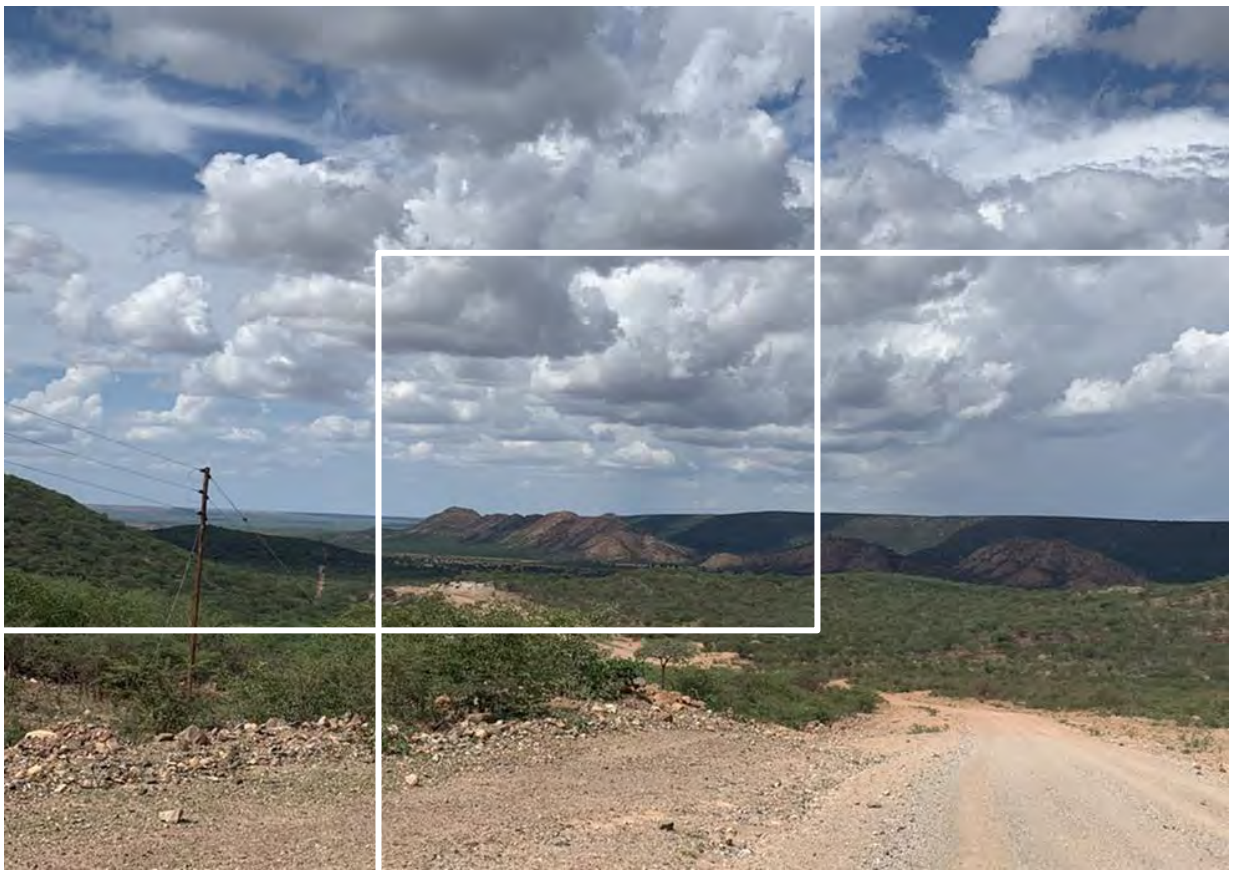

skorpion zinc

Submitted to: Skorpion Mining Company (Pty) Ltd.
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REPORT:

EXPLORATION ACTIVITIES ON EPL 8572 – ENVIRONMENTAL MANAGEMENT PLAN

PROJECT NUMBER: ECC-132-382-REP-13-D

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DISCLAIMER

Environmental Compliance Consultancy (ECC) (Reg. No. CC 2013/11401) has prepared this scoping report and the preliminary EMP on behalf of the proponent. This report has been authored by employees of ECC, who have no material interest in the outcome of this report, nor do any of the ECC team have any interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. ECC is independent from the proponent and has no vested or financial interest in the project, except for fair remuneration for professional fees rendered based upon agreed commercial rates. Payment of these fees is in no way contingent on the results of this report or the assessment, or a record of decision issued by Government. No member or employee of ECC is, or is intending to be, a director, officer, or any other direct employee of Skorpion Mining Company (Pty) Ltd. No member or employee of ECC has, or has had, any shareholding in Skorpion Mining Company (Pty) Ltd. Any personal views or opinions expressed by the writer may not necessarily reflect the views or opinions of Environmental Compliance Consultancy or its client.

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DEFINITIONS AND ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
ASTM	American Society for Testing and Materials
ECC	Environmental Compliance Consultancy
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPL	Exploration Prospecting Licence
GPS	Global Positioning System
HR	Human Resources
HSE	Health, Safety and Environmental
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
NHC	National Heritage Council
PPE	Personal Protective Equipment
SOPs	Standard Operating Procedures
ToRs	Terms of Reference

1 INTRODUCTION

1.1 PROJECT BACKGROUND

Environmental Compliance Consultancy (ECC) has been retained by Skorpion Mining Company (Pty) Ltd (herein after referred to as 'the proponent'). ECC is conducting an environmental impact assessment (EIA) for exploration on Exclusive Prospecting Licence (EPL) 8572

The Proponent has obtained an EPL from MME; now requires an environmental clearance from DEA/MEFT for the search of base and rare metals, industrial minerals, and precious metals.

The exploration activities on EPL 8572 will include the following: geological mapping, geochemical surveys, remote sensing, geophysical surveys (airborne and ground-based) and potentially diamond and RC drilling. Details of these methods are described below. Ground-based exploration techniques are inevitable in the search for base, rare and precious metals. Data obtained by remote-sensing data are also used to select target areas.

The proposed Project is located on (EPL) 8572. EPL 8572 is located within the Opuwo District, in the Kunene Region and is accessible via the main tar road C41 and gravel road D3720. The location of EPL 8572 is shown in Figure 1.

ECC has compiled this environmental management plan (EMP) in terms of the Environmental Management Act (EMA) of 2007 and its regulations of 2012. The purpose of this EMP is to support the full environmental impact assessment (EIA) report.

