the port of Walvis bay as well as other legitimate ports of entries based on customers demand. The proponent has submitted the application for the renewal of the mining claims and all relevant documents have been submitted to the Ministry of Industries, Mines and Energy to enable the renewal process to take place. Currently the Environmental Clearance Certificate (ECC) that was issued on the 29 January 2020 and expired on the 29 January 2023, this prompted the renewal of the ECC in order to necessitate the operation of the mine.

The continuous operation of the mine will guarantee 15 people from the local community that are involved in mining, cutting and on/off-loading of the stones to retain their employment. This project will continue to contribute to the local economy of the Oroutumba village as well as ensuring income security among the local community.

The lifespan of the mine is anticipated to be approximately 15 years with prospect for extending beyond the projected period. The resource estimate of the available blue sodalite within the mining claims is believed to be worth millions of Namibian dollars. The proponent has appointed EnviroClim Consulting Service cc to facilitate the renewal process of the ECC in order to ensure continuous mining operation of dimension stones (blue sodalite) at the allocated mining claims at Oroutumba village.

1.2 PROJECT COMPONENTS

The mine will operate as an open cast mine in order to extract the required dimension stone. The excavation will involve making drilling holes using Makita heavy-duty drills and then apply crack powder in the drilled holes to expedite the excavation using hand-held gasoline powered rock drill petrol jack-

4. COMPLIANCE TO THE EMP

This EMP is a legally binding document as given under the provisions of the Environmental Management Act, 2007 (Act No. 7 of 2007). The project proponent and its contractors must therefore adhere to the framework of this document. It should be noted further that the EMP is a living document and is subjected to amendments dependent on the changing environments and new information that may be available in the future, therefore, it must be reviewed accordingly with the provision of the EMA. The Environmental Management Plan (EMP) serves as a comprehensive risk strategy for the proposed continuous dimension stone and semi-precious stone mining operation on Mining Claims 68462 and 68763.

5. LEGAL AND POLICY FRAMEWORK

Mineral rights for mining activities are regulated by the Ministry of Industries, Mines and Energy (MIME), while environmental compliance is governed by the Ministry of Environment, Forestry and Tourism (MEFT). The proposed continuous mining of dimension stone and semi-precious stone will be established and operated in full compliance with all relevant Namibian statutory frameworks and international laws to which Namibia is a signatory.

Table 1. Legal Requirements for the proposed project

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

Legislation	Summary	Applicability
	<p>Further, the Act ensures that;</p> <ul style="list-style-type: none"> (a) Potential threats are considered timeously (b) A comprehensive stakeholder’s consultation is conducted, and all Interested and affected parties are given an opportunity to comment on the project (c) Decision are robust by considering the above-mentioned activities. 	
Atmospheric Pollution Prevention Ordinance Act (No.11 of 1976)	<p>This Ordinance serves to control air pollution from point sources, but it does not consider ambient air quality. This ordinance is being repealed by the proposed Pollution Control and Waste Management Bill. Any person carrying out a ‘scheduled process’ which are processes resulting in noxious or offensive gases typically pertaining to point source emissions have to obtain a registration certificate from the Department of Health.</p>	<p>Generation of greenhouse gases from emission from vehicles and mining equipment.</p>
Draft Pollution Control and Waste Management Bill	<p>This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill will repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) when it comes into force. The Bill also provides for noise, dust or odour control that may be considered a nuisance. Further, the Bill advocates for duty of care with respect to waste management affecting humans and the environment and calls for a waste management licence for any activity relating to waste or hazardous waste management.</p>	<p>Possible fuel spill and leakages may pollute ground and surface water.</p>
Environmental Policy framework (1995)	<p>This policy subjects all developments and project to environmental assessment and provides guideline for the Environmental Assessment. Its provision mandate that</p>	<p>Provision of the EIA and guidelines</p>

Legislation	Summary	Applicability
	Environmental Assessment take due consideration of all possible impacts and incorporate them in the development or planning stages.	
The Occupational Safety and Health Act No. 11 of 2007;	<p>Safety: A safety risk is a statistical concept representing the potential of an accident occurring, owing to unsafe operation and/or environment. In the working context “SAFETY” is regarded as “free from danger” to the health injury and to properties.</p> <p>Health: Occupational Health is aimed at the promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations. This is done by ensuring that all work-related hazards are prevented and where they occur, managed.</p>	<p>Operating mining equipment has the potential risk of injuries.</p> <p>Provision of clean ablution facility, routine health check-ups for employees, HIV/AIDS awareness etc.</p>
Public Health Act No. 36 of 1919	The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.	Ensure public safety from noise, dusts, and air pollution.
Water Resources Management Act (2013)	This Act provides a framework for managing water resources based on the principles of integrated water resources management. It provides for the management, development, protection, conservation, and use of water resources. Furthermore, any	Ensure that the riverine systems are not polluted and implement pollution control mechanism to avoid water pollution.

Legislation	Summary	Applicability
	watercourse on/or in close proximity to the site and associated ecosystems should be protected in alignment with the listed principles.	
Water Act No, 54 of 1956	<p>This act states that, all water resources belong to the State. It prevents pollution and promotes the sustainable utilization of the resource. To protect these resources, this act requires that permits are obtained when activities involve the following;</p> <ul style="list-style-type: none"> (a) Discharge of contaminants into water sources such as pipe, sewer, canal, sea outfall and (b) Disposal of water in a manner that may cause detrimental impact on the water resources 	Contaminated water, such as sewage sludge must not be dumped into the ephemeral river.
Petroleum Product and Energy Act No, 13 of 1990 Explosive Act No 26 of 1956	This Act provides a framework for handling and distribution of petroleum products which may include purchase, sale, supply, acquisition, possession, disposal, storage or transportation thereof.	Safe handling of the petroleum products such as fuel and lubricants.
Labour Act No. 11 of 2007	This Act aims to regulate labour in general and includes the protection of the health, safety and welfare of employees. The 1997 Regulations relating to the Health and Safety of employees at work sets out the duties of the employer, welfare and facilities at the workplace, safety of machinery, hazardous substances, physical hazards, medical provisions, construction safety and electrical safety.	Follow legal labour requirements such as safety, remuneration etc.
Regional Council Act, 1992 (Act No. 22 of 1992)	The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning and coordination of regional policies and development.	Observe the regional by laws

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

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

6. ROLES & RESPONSIBILITIES

6.1. Environmental Compliance Officer (ECO)

The scope of this Environmental Management Plan (EMP) is with reference to the mining activities for the continuous mining of dimension stone (blue sodalite) and semi-precious stone on mining claims; 68462 and 68763 at Oroutumba Village, Swartbooidrift, Kunene Region, and the decommissioning phase of the intended project. The Ministry of Environment, Forestry and Tourism is the custodian of environmental protection. The Environmental Compliance Officer shall be an appointed Environmental Officer from the Directorate of Environmental Affairs delegated to impose compliance as per the provision of the EMA. The ECO may carry out inspection at any given time to impose compliance. Depending on his/her work schedule, the ECO shall visit the site at any time for environmental inspection and monitoring.

6.2. The Proponent

Mr. Phillipus Shipanga shall resume the overall responsibility of environmental management through acceptable implementation of the environmental management plan. Moreover, it shall be a full obligation of the proponent to ensure the following activities.

- Appoint a site Manager;
- Ensures that all workers and contractors are conversant with the Environmental Management Plan (EMP) and are inducted on safety measures pertaining to mining of dimension stone and semi-precious stone on Mining Claims; 68462 and 68763 at Oroutumba village, Swartbooidrift in the Kunene Region.
- Ensure a safe and healthy working environment;
- Provide workers with appropriate Personal Protective Clothing (PPE);
- Monitor the employees works with regard to safety;
- Ensure good environment performance and compliance;
- Appoint an environmental officer or Environmental Practitioner to carry out environmental audits.

6.3. Site Manager

The Site Manager shall represent **Mr. Phillipus Shipanga** will be accountable for monitoring daily operations and ensure adequate adherence of workers and contractors to the EMP. The Site Manager must ensure that a copy of the EMP is accessible on site at all times and every worker is conversant with the EMP.