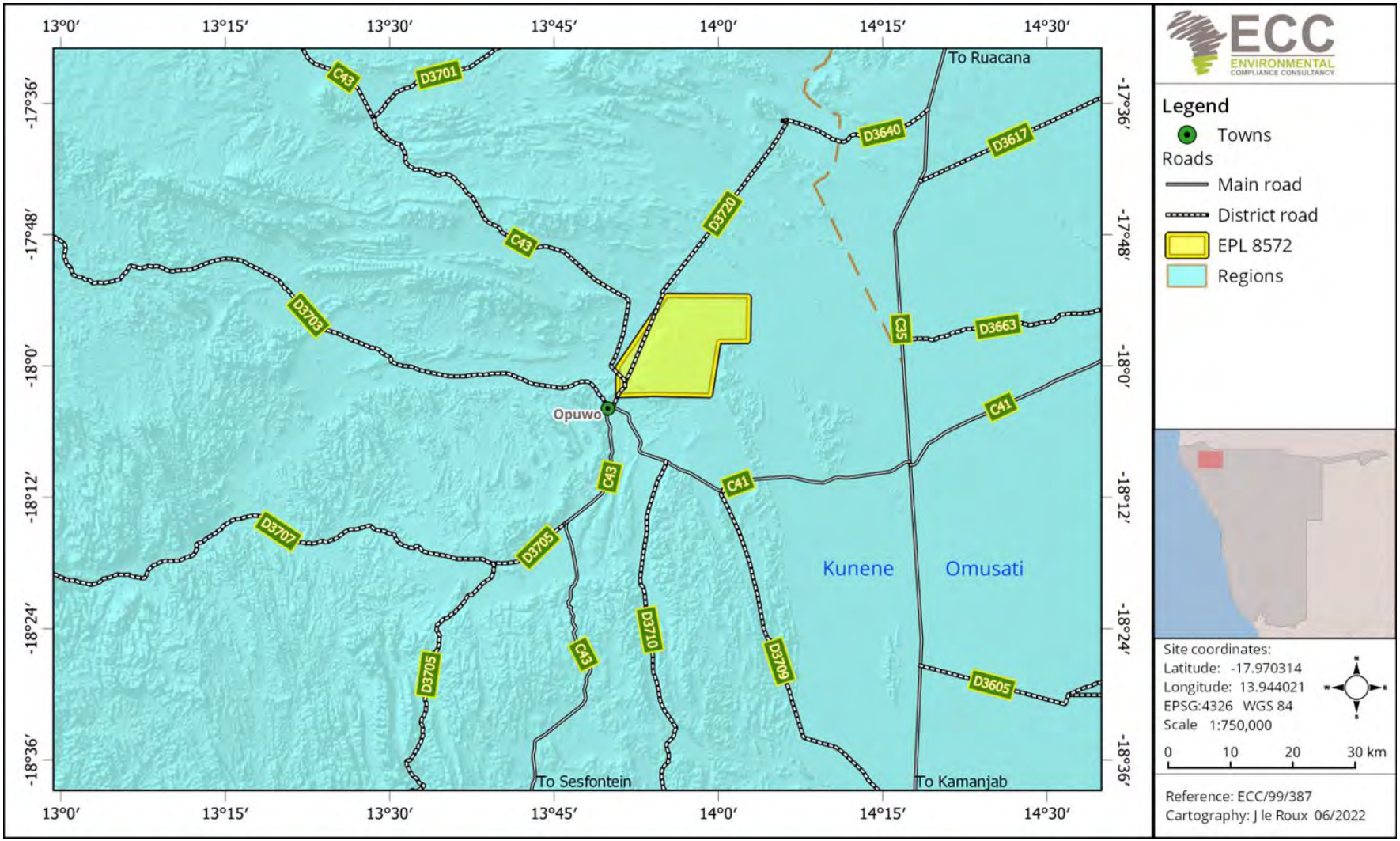

Figure 1: Locality map showing the location of the proposed exploration activities on EPL 8572

1.2 ENVIRONMENTAL REGULATORY REQUIREMENTS

The proposed Project is considered as a listed activity as stipulated in the Environmental Management Act, No. 7 of 2007 and its Regulations, promulgated in 2012. An environmental scoping report, environmental impact assessment (EIA) and environmental management plan (EMP) are required to be submitted as part of the application to support the decision-making process for issuing an environmental clearance certificate.

This report presents the EMP and has been undertaken in terms of the requirements of the Environmental Management Act, 2007 and its Regulations.

1.3 PURPOSE AND SCOPE OF THIS REPORT

The preliminary environmental management plan (hereafter referred to as the EMP) provides a logical framework, mitigation measures and management strategies for the activities associated with the proposed Project. In this way ensuring that the potential environmental impacts are curbed and minimised as far as practically possible and that statutory and other legal obligations are adhered to and fulfilled. Outlined in the EMP are the protocols, procedures and roles and responsibilities to ensure the management arrangements are effectively and appropriately implemented.

The EMP forms an appendix to the environmental scoping report and is based on the findings of the assessments carried out to date. The environmental scoping report should be referred to for further information on the proposed Project, assessment methodology and terms of reference (ToR), applicable legislation, and assessment findings.

This EMP is a live document and shall be reviewed at predetermined intervals, and or updated during the EIA process when or if the scope of work alters, or when further data or information is added. All personnel working on the Project will be legally required to comply with the requirements set out in the final EMP that is approved by the competent authorities and Ministry of Environment, Forestry and Tourism (MEFT).

The scope of this EMP includes all activities associated with the expansion activities undertaken.

1.4 MANAGEMENT OF THIS EMP

The proponent, will hold the environmental clearance certificate for the proposed project and will be responsible for the implementation and management of this EMP. Before the expansion activities commence, this EMP will be reviewed, amended as required and approved ready for implementation. The implementation and management of this EMP, and thus the monitoring of compliance, will be undertaken through daily duties and activities, as well as monthly inspections.

1.5 LIMITATIONS, UNCERTAINTIES, AND ASSUMPTIONS RELATED TO THIS EMP

This EMP does not include measures for compliance with statutory occupational health and safety requirements. This will be provided in the safety management plan to be developed by the Proponent.

Where there is any conflict between the provisions of this EMP and any contractor's obligations under their respective contracts, including statutory requirements (such as licences, project approval conditions, permits, standards, guidelines, and relevant laws), the contract should be amended, and statutory requirements are to take precedence.

The information contained in this EMP has been based on the project description as provided in the EIA report. Where the design or construction methods is different, this EMP may require updating and potential further assessment may be undertaken.

1.6 ENVIRONMENTAL ASSESSMENT PRACTITIONER

Environmental Compliance Consultancy (ECC) (Reg. No. CC 2013/11401) has prepared this preliminary EMP on behalf of the proponent.

This report has been authored by employees of ECC, who have no material interest in the outcome of this report, nor do any of the ECC team have any interest that could be reasonably regarded as being capable of affecting their independence in the preparation of this report. ECC is independent from the proponent and has no vested or financial interest in the project, except for fair remuneration for professional fees rendered based upon agreed commercial rates. Payment of these fees is in no way contingent on the results of this report or the assessment, or a record of decision issued by Government. No member or employee of ECC is, or is intending to be, a director, officer, or any other direct employee of Skorpion Mining Company (Pty) Ltd. No member or employee of ECC has, or has had, any shareholding in Skorpion Mining Company (Pty) Ltd.

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2 ENVIRONMENTAL MANAGEMENT FRAMEWORK

This EMP provides measures, guidelines, and procedures for managing and mitigating potential environmental impacts. The EMP also indicates monitoring and reporting guidelines and sets responsibilities for those carrying out management and mitigation measures.

2.1 OBJECTIVES AND TARGETS

Environmental objectives and targets have been developed so that exploration activities can minimise potential impacts on the environment, as far as reasonably practicable.

Environmental objectives for the Project are as follows:

- Zero pollution incidents;
- Minimal vegetation clearing and earthworks;
- Minimal impact on regional groundwater users;
- Protect local flora and fauna, and
- Use natural resources effectively and efficiently.