6.4. Employees and Contractors

All stakeholders, especially employees and contractors must;

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

7. DISCIPLINARY ACTION

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

- Suspension of work;
- Financial penalties.

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

8. THE ENVIRONMENTAL MANAGEMENT PLAN

This EMP is structured to address the Social, Environmental, Safety, and Occupational Health aspects associated with the continuous mining of dimension stone (blue sodalite) and semi-precious stones on Mining Claims; 68462 and 68763 at Oroutumba Village, Swartbooidrift, Kunene Region, as well as the decommissioning phase of the project. The framework is summarised in **Table 2** and provides a comprehensive approach to managing all relevant aspects throughout the project lifecycle.

Table 2 : Environmental Management Plan (EMP)

Activity	Objectives
A – Staff Induction	Induction
	Communication
B – Health and Safety	General safety at workplace
	Ablution facilities
	Dust and Noise Exposure
C – Pollution and Waste Management	Material waste, domestic waste
	Mining equipment and vehicle emissions, dust, noise and blasting
	Fuel spillage and leakages
	Oil and lubricant leakages
D – Environment	Soil
	Water
	Biodiversity
	Rehabilitation
E – Cultural Heritage	Archaeological and Heritage
F – Socio- Economic	Employment
	Alcohol and drug abuse
	Working hours
	Capacity building
	HIV / AIDS
	Traffic

SECTION A: STAFF INDUCTION

Table 3. Staff Induction Mitigation Measures

Environmental or Social Aspects	Objective	Proposed Mitigation Measures	Monitoring Indicators	Responsibility
Staff Induction	To ensure that all employees are conversant with the requirements of the EMP.	<ul style="list-style-type: none"> • Educates employees on EMP requirements and their responsibilities. • All employees and contractors must go through a comprehensive induction course on all the provisions of the EMP. • There must be an annual induction course for all the workers. • New employees must not start work without undergoing through the induction course. • Ensures that employees understand site-specific hazards. • Re-train employee on EMP requirements. 	<p>Induction minutes and attendance register signed by each staff member.</p> <p>Induction report</p>	Management or Site Manager

Environmental or Social Aspects	Objective	Proposed Mitigation Measures	Monitoring Indicators	Responsibility
	Disciplinary	<ul style="list-style-type: none"> The Company must adopt a disciplinary system to discipline staff for non-compliance with environmental requirements and all employees, contractors, and site personnel are subject to this system. Strict measure must be put in place, any employee found contravening provisions of the EMP, must be granted a warning letter. 	<p>Disciplinary meetings and actions</p> <p>Disciplinary letters / Warnings</p>	Management or Site Manager
	Availability of the EMP on site for ease of reference	<ul style="list-style-type: none"> Ensure that a physical copy of the EMP is kept on site at all times digital copy of is kept on a computer or tablet accessible on site. 	Physical view of the printed and digital copies of EMP.	Management or Site Manager

Environmental or Social Aspects	Objective	Proposed Mitigation Measures	Monitoring Indicators	Responsibility
Communication	To ensure effective communication	<ul style="list-style-type: none"> • The project must develop a communication strategy • All correspondences must be in writing • The contact numbers for the Site Manager must be available displayed onsite in case of emergencies. • There must be an alarm bell for emergency communication. • Ensure neighbouring land users are aware of blasting and rock fracturing related activities to avoid potential hazards. 	<p>Communication Strategy</p> <p>Letters, e-mail, notices, minutes</p> <p>Display of site manager and emergency numbers on site</p>	Management or Site Manager

SECTION B: HEALTH AND SAFETY

Table 4. Health and Safety Measures to be implemented

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

Environmental / Social Aspects	Objective	Mining phase mitigation measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<p>during working and when on site.</p> <ul style="list-style-type: none"> • Ensure all employees are inducted on the dangers of risks of explosions, chemicals and the emergency response; • There must be clear health and safety signs at designated sites such as assembly area, no smoking, "danger", "entrance prohibited", and other required warning signs. • Employees must not be exposed to noise levels above the required 85 dB(A) limit over a period of 8 hours. Should the noise level be higher than 85 dB(A), the employer must implement a 	<p>Visual Inspection</p> <p>Visual Signs available</p>	<p>Visual Inspection</p> <p>Availability of fire extinguishers and evidence on training (e.g. minutes, training pictures etc.).</p> <p>Visible signs</p>	

Environmental / Social Aspects	Objective	Mining phase mitigation measures	Monitoring Indicators	Monitoring Indicators	Responsibility
Health		<p>hearing conservation program, including noise monitoring and other protective measures;</p> <ul style="list-style-type: none"> • Worker must be provided with appropriate PPE such as industrial earmuffs; • Supply safe drinking water. • Ensure adequate, hygienic and user-friendly ablution facilities for all staff; • Separate male and female toilets with a ration of 1:30 and 1:15 for male and females respectively. • Appoint cleaners from the local community of Oroutumba village and rotate cleaning responsibilities. 	<p>Record of hearing loss</p> <p>Clean tap water</p> <p>Clean toilets at all time</p>	<p>Report of health check ups</p> <p>Laboratory analysis report</p> <p>Clean toilets at all time</p>	

Environmental / Social Aspects	Objective	Mining phase mitigation measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> • Inspect ablution facilities regularly. • Supervisors must undergo an occupational health and first aid course. • Adhere to all relevant sections of the occupational safety and health act no. 11 of 2007. 	Proof of Certification		
Noise	To reduce noise in the surrounding environment	<ul style="list-style-type: none"> • All mining vehicle and machinery engines must be off when not in use; • Adhere to minimum speed limit of 40km. • Erect signage that prohibit authorised speed. • Purchase/hire mining equipment such as excavator, front-end loader and jack - 	Record of public complaints	Record of public complaints	Management / Site Manager

Environmental / Social Aspects	Objective	Mining phase mitigation measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<p>hammers with low noise emission;</p> <ul style="list-style-type: none"> • Where possible, fit silencers on vehicle exhaust; • Operation must be limited to daytime only (08h00-17h00); • Respect local residents' quality of life by avoiding night-time operations. • It is advisable to use certified environmentally cracking agent such as crack powder to fracture rocks and avoid noise pollution as well as extreme ground vibration through traditional blasting. • In the event that blasting is employed, it should not be carried out under overcast 			

Environmental / Social Aspects	Objective	Mining phase mitigation measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<p>conditions, since this increases noise and vibration transmission through such mediums.</p> <ul style="list-style-type: none"> • Drilling and blasting contractors must monitor the blast noise, shock and vibration felt at the boundary of the mine to ascertain impact levels. • Comply with environmental and health regulations regarding noise and disturbance. 			
Dust / Air Pollution	The reduce fugitive dust from project operation	<ul style="list-style-type: none"> • Movement of heavy mining vehicles must be restricted to the mining site; • Reduce dust, noise, and road erosion outside the mining area. 		Record of public complain	Management / Site Manager

Environmental / Social Aspects	Objective	Mining phase mitigation measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<ul style="list-style-type: none"> • Keep heavy equipment focused on mining activities. • Only use a one-way lane to access the site; • Adhere to the minimum speed limit of 30 or 40km/hour; • Do not excavate or make excavation during heavy winds; • Sand and/or gravel heaps must be covered or regularly water sprayed; • On site where soil is loosened by vehicle movement, apply dust suppression method such as water spraying; • Workers must not be exposed to excess dust and should be provided with appropriate PPE 			

Environmental / Social Aspects	Objective	Mining phase mitigation measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<p>such as dust mask and earmuffs;</p> <ul style="list-style-type: none"> • Adhere to the Labour act, non-toxic human dust exposure levels may not exceed 5mg/m³ for respiratory dust and 15mg/m³ for total dust; • Water sprays and/or chemical suppressants (agglomeration additives) should be used on: <ul style="list-style-type: none"> - the roads • Exposed soils and other erodible materials should be re-vegetated or covered promptly. • Dust monitoring should be established before operations commence to measure baseline conditions. It should 			

Environmental / Social Aspects	Objective	Mining phase mitigation measures	Monitoring Indicators	Monitoring Indicators	Responsibility
		<p>remain active throughout the life of the mine as well as for a few years post closure to determine the effectiveness of tailing storage facility mitigation measures.</p> <ul style="list-style-type: none"> • Conduct regular patrols to detect violations. 			