2.2 ORGANISATIONAL STRUCTURE, ROLES AND RESPONSIBILITIES

The proponent shall provide a Project team to oversee and undertake the preparation and expansion activities, which will be composed of the proponent's personnel and contractors. A nominated role shall be identified to ensure the management and implementation of this EMP is carried out throughout the Project Life. The Proponent shall be responsible for:

- Ensuring all members of the project team, including contractors, comply with the procedures set out in this EMP
- Ensuring that all persons are provided with sufficient training, supervision, and instruction to fulfil this requirement
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood
- Contractors shall be responsible for ensuring and demonstrating that all personnel employed by them are compliant with this EMP, and meet the responsibilities listed above

Table 1 lists the roles and responsibilities allocated to different management levels in the company and specific personnel.

Table 1 - Roles and responsibilities

ROLE	RESPONSIBILITIES AND DUTIES
Proponent	– Responsible for the overall management and implementation of the EMP; – Ensure environmental policies are drafted/updated and communicated to all personnel throughout the company; – Responsible for providing the resources required to effectively run operations and comply with the EMP; – Appoint all managers needed to ensure effective running of operations; and – Ensure systems for proper induction and training of personnel and contractors are in place.
Exploration management	– Manage all activities on the exploration project; – Monitor operations and ensure systems are in place for implementation of the EMP; – Maintain the community issues and concerns register and keep records of complaints; – Ensure corrective action are taken and communicated to complainants, and – Maintain up to date records of employees who have completed training and induction. – Ensure that all contract workers, sub-contractors and visitors to the site are aware of the requirements of this EMP, relevant to their roles and always adhere to this EMP; – Report any non-compliance or accidents; – Receive, recording and responding to complaints; – Ensure adequate resources are available for the implementation of the EMP; – Ensure safe and environmentally sound operations and – Responsible for the management, maintenance, and revisions of this EMP.
HSE (Health, safety and Environment) Appointed Person/ Environmental Manager	– Maintain the exploration operation's environmental management system (EMS). – Draft and update exploration operation specific environmental procedures. – Ensure on-site induction training is relevant and address issues from this EMP. – Do all environmental audits and inspections and report findings to relevant personnel.

ROLE	RESPONSIBILITIES AND DUTIES
	– Check the implementation of corrective action for incidents and complaints. – Ensure all environmental monitoring and reporting is done. – Conduct environmental monitoring, audits and inspections, and – Compile draft environmental reports.
Employees	– Adhere to measures set out in the EMP. – Ensure they have undertaken a site induction. – Report any operations or conditions which deviate from the EMP as well as any non-compliant issues or accidents to the environmental manager.

2.3 CONTRACTORS

Any contractors hired during the exploration activities of the operations and for the project duration shall be compliant with this EMP and shall be responsible for the following:

- Undertaking activities in accordance with this EMP as well as relevant policies, procedures, management plans, statutory requirements, and contract requirements.
- Implementing appropriate environmental and safety management measures.
- Reporting of environmental issues, including actual or potential environmental incidents and hazards, to the site manager.
- Ensuring appropriate corrective or remedial action is taken to address all environmental hazards and incidents reported by employees and subcontractors.

2.4 EMPLOYMENT

The Proponent and all contractors shall comply with the requirements of the Republic of Namibia's regulations for Labour, Health and Safety, and any amendments to these regulations. The following shall be complied with:

- In liaison with local government and community authorities, the Proponent shall ensure that local people have access to information about job opportunities and are considered first for construction/maintenance contract employment positions.
- The number of job opportunities shall be made known together with the associated skills and qualifications to the locals in the area.
- The maximum length of time the job is likely to last for shall be indicated.
- Foreign workers with will be hired and the proponent shall ensure that they have a valid work permit at all times.
- Every effort shall be made to recruit from the group of unemployed workers living in the surrounding area for positions that require unskilled work.

2.5 REGISTER OF ENVIRONMENTAL RISKS AND ISSUES

An environmental review of the proposed Project has been completed to identify all the commitments and agreements made. A list of environmental commitments and risks has been produced, which details deliverables including measures identified for the prevention of pollution or damage to the environment during the expansion phase.

Table *2* provides a list of environmental risks and issues, as well as associated mitigation (as derived from the EIA) and monitoring measures, and the roles responsible for compliance. It will be subject to regular review by the Manager and updated when necessary. The Exploration Manager and Environmental Manager will use this register to undertake monthly inspections (see next section) to ensure the project is compliant with this EMP.

Table 2 – A list of environmental risks and issues, as well as associated mitigation and monitoring measures

RECEPTORS	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
Access and site preparation	Disruption of communal land operations	– Compliance with all applicable laws and agreements.	– OHSE Audits and inspections. – Daily	– HSE appointed person /Environmental manager – Exploration manager
	Conflict with traditional authorities	– Ensure documented permission to enter communal lands are obtained from relevant traditional authorities; – Traditional authorities should have access to all communal areas at all times; – Existing water points and feeding areas need to be left unaffected, unless otherwise agreed with traditional authorities; – Use existing roads for access to avoid new tracks as far as practicable and create cut lines with due regard to existing land use activities in the area; – Ensure appropriate supervision of all activities; – Develop and implement an operation manual or procedures to work on communal lands and implement monitoring programmes thereafter; – Maintain continuous engagement with residents to identify any concerns or issues, and appropriate mitigation and management measures agreed upon and – Accidents and incidents need to be reported to the exploration manager and recorded in an incident register.	– OHSE Audits and inspections. – Daily	– Exploration manager
	Limiting access to sites	– Compliance with all applicable laws and agreements.	– OHSE Audits and inspections.	– Exploration manager

RECEPTORS	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
			– Daily	– HSE appointed person /Environmental manager
	Potential damage to cultural heritage sites	– Implement a Chance Find Procedure; – Raise awareness about possible heritage finds; – Report all finds that could be of heritage importance; – In case archaeological remains are uncovered, cease activities and the exploration manager has to assess and demarcate the area; – Exploration manager to visit the site and determine whether work can proceed without damage to findings, mark exclusions boundary and inform ECC with GPS position; – If needed, further investigation has to be requested for a professional assessment and the necessary protocols of the Chance Find Procedure have to be followed; – Archaeologist will evaluate the significance of the remains and identify appropriate action, for example, record and remove; relocate or leave premises (depending on the nature and value of the remains); – Inform the police if the remains are human and – Obtain appropriate clearance or approval from the competent authority, if required, and recover and remove the remains to the National Museum or National Forensic Laboratory as directed.	– Chance finds procedure and records	– Exploration Manager
Socio-economic	Job creation for locals	– Maximise local employment and local business opportunities and – Enhance the use of local labour and local skills as far as reasonably possible.	– HR recruitment policies and procedures	– HR Manager