SECTION C: POLLUTION CONTROL AND WASTE MANAGEMENT

Table 5. Waste Management Mitigation Measures

Environmental / Social Aspect	Objectives	Mining Phase Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
Vehicle Emissions	Reduce greenhouse gas (GHG) emissions from vehicles / machinery	<ul style="list-style-type: none"> • All vehicles and equipment must be kept in good working condition and serviced frequently to prevent leakage and emission of noxious 	Vehicle servicing records books		Management / Site Manager

Environmental / Social Aspect	Objectives	Mining Phase Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<p>smoke and other pollutants etc.</p> <ul style="list-style-type: none"> • Switch off engines when vehicle is not operations • Vehicle fleet should be carefully selected to include the latest technology that would ensure low tailpipe emissions. • Preventative controls for vehicle tailpipe PM10 emissions: minimization of vehicle idling times, regular maintenance of vehicles according to manufacturer's guidance, use of best available technologies such as the installation of selective catalytic reducers, oxidation 	<p>Reports of smoke emissions from machinery</p> <p>Visible signs</p>		

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

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

Environmental / Social Aspect	Objectives	Mining Phase Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • Waste containers (bins) should be emptied regularly and • removed from site to a recognized (municipal) waste disposal site at Opuwo. • Enough separate waste containers (bins) for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such. • Mining workers and contractors should be sensitized to dispose of waste in a responsible manner and not to litter. • No waste may remain on site after the completion of the project. 			

Environmental / Social Aspect	Objectives	Mining Phase Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
Surface and ground water contamination / pollution	To prevent soil and water pollution	<ul style="list-style-type: none"> • Vehicle and machinery to be used for mining and transportation purposes must be in good condition and well serviced to avoid leakages of oils and lubricants; • All stationary vehicles and machinery must have drip trays to collect leakages of oils and lubricants; • Oils, lubricants and hydrocarbons must be stored in a proper storage facility with concrete bunds or impermeable lined materials. • Although not expected to be significant, i.e oil drops of less than 500ML, if it occurs, and happened to contaminate soils 	Service records Visible drip trays Proper storage with concrete bund surface Bioremediation chamber		Management / Site Manager

Environmental / Social Aspect	Objectives	Mining Phase Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<p>must be collected and treated with bioremediation waste.</p> <ul style="list-style-type: none"> • Performance of the seepage control measures are to be evaluated with monitoring of water levels and water balance of the operations. The indication of higher seepage rates than expected would require the following: • Installation of recovery boreholes for retrieval of the effluent without affecting downstream groundwater. • Wastewater is to be disposed of in the natural environment unless the effluent quality guidelines are met. 			

Environmental / Social Aspect	Objectives	Mining Phase Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
Oil Spillages	To prevent oil spill from tanks and during re-fuelling	<ul style="list-style-type: none"> • Refuel vehicles at designated areas that has protected surface covering /geomembrane lining and use drip trays for stationary equipment and vehicle. • Engage the suppliers of consumable such as grease and lubricants upon used to collect and dispose of such waste in an environmentally friendly manner. 	Place warning signs	Site inspection and record keeping	Management / Site Manager

<p>Oil leakage</p>	<p>To prevent fuel leakages</p>	<ul style="list-style-type: none"> • All stationary vehicles and machinery must have drip trays to collect leakages of oils and lubricant; • The workshop area should be lined with concrete. • The workshop should have an oil-water separator for collection of run-offs from washing. • Oil filters should be stored in marked containers that allow oil to drain but not escape from storage. • Any spills should immediately be contained and cleaned up and the contaminated soil appropriately disposed of. The receiving environment should then be remedied where necessary to prevent the spill 		<p>Visible monitoring</p>	<p>Management and Site Manager</p>
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Environmental / Social Aspect	Objectives	Mining Phase Mitigation Measures	Monitoring Indicator	Monitoring Indicator	Responsibility
		<p>from entering the storm water drainage system.</p> <ul style="list-style-type: none"> • Scheduled maintenance of equipment and vehicles as per manufacturer specifications. • Proactive replacement of worn seals, hoses, and gaskets. • Reduce slip hazards and fire risks associated with oil leaks. • Conduct systematic check for oil and lubricant leaks. 			

SECTION D: ENVIRONMENT

Table 6. Environmental Mitigation Measures to be implemented

Aspect	Objective	Mining phase mitigation measure	Monitoring Indicator	Responsibility
Biodiversity	To protect the flora and fauna	<ul style="list-style-type: none"> • The targeted mining site must be cordoned off to avoid safety risk to animals. 		Management / Site Manager

Aspect	Objective	Mining phase mitigation measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • Prevent the destruction of protected species. • Prevent the employees from collecting firewood. • No workers should be permitted to collect plant materials, hunt or snare to capture wild animals. • Provide gas to staff for cooking and heating in order to discourage fire wood harvesting. • No poaching of wild animals including high valued species. • Any suspicious activities pertaining to illegal hunting should be reported to the nearest police at Otjimuhaka. • No killing of animals including crawling animals unless it poses danger to human life. • No domestic animals are allowed at the site. 		
Soil Erosion	To prevent soil erosion	<ul style="list-style-type: none"> • Mining should be limited to targeted sites only. • It is highly recommended that mining must not take place during heavy winds; • Excavated topsoil from mining trenches must be well compacted to avoid wind erosion; 		Management / Site Manager

Aspect	Objective	Mining phase mitigation measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • Movement of all vehicles must strictly be within the project site; • Sand and gravel heaps from the excavated pit should be placed in designated areas. • Rehabilitate all sites upon completion of the project. • The top 200-300mm of topsoil should be saved for use in rehabilitation. The soil should be stripped and stockpiled not exceeding 1m in height. 		
Soil Compaction	To prevent flooding at the surrounding areas.	<ul style="list-style-type: none"> • Vehicle and mobile mining equipment should be confined to existing roads and tracks. • Implement a road and track management. 		Management / Site Manager
Topsoil Stockpile	Avoid dispersion of the stockpile.	<ul style="list-style-type: none"> • If not used within 1 year, the stockpile should be levelled and contoured to allow natural grass to grow over the area. This will keep the soil biologically active. 	Trial sites	Management / Site Manager
Water Resource	Conservation of water resource	<ul style="list-style-type: none"> • A valid water abstraction permit should be obtained from the MAWLR and maintain its validity. • No pollution or contaminant should be allowed to enter the water ecosystem. 	Valid water abstraction permit.	Management / Site Manager

Aspect	Objective	Mining phase mitigation measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • Recycle water and foster the re-use of water. • Monitor and control water usage and minimise if possible. • Monitoring points and parameters are recommended for providing an early warning system. • Monitoring of groundwater levels from the beginning of operations is recommended for an understanding of the expected seasonal fluctuations and recharge. • Although rainfall is rare in the area storm/rainwater harvesting methods should be considered for use on the mine site. 		
Visual and Sense of Place	Maintain aesthetic value	<ul style="list-style-type: none"> • Pit and excavated area should be levelled upon completion. • Care must be taken to ensure that rehabilitated area blend in with the natural environment. • Overburdens must be placed in trenches and pits as part of rehabilitation. • Keep site visual clean. 		
Alien Invasive	Maintain natural ecosystem	<ul style="list-style-type: none"> • All alien invasive that may be found in the area should be cleared. 		

Aspect	Objective	Mining phase mitigation measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> Place measures in place to eradicate any alien infestation in the project area. Adopt an alien clearing policy and awareness campaign. 		

SECTION E: HERITAGE AND ARCHEOLOGICAL SITES

Table 7. Archaeology and Heritage Mitigation Measures

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

Environment / Social Aspect	Objectives	Mining phase mitigation measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • Informing the site manager or supervisor • Cordoned of the area with a danger tape and the manager shall take appropriate pictures. • Site manager must report the finding to the nearest Namibian police or alternatively the National Forensic Laboratory (+264 61 240461). 		