RECEPTORS	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
	Increased levels of stock theft on communal lands	– Ensure documented permission to enter communal lands is obtained from all relevant traditional authorities; – Training and raise awareness to sensitize employees about contentious issues such as stock theft and poaching; – Ensure appropriate supervision of all activities and – Raise awareness and sensitize employees about contentious issues such as stock theft and poaching.	– HR recruitment policies and procedures	– HR Manager
Groundwater	Groundwater quality	– Good housekeeping; – Training through toolbox talks and induction; – Ensure drill pads and spill kits are in place; – All vehicles and machinery undergoing maintenance must have drip trays to collect leakages of lubricants and oil; – Consider alternative sites when the water table is too high; – Drill system will be fitted with sumps to direct any accidental spills into containment areas; – Accidental spills and leaks (including absorption material) to be cleaned as soon as possible; – Store bulk fuel in adequate containment areas (non-porous surface and bunded); – No damaged containers in use; – Major spills to be reported, also to the authorities	– OHSE Audits and inspections. – Daily	– Exploration Manager – HSE appointed person /Environmental manager

RECEPTORS	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		– Where possible, water from existing water sources shall be used and – Refuelling will be done in areas with adequate preventative measures in place.		
Water	Wastewater can contaminate surface and groundwater	– Wastewater discharges will be contained; – Workers will be made aware about the importance of wastewater management; – Good housekeeping and – Ensure prompt clean-up of spills.	– OHSE Audits and inspections. – Daily	– Exploration Manager – HSE appointed person /Environmental manager
Terrestrial environment and ecology	Loss of biodiversity and habitat	– Use existing roads for access to avoid new tracks and create cut lines; with due regard for the existing ecosystem functions in the area; – Minimise clearance areas through proper planning of the exploration activities; – Route new tracks around established and protected trees, and clumps of vegetation; – Identify rare, endangered, threatened and protected species; – During toolbox talks and induction, highlight to workers so that the removal of significant plants (species of conservational importance) are avoided; – Where possible rescue and relocate plants of significance with the appropriate permits in place beforehand and – Promote revegetation of cleared areas upon completion of the exploration activities.	– OHSE Audits and inspections. – Daily	– Exploration Manager – HSE appointed person/Environmental Manager

RECEPTORS	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
	Increase in invasive species in cleared areas	– All project equipment arriving on site from an area outside of the Project or coming from an area of known weed infestations (not present on the project site) should have an internal weed and seed inspection completed prior to equipment being used; – Ensure the potential introduction and spread of alien plants is prevented, and – Ensure the correct removal of alien invasive vegetation and prevent the establishment and spread of alien invasive plants. – Eradicate weeds and alien species as soon as they appear and – Make workers aware about alien species and weeds.	– OHSE Audits and inspections. – Daily	– HSE appointed person/Environmental Manager – Exploration manager
	Residing, nesting and slow-moving organisms can be disturbed, injured or killed by movement of vehicles and equipment	– Restrict movements to areas of activities only; – Use existing tracks and routes only; – Identify rare, endangered, threatened and protected species in advance; – Route new tracks around protected species and sensitive areas; – Minimize movements to daytime hours; – Training and raise awareness to sensitize employees and notify them on avoiding some areas; – No driving off designated access routes (into the bush) / off-road driving and – No animals or birds may be collected, caught, consumed or removed from site.	– OHSE Audits and inspections; – Daily	– HSE appointed person/Environmental Manager – Exploration manager
	Accidental and uncontrolled fire	– Equipment to be well maintained and serviced regularly and documented proof kept; – Restrict movements of people to areas of activities only;	– OHSE Audits and inspections; – Daily	– Exploration manager – HSE appointed person/Environmental Manager

RECEPTORS	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		– Train people and raise awareness about veld fires and firefighting and documented proof kept; – No open fire outside designated areas; – Ensure proper cooking facilities at fly camps; – No cigarette buds are discarded but contained and disposed of at an appropriate facility; – Proper fire hazard identification signage to be placed in areas that store flammable material (i.e. hydrocarbons and gas bottles); – Control and reduce the potential risk of fire by segregating and safe storage of materials; – Avoid potential sources of ignition by prohibiting smoking in and around facilities and – Firefighting equipment and fire breaks should always be at designated areas and should be maintained regularly.	– Pre-start checklists on all machines – Incident records management.	

RECEPTORS	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
	Risk of spillage of hydrocarbons, chemicals or other dangerous goods/material	– Tailings, chemical and hydrocarbon spillages from trucks, conveyors and pipelines will be cleaned up timeously in order to prevent contamination. – Fuel and chemicals are handled with care; – Spill kits to be at designated areas across the site or available for use during refuelling, fuel/chemical delivery or use. Absorption material should be available and at hand. Where sawdust is used it should be cleaned up immediately and not left for long periods as this poses a fire hazard; – Equipment to be well maintained and serviced regularly and documented proof kept and – A funnel should be available and used to avoid spillage.	– Daily visual inspections – Pre-start checklists on all machines – Incident records management.	– Exploration Manager
	Noise and vibration impact	– Minimize noise generating activities at night, by ensuring noisy activities are avoided especially at night; – Ensure appropriate measures are put in place to rectify noise and vibration complaints, should they occur; – Scheduling of works to avoid disturbance between the hours of 7 pm and 5 am, unless night operations unavoidable; – Procedures for receiving complaints from nearby land users or residents to be in place and mitigation measures to be implemented should construction	– Noise and vibrational monitoring – Pre-start checklists on all machines	– Exploration Manager

RECEPTORS	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		and exploration generate excessive noise and vibration. – Drill equipment shall be suitably positioned to ensure that noisy equipment is away from receptors; – Residents shall be provided at least two weeks' notice of drilling operations within 1 km of their property and – All equipment to be shut down or throttled back between periods of use		
	Waste generation and litter	– Implement the waste management hierarchy across site: Avoid, reuse, recycle, then disposal through burning or dump; – Waste shall be collected and shall be removed on a regular basis to avoid pests and bad odours; – It is unlikely that hazardous material and wastes will be produced, however in the event that they do, they shall be managed in a safe and responsible manner so as to prevent contamination of soils, pollution of water and/or harm to people or animals as a result of the use of these materials. Proof of waste disposal certificates should be kept on file and – Hazardous and non-hazardous waste shall be stored separately at all times.	– OHSE Audits and inspections; – Waste management inspections, – Safe disposal certificates	– HSE appointed person/Environmental Manager
Soil quality	Soil contamination due to mixing of earth matter, trampling, compaction and pollution,	– Equipment must be in a good condition to ensure that accidental oil spills do not occur and contaminate soil. – During drilling plastic liners to be placed underneath rigs to avoid environmental contamination and oil	– Pre-start checklists on all machines	– Exploration Manager – Environmental Manager

RECEPTORS	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		absorbent matting should be available in the event of spillage; – Limit the possibility of compaction and creating of a hard subsurface; – Limit the possibility of trampling; – In the event of spills and leaks, polluted soils must be collected and disposed of at an approved site and – Limit the possibility to mix mineral waste with topsoil.		
	Soil erosion	– Where necessary, install diversions to curb possible erosion; – Restore drainage lines when disturbed and – Topsoil should be stockpiled separately, and re-spread during rehabilitation.	– OHSE Audits and inspections;	– Environmental Manager
Air quality	Increased dust levels	– All vehicles and machinery / equipment to be shut down or throttled back between periods of use; – Use existing access roads and tracks where possible; – Apply dust suppression where possible and – Restrict speed of vehicles (<30km/h) on communal land roads, close to traditional houses or livestock pens/enclosure. – Specific activities that may generate dust and impact on residents shall be avoided during high wind events.	– Dust fallout monitoring	– Environmental Manager
Visual	Visual disturbances	– Position drill equipment in such a way that it is out of sight from human receptors, where practicable; – Barriers or fences around drill sites mandatory to avoid human or animal impacts; – Residents need to be informed at least two weeks in advance that drilling operations are within 1km of their property;	– Daily observations	– Exploration Manager

RECEPTORS	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		– Maintain good housekeeping; – Apply dust suppression where possible; – Maintain continuous communication with I&APs to identify concerns and mitigation measures – Restrict speed of vehicles (<30km/h), on communal land roads, close to traditional houses or livestock pens/enclosure – Specific activities that may generate dust and impact on residents shall be avoided during high wind events – All vehicles and machinery / equipment to be shut down or throttled back between periods of use – Maintain good housekeeping – Continuous engagement with residents to identify any concerns or issues, and appropriate mitigation and management measures agreed upon		
Resource use	Inefficient use of water resources	– Use water effectively and efficiently by following the reduce-recycle-reuse approach; and – Record volumes of abstraction and supply.	– Daily observations – Groundwater level monitoring	– Environmental Manager; and – Employees

3 ENVIRONMENTAL MANAGEMENT PRINCIPLES

3.1 CONTINUAL IMPROVEMENT

The proponent's team is responsible for reviewing and updating this EMP, which will be supported by the monthly reports from the exploration team. As part of this review process, the monthly reports will be reviewed, identifying any trends or significant areas of concern, as well as measures implemented to manage / resolve environmental or social issues. Compliance and legislative changes will be reviewed, and lessons learnt will be captured. The EMP will be amended as required, and follow up training, awareness or updates will be provided.

Ongoing hazard identification through the review of the EMP and supporting management plans and standard operating procedures (SOPs) will ensure environmental impacts are avoided or minimised to as low as reasonably practicable as part of the continuous improvement of the EMS.

3.2 BEST PRACTICE

The best practice management measures that will be complied with across site are listed in **Table *3***.

Table 3 – A list of environmental best practice measures to be implemented

ENVIRONMENTAL ASPECT	BEST PRACTICE REQUIREMENT
Pollution Prevention Control	– Equipment to be maintained and serviced regularly; – Refueling at designated locations; – Spill kits available where the risk of loss of containment is identified; – Bunds to be at least 110% of the volume of the container; and – Good housekeeping.
Solid Waste Management	– Good housekeeping (no littering); – Designated waste collection areas around site and one central location; – Bins labelled; – Waste to be separated and kept clean and tidy; and – Waste bins emptied on regular basis.
Ground Contamination	– Refueling will be undertaken in designated areas with spill kits available; – Chemical management enforced on site; and

ENVIRONMENTAL ASPECT	BEST PRACTICE REQUIREMENT
	– Good housekeeping.
Storage of Fuels, Oils, Chemicals and other hazardous liquids	– Storage tanks will be suitable and labelled for the liquid being stored; – Bunds to be at least 110% of the volume of the container; and daily inspections of tanks.
Energy Efficiency	– Equipment to be maintained and serviced regularly; and – Turn off equipment when not in use.
Air Quality	– Maintenance of roads; – Turn off equipment when not in use; and – Equipment to be maintained and serviced regularly.

3.3 ENVIRONMENTAL MONITORING

A monitoring and evaluation program will be used in line with internal HSE standards to evaluate environmental performance and promote continual improvement. Monitoring also supports environmental management on site to evaluate how effective the environmental management has been, over an extended period of time.

An environmental monitoring schedule will be put in place for the operations domain.

The monitoring program comprises:

- Air quality monitoring; (e.g. dust fallout) and
- Water monitoring (e.g. groundwater)

The Environmental Officer will be tasked with conducting the monitoring within this domain with the support of the exploration manager.

4 COMMUNICATION AND TRAINING

To ensure potential risks and impacts are minimised it is vital that personnel are appropriately informed and trained on how to properly implement the EMP. It is also important that regular communications are maintained with stakeholders (if applicable) and made aware of potential impacts and how to minimise or avoid them. This section sets out the framework for communication and training in relation to the EMP.

4.1 COMMUNICATIONS

During construction and operations, the exploration manager and site manager shall communicate site-wide environmental issues to the project team through the following means (as and when required):

- Ensure all personal are afforded the opportunity to attend an environmental site induction that sets out their requirements in relation to this EMP
- Ensuring audits and inspections are undertaken regularly on a risk-based schedule
- Toolbox talks, including instruction on incident response procedures
- Deliver project-specific environmental briefings where required
- Ensure all personnel have access to the EMP
- Ensure operators of key activities and environmentally sensitive operations are briefed and understand their requirements.

This EMP shall be distributed to the exploration team including any contractors and personnel working on the exploration site to ensure that the environmental requirements are adequately communicated. Key activities and environmentally sensitive operations shall be briefed to workers and contractors.

During the exploration activities, communications between the management team shall include discussing any complaints received and actions to resolve them; any inspections, audits, or non-conformance with this EMP; and any objectives or target achievements.

4.2 ENVIRONMENTAL EMERGENCY AND RESPONSE

An emergency is any abnormal event, which demands immediate attention. It is any unplanned event, which results in the temporary loss of management control at site, but where functional resources can manage the response. An Emergency Response plan document will be put in place that manages the response in relation to emergencies including environmental emergencies.

Table 4 – Emergency Contact details

TOWN	AMBULANCE	POLICE	FIRE BRIGADE
Rosh Pinah	+264 (63) 274 911/ Toll Free 924	+264 (63) 274 597	+264 (63) 274 263

For large-scale spills and other significant environmental incidents, the fire services should be contacted as required and the office of the Ministry of Environment, Forestry and Tourism (MEFT) informed of the incident (telephone +264 61 284 2111). All correspondence with MET should be undertaken by the General Manager or Exploration Manager.

For the clean-up of smaller spills, the relevant Material Safety Data Sheet (MSDS) should be consulted to determine the appropriate clean-up procedure. Basic spill response training will be provided as part of the site environmental induction, spill response equipment, including relevant MSDS copies, will be provided in areas where potentially environmentally hazardous chemicals may be used.

4.3 COMPLAINTS HANDLING AND RECORDING

Any complaints received verbally by any personnel on the project site shall be recorded by the receiver including:

- The name of the complainant
- The contact details of the complainant
- Date and time of the complaint
- The nature of the complaint

The information shall be given to the exploration manager who is overall responsible for the management of complaints. The exploration manager shall do the following:

- Inform the site manager of issues, concerns, or complaints.
- The site manager must maintain a complaint register that required details of the complaint
- The exploration manager will provide a written response to the complainant of the results of the investigation and action to be taken to rectify or address the matter(s). Where no action is taken, the reasons why are to be recorded in the register

The workforce shall be informed about the complaints register, its location and the person responsible, to refer residents or the general public who wish to lodge a complaint. The complaints register shall be kept for the duration of the Project and will be available for government or public review upon request.

4.4 TRAINING AND AWARENESS

All personnel working on the Project shall be competent to perform tasks that have the potential to cause an environmental impact. Competence is defined in terms of appropriate education, training, and experience. Training and toolbox talks will be provided to all employees and contractors.

4.5 SITE INDUCTION

All personnel involved in the Project shall be inducted to the site with specific environmental awareness training, and health and safety issues. The environmental awareness training shall ensure that personnel are familiar with the principles of this EMP, and the environmental impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures. The exploration manager shall ensure a register of completed training is maintained.

The site induction should include, but is not limited to the following:
A general site-specific induction that outlines:

- What is meant by “environment” and the EMP?
- Why the environment needs to be protected and conserved?
- How can exploration activities impact the environment?
- What can be done to mitigate against impacts?
- The inductee's role and responsibilities concerning implementing the EMP
- The site’s environmental rules
- Details of how to deal with, and who to contact should any environmental problems occur
- Basic vegetation clearing principals and species ID sheets
- The potential consequences of non-compliance with this EMP and relevant statutory requirements, and
- The role of responsible people for the Project.

5 INCIDENT REPORTING

The Proponent must have an accident and incident reporting system that covers all applicable statutory requirements. The section below sets out the minimum requirements for incident reporting and should be used as a basis for incident reporting, in the event that no incident reporting system exists.

5.1 MINOR INCIDENT OR "NEAR MISS"

Any incident or "near miss" involving the proponent, a nominated representative, any contractor, or its subcontractors or any third party's personnel, property or equipment, must be:

1) Orally reported to the manager or the manager's nominated representative:
   A. Immediately and without delay
   B. Regardless of whether or not injury to personnel has occurred
   C. Or property or equipment has been damaged.
2) Written up and handed to the manager or the manager's nominated representative by the end of the shift. The written report should:
   A. State all known facts and conditions at the time of the incident and
   B. Includes a preliminary assessment of the most likely potential consequences of the incident under the current circumstances.

5.2 SERIOUS INCIDENT

For any serious incident involving a fatality, or permanent disability, the incident scene must be left untouched until witnessed by a representative of the police. This requirement must not delay immediate first aid being administered and the location being made safe.

5.3 INCIDENT REPORT AND CLOSE OUT

The manager must investigate the cause of all work accidents and significant incidents and must provide the results of the investigation and recommendations on how to prevent a recurrence of such incidents. A formal root-cause investigation process should be followed.

6 COMPLIANCE AND ENFORCEMENT

6.1 ENVIRONMENTAL INSPECTIONS AND COMPLIANCE MONITORING

Inspections and audits of the site will be managed and undertaken by the exploration manager or his/her representative to check that the standards and procedures set out in this EMP are being complied with and pollution control measures are in place and working correctly. All equipment will be inspected to ensure they are operating as per specification; no damage has been caused, and no leaks or spills have occurred. Any non-conformance shall be recorded, including the following details:

- A brief description of non-conformance;
- The reason for the non-conformance;
- The responsible party;
- The result (consequence);
- The corrective action is taken and any necessary follow up measures required.

The application documentation for renewal of the environmental clearance certificate must include an audit report and copies of the 6 bi-annual reports that were submitted every 6 months for the 3 years that the clearance certificate is valid for.

6.2 REPORTING

Reports shall be submitted to the Mining Commissioner in terms of the Minerals (Mining and Prospecting) Act, No. 33 of 1992.

Bi-annual environmental reports shall be submitted to the Environmental Commissioner every 6 months of every year. These reports should include records of the monitoring and other deliverables of every aspect or programme described in the EMP.

6.3 NON- COMPLIANCE

Where it has been identified that works are not compliant with this EMP, the exploration manager shall employ corrective actions so that the works return to being compliant as soon as possible. In instances where the requirements of the EMP are not upheld, a non-conformance and corrective action notice shall be produced. The notice shall be generated during the inspections and the exploration manager shall be responsible for ensuring a corrective action plan is established and implemented to address the identified shortcomings.

A non-compliance event/situation is considered if, for example:

- There is evidence of a contravention of this EMP and associated indicators or objectives.
- The site manager and or contractor have failed to comply with corrective or other instructions issued by the environmental manager or qualified authority.

- The site manager and or contractor fail to respond to complaints from the public.

Activities shall be stopped in the event of non-compliance until corrective action(s) have been completed.

6.4 DISCIPLINARY ACTION

This EMP is a legally binding document and non-compliance with it shall result in disciplinary action being taken against the perpetrator/s. Such action may take the form of (but is not limited to):

- Fines / penalties
- Legal action
- Monetary penalties imposed by the proponent on the contractor
- Withdrawal of licence
- Suspension of work

The disciplinary action shall be determined according to the nature and extent of the transgression / non-compliance, and penalties are to be weighed against the severity of the incident.

7 GROUNDWATER MANAGEMENT PLAN

7.1 INTRODUCTION

Chemical and waste spills must be contained, so as not to contaminate the soil or groundwater. Any contact with groundwater must be treated with exceptional care and reported immediately, so as to minimize the potential for contamination of an aquifer. It is important to limit the potential for wastewater seepage to groundwater.
This groundwater management plan outlines appropriate groundwater water management measures, monitoring programs and reporting procedures to be implemented.

7.2 OBJECTIVES

This groundwater management plan has been prepared to minimise potential impacts on groundwater resulting from the exploration activities. It is important to report any contact with or contamination of groundwater to the environmental coordinator or site manager as soon as possible.

7.3 RESPONSIBILITIES

WORKFORCE AND ALL CONTRACTORS
Required to take all reasonable measures to prevent the discharge of sediments and pollutants from the site into groundwater sources. Report any contact with groundwater to the environmental coordinator.

ENVIRONMENTAL COORDINATOR
Will ensure that the objectives listed above are being met and provide performance feedback to the manager.

7.4 GROUNDWATER MANAGEMENT MEASURES

The groundwater management plan measures are designed to minimise the runoff of sediment-laden or polluted water/effluent into the surrounding environment. Exploration activities that could potentially impact groundwater quality include:

- Chemical spills
- Refuelling
- Poor resource stewardship practices.

The following requirements are to be met to ensure that groundwater is not contaminated:

- Fuel/oil and chemicals must be safely stored and removed.
- Any contact groundwater must be treated with exceptional care and reported immediately, so as to minimize the potential for contamination of an aquifer.

Table 5 - Water Quality Mitigation Measures

Responsibility	– Exploration Manager – Employees
Potential issues or impacts	– Groundwater contamination due to incidental hydrocarbon spills – Change in the water table
Protection of groundwater	Where the water table is penetrated by drilling and the water flows out onto the surface, a furrow needs to be dug that diverts the water to vegetation if water is deemed uncontaminated
	All boreholes should be capped and labelled. In the instances where water is encountered the water should be sampled and tested and the local traditional authorities be made aware thereof
	Water saving measures should be applicable at all times. No taps or pipes left to run, leaks to be detected immediately. Vehicles only to be washed with buckets, not running water
Sewage and grey water from temporary portable toilets on site	Chemical toilets should be provided and the veld should not be used as an alternative
	If grey water can be collected from ablution facilities at the campsite it should be recycled and: o Used for dust suppression o Used to clean equipment
Lowering of the groundwater levels	1. To maximise the re-use of water during operational phases in order to minimise the use of clean water no matter the source 2. Extraction volumes of water shall be minimal during exploration and where possible, water from existing water sources shall be used 3. Use water effectively and efficiently by following the reduce-recycle-reuse approach

	4. Record volumes of abstraction and supply 5. A site-wide water balance will be kept and updated on a regular basis
Inefficient use of water resources	1. To ensure compliance with all legal obligations 2. Refuelling shall be undertaken in a designated area 3. All vehicles and machinery undergoing maintenance must have drip trays to collect leakages of lubricants and oil during any field repairs or emergency maintenance 4. In the event of pollution, polluted soils must be collected and disposed of at an approved site 5. A 'good housekeeping' policy shall be adopted across the exploration area
Any hazardous fluid or lubricating chemicals used could enter the aquifer environment causing pollution	1. The contractors' laydown areas are to be surfaced and will drain to a sump with silt traps and hydrocarbon collectors 2. All chemicals, bulk fuels, oils and grease and any other hazardous substance, will be stored and handled as per all applicable legislation and national standards 3. Portable chemical toilets will be provided during the exploration phase. They will be routinely cleaned, and sewage disposed of at a licenced sewage treatment plant with the safe disposal certificate to be provided
Monitoring requirements	1. Take borehole water level at the start of exploration and at the end of exploration operations. 2. Keep the records. 3. Monitor the use of water and keep records of daily requirements.

7.5 GROUNDWATER QUALITY MONITORING

Every effort must be made throughout to preserve the quality of groundwater sources that the Proponent may impact. Containment of waste and chemicals and the correct disposal thereof must be of an acceptable standard. Personnel must report any unusual conditions and intersection with groundwater immediately to the environmental manager.
The Department of Water Affairs require quarterly reporting for water levels and quality of water from the sources for which a permit was required, namely, for abstraction permits and discharge permits:

1. Maintain a record of all abstracted volumes and report to DWA / MAWLR as per permit conditions
2. Maintain a monthly water balance
3. Submit quarterly water quality tests for water and monitoring boreholes.

8 WASTE MANAGEMENT PROGRAMME

8.1 INTRODUCTION

The exploration activities will generate both solid and liquid waste. The types of waste generated at the facility are classified as mineral and non-mineral waste. All non-mineral waste will eventually be removed from the Project site and will either be disposed of at the Otjiwarongo waste disposal site (household or garden waste).

8.2 OBJECTIVES

This waste management programme has been prepared to ensure the proper storage, transport, treatment, and disposal of waste and where possible will follow the waste hierarchy, which encourages waste avoidance and waste reduction followed by reuse, recycling, and reclamation, before waste treatment and waste disposal.

8.3 ROLES AND RESPONSIBILITIES

WORKFORCE AND ALL CONTRACTORS

- Required to ensure that all waste generated during exploration activities is removed and disposed of accordingly including providing evidence in the form of waste transfer receipts for the waste moved off site.
- Ensure no windblown rubbish pollutes the environment, and
- Remove waste on a regular basis to prevent vermin.

SITE MANAGER AND ENVIRONMENTAL COORDINATOR

- Required to inspect receipts and evidence of correct waste handling.
- Review waste management practices regularly during the construction and exploration operations on site.

8.4 SOLID AND LIQUID NON-MINERAL WASTE

The Project site will set up a form of recycling system thus reducing its impacts associated with solid waste generation. Where possible the Proponent will implement measures to reduce, reuse and recycle waste generated as part of the operations. In order to achieve this a temporary waste storage facility will be required.

Waste will be controlled through prevention and mitigation measures as follows:

- Reduce, reuse, and recycle where possible
- Storage of domestic waste on site may result in the attraction of unwanted scavengers and should be disposed of the accredited site as soon as is feasible, and
- Hydrocarbon and chemical contaminated solids have the potential to cause contamination to the soil or groundwater thus correct storage and disposal methods are required. Some of these materials can be recycled or used by other facilities.

Table 6- Waste Mitigation Measures

Responsibility	Exploration Manager Site Manager Employees
Potential issues or impacts	– Soil and ground water contamination due to spillage – Land and water pollution. – Loss of biodiversity – Infectious diseases
Waste Management Plan	The Proponent should compile a waste management plan that should address as a minimum the mitigation measures included below
Hazardous waste	All vehicles (4x4 vehicles and trucks) and equipment on site should be provided with an oil spill kit: - All spillages should be cleaned immediately and contaminated waste disposed of as it occurs in the appropriate hazardous waste containers (sealable drums) on site, and removed off site at the end of each day to the closest recognised, appropriate hazardous waste disposal site in the vicinity or as soon as possible when working in remote areas - Once spill kits are utilised, the kits need to be replenished to ensure full kit available at all times
	All mining vehicles should be maintained regularly to prevent oil leakages. Maintenance of vehicles is not permitted to occur on site as far as reasonably possible, but if maintenance is to be undertaken on site, measures need to be put in place to avoid hydrocarbon spillages.
	Maintenance and washing of vehicles should be conducted at a suitable site/facility which adhere to the following: – The work area/facility should be lined to be impermeable – The work area/facility should have an oil-water separator (oil trap) to collect any run-off from the washing and or maintenance activities, or be equipped with an oil and water separation system
	Spilled oil or fuel should be treated as hazardous waste, disposed of as it occurs in the appropriate hazardous waste containers (sealable drums) on site, and removed off site at the end of each day to the closest recognised, appropriate hazardous waste disposal site in the vicinity or as soon as possible when working in remote areas. All such waste should be provided to specialists in the handing and treatment of such materials.

	All hazardous substances (e.g., fuel, grease, oil, drilling fluids etc.) or chemicals should be stored in a specific location at the exploration campsite on an impermeable surface which is bunded.
General waste	The exploration site should be kept tidy at all times. All domestic and general waste produced daily should be contained: – No waste may be buried or burned – No waste is to be left uncontained, in suitable containers, over night – Waste containers (bins) should be emptied regularly and removed from site to the nearest official waste disposal site. All recyclable waste needs to be taken to the nearest recycling depot if available – A sufficient number of separate waste containers (bins) for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such – Exploration personnel should be sensitised to dispose of waste in a responsible manner and not to litter – No waste may remain on site after the completion of the project
Residual mineral samples	Samples that will not be used for further analysis or submitted to MME should be taken off site or used (with the required permission from the affected landowner and/or tenant) to repair any possible damaged roads. No samples are to be dumped at site or in the vicinity of the site as to not affect rehabilitation efficiency through physical and chemical pollution of weathering samples.
Littering and environmental contamination from waste	No littering by workers shall be allowed.
	All litter on and around the site must be picked up and placed in the bins provided
	The site should be kept tidy and free of litter at all times. All domestic and general waste produced on a daily basis should be cleaned and contained daily.
	No solid waste landfill will be established at the site.
	No waste shall be burned or buried anywhere unless permitted to do so.
	Waste shall be collected and shall be removed regularly to avoid bad odours.
	Hazardous and non-hazardous waste shall be stored separately at all times.
Environmental contamination	Hydrocarbon and chemical contaminated solids must be stored correctly and disposed of by registered companies.

from liquid waste	Safe disposal certificates must be kept and provided to the exploration manager on request.
Sewage and grey water from temporary portable toilets on site	Portable toilets such as portable camping units, must be provided during exploration
	Discharging of the portable units are to be conducted at an existing suitable facility
Monitoring Requirements	1. Monitor whether the provisions set out in this EMP concerning waste management is being applied as per instructions 2. All non-compliances should be recorded and discussed at weekly site meetings and timeous remedial actions taken 3. All guilty parties that are in contravention of the provisions set out for managing waste should be given a penalty and according to the severity of the impact appropriate steps taken

8.5 WASTE DISPOSAL MONITORING

Certificates to prove the safe disposal of waste from a permitted hazardous waste disposal site must be provided to the manager upon request.

9 SPILL MANAGEMENT PROGRAMME

9.1 INTRODUCTION

The uncontrolled release of fuels and other chemicals has the potential to result in the contamination of soil, groundwater, which may lead to serious environmental harm. On this basis, the storage and use of fuels or other chemicals must be managed to minimise the risk of a release, and measures must be in place to promptly address impacts should a release occur.

9.2 OBJECTIVES

This spill management plan has been prepared to minimise the potential for the uncontrolled release of fuels, oils and other chemicals. Preventative measures to minimise the potential for a spill are listed. Should a spill occur, this plan provides guidance for the proponent on the appropriate spill response measures.

9.3 ROLES AND RESPONSIBILITIES

WORKFORCE AND ALL CONTRACTORS
Required to implement the spill prevention and response measures listed below.

SITE MANAGER/ ENVIRONMENTAL MANAGER
Required to ensure that appropriate spill prevention measures (listed below) are implemented and that any spills have been appropriately managed and reported.

9.4 SPILL PREVENTION MEASURES

The following management measures are to be implemented by the Proponent:

- Spill kits are to be made available throughout the site. The kits are to include, as a minimum, the following items:
    - Absorbent materials
    - Shovels
    - Heavy-duty plastic bags
    - Protective clothing (e.g., gloves and overalls), and
- Major servicing of equipment shall be undertaken off-site in appropriately equipped workshops
- Ensure drill pads liners and spill kits are in place,
- All vehicles and machinery undergoing maintenance must have drip trays to collect leakages of lubricants and oil
- Consider alternative sites when the water table is too high,

- Accidental spills and leaks (including absorption material) to be cleaned as soon as possible
- Store bulk fuel in adequate containment areas (non-porous surface and bunded)
- No damaged containers in use
- Provision of adequate and frequent training on spill management, spill response and refuelling must be provided to all onsite staff and contractors
- Fuels, lubricants, and chemicals are to be stored within appropriately sized, impermeable bunds or trays with a capacity not less than 110% of the total volume of products stored
- All fuel and chemical storage and handling equipment (including transfer hoses, etc.) shall be well maintained
- Storage and handling of fuels and chemicals shall follow relevant legislation and regulations
- No refuelling is to take place within 50 metres of groundwater boreholes and
- MSDS are to be kept for each chemical used on site. These must be easily accessible to all personnel.

9.5 SPILL RESPONSE MEASURES

The primary concern, in the event of any spill, is the health and safety of any residents/ employees and contractors in the vicinity. Of secondary, but highly significant, importance, is the protection of water sources and then soil and vegetation.

The following points therefore apply to all areas on the site:

- Assess the situation for potential hazards.
- Do not come into contact with the spilled substance until it has been characterised and necessary personal protective equipment (PPE) is provided.
- Isolate the area as required.
- Notify the site manager or safety, health, and environmental coordinator.

The following measures are to be implemented in response to a spill:

- Spills are to be stopped at source as soon as possible (e.g., close valve or upright drum)
- Spilt material is to be contained to the smallest area possible using a combination of absorbent material, earthen bunds, or other containment methods
- Spilt material is to be recovered as soon as possible using appropriate equipment. In most cases, it will be necessary to excavate the underlying soils until clean soils are encountered
- All contaminated materials recovered subsequent to a spill, including soils, absorbent pads, and sawdust, are to be disposed to appropriately licenced facilities

- The manager or safety, health and environmental coordinator are to be informed as soon as possible in the event of a spill, and
- A written Incident Report must be submitted to the manager.

Table 7 - Spill mitigation measures

Responsibility	Exploration Manager Site Manager Employees
Potential issues or impacts	Soil and ground water contamination due to spillage
Stored Hazardous Chemicals	Hazardous chemicals are to be stored in bunded areas
	Hazardous chemicals (such as fuels) are to be handled over areas provided with impervious surfaces
	Spills of hazardous chemicals are to be contained and cleaned-up to ensure protection of the environment
	All the necessary PPE required for the safe handling and use of petrochemicals and oils shall be provided to, and used or worn by, the onsite staff
Machinery and Equipment Maintenance	Major servicing of equipment shall be undertaken off site or in appropriately equipped workshops
	For small repairs and required maintenance activities all reasonable precautions to avoid oil and fuel spills must be taken (e.g., spill trays, impervious sheets).
	Vehicles and machinery are to be regularly serviced to minimise oil and fuel leaks
	All the necessary PPE required for maintenance activities must be issued to staff whose duty it is to manage and maintain the machinery and equipment.

The table below shows the environmental risks and issues, and mitigation and monitoring measures for the Spill of hazardous substances.

Table 8 - Spill of Hazardous Substances

Responsibility	- Exploration Manager - Site Manager - Environmental Manager	
Potential issues or impacts	Hydrocarbon and chemical handling and storage can cause spillages that lead to groundwater contamination and soil contamination.	
Management/ Mitigation measures	Safe delivery and handling	1. Training employees and toolbox talks 2. Good housekeeping across the site 3. Fuel and chemicals are handled with care 4. Spill kits to be at designated areas across the site or available for use during refuelling, fuel/chemical delivery, or use. Absorption material should be available and at hand. Where sawdust is used it should be cleaned up immediately and not left for long periods as this poses a fire hazard 5. Any major spill is reported once containment has been achieved 6. Equipment to be well maintained and serviced regularly 7. In the field, the use of hydrocarbons under 200 litres can be used for mobile refuelling or servicing
	Storage	1. All tanks to be stored on a non-porous floor and within a bunded area. 2. Bund to be capable of storing at least 110% of the volume of the largest tank 3. All containers to be suitable for use and not damaged 4. Tanks are locked at all time 5. Spill kits available at storage locations and around the site at suitable locations
	Refuelling	1. Drip tray to be used during refuelling of vehicles and on an impermeable flat surface where possible 2. A funnel should be available and used to avoid spillage during decanting

	Rehabilitation	Contaminated soils should be removed and deposited on lined storage areas for rehabilitation purposes. Rehabilitation can take place naturally by adding water, air and fertiliser. The process can be accelerated by using special additives that will breakdown the hydrocarbons.
Monitoring requirements	1. Daily observations when fuels/chemicals are delivered and handled 2. Supervision during refueling 3. Weekly observations monitor containment and storage 4. Establish an internal land clearing permit system that restricts advance clearing. 5. Monitor the level of hydrocarbons in contaminated soils after a year of rehabilitation. 6. Monitor each year until the soils are ready for re-use in revegetation projects.	

For large-scale spills over 200L and other significant environmental incidents, the fire services should be contacted as required and the office of the Ministry of Environment, Forestry and Tourism (MEFT) informed of the incident (telephone +264 61 284 2111). All correspondence with MEFT should be undertaken by the manager.

For the clean-up of smaller spills, the relevant material safety data sheet (MSDS) should be consulted to determine the appropriate clean-up procedure. Basic spill response training will be provided as part of the site environmental induction, spill response equipment, including relevant