SECTION F: SOCIO ECONOMIC

Table 8. Social Economic Mitigation Measures

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

Environmental / Social Aspects	Objectives	Mining phase mitigation measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> • Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside the agreed upon process. • Contractors should give preference in terms of recruitment of sub-contractors and individual labourers to those from the local community. • Clearly explain to all job seekers the terms and conditions of their respective employment contract (e.g. period of employment etc.) – make use of interpreters when necessary. • Secure accreditation for in-house skills transfer which recognizes and certifies any training courses. 		
HIV/AIDS	To prevent the spread of HIV/AIDS	<ul style="list-style-type: none"> • Provide HIV / AIDS awareness at induction. • Avail condoms at site. 		
Alcohol and Drug use	Prevent alcohol and drug use	<ul style="list-style-type: none"> • Ban the use of alcohol and drugs at workplace • Teach employees about dangers of alcohol and substance abuse 	Drunk / Misbehaving employees Breathalyser report	Management or Site Manager

Environmental / Social Aspects	Objectives	Mining phase mitigation measure	Monitoring Indicator	Responsibility
		<ul style="list-style-type: none"> Suspicious employees must be screen with the breathalyser to avoid intoxicated personnel on site. 	Monitor presence of alcohol at the construction site	
Working hours	Adhere to the Labour Act No. 11 of 2007	<ul style="list-style-type: none"> Operate within the prescribed working days and hours as per the Namibian Labour laws and regulations. 	Labour unrest / Demonstration	Management or Site Manager
Traffic	Adhere to Traffic Rules and ease traffic flow	<ul style="list-style-type: none"> A logbook must be kept at the gate of the access road indicating the time of entrance or exit, the type of vehicle, and its destination. By doing so, traffic to and from the town during peak hours can be monitored. It will also indicate whether traffic predictions were accurate or not, and whether traffic forecasts should be revisited. Ensure that a valid and correct mineral export permit is applied for from the Ministry of Industries, Mines and Energy (MIME) and that such permit accompanies the mined product during all transportation activities. Although traffic congestion is not anticipated in the area of the project, transport of shift workers 	Gate Log-sheet/Correspondence to Traffic Department	Management or Site Manager

Environmental / Social Aspects	Objectives	Mining phase mitigation measure	Monitoring Indicator	Responsibility
		should take place outside of peak traffic hours such as 07h00–08h30 and 16h00–17h30.		

9. DECOMMISSIONING PHASE

The proposed continuous mining operation is anticipated to have an operational life of 15 years; therefore, decommissioning is not envisaged at this stage of the project. However, in the event where the mine has to be decommissioned, all the necessary applications required from the relevant authorities must be secured to ensure statutory adherence. A qualified personnel must be appointed to study and develop a decommissioning plan. Therefore, the project owners must implement the following mitigation measures;

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

10. CONCLUSION AND RECOMMENDATIONS

The mining operation should integrate risk reduction and prioritise stewardship. Employees must not be exposed to noise levels above 85 dB(A) over an 8-hour period. Where noise levels exceed this limit, the employer must implement a comprehensive hearing conservation program including noise monitoring, engineering and administrative controls, hearing protection devices, audiometric testing, and employee training. Compliance with this requirement will protect workers from permanent noise-induced hearing loss. Blasting must not be carried out under overcast conditions, as such conditions increase noise and vibration transmission, causing greater disturbance to neighbouring land users and the environment. Under overcast conditions (cloudy, low cloud ceiling, fog, or high humidity), sound and vibration waves can travel further and with greater intensity. Weather monitoring and documented decision-making shall be implemented to ensure compliance with this restriction. Mining in general poses a significant impact to the environment. It aligns with your environmental management goals and ensure regulatory compliance. The proposed mining project will have an impact to the receiving environment; therefore, mitigation measures should be applied to ensure that the preservation of the environment receive the highest priority. The impacts associated with mining of dimension stone (blue sodalite) and semi-precious stones had been identified and appropriate mitigation measure were proposed. The information provided and environmental set up of the intended continuous dimension stone and semi-precious stone mining project are adequate. It is therefore recommended that a renewal of the Environmental Clearance Certificate shall be issued to necessitate the continuity of the mining project. If the renewal of the Environmental Clearance Certificate is issued continuous monitoring and adherence to the EMP should be strictly imposed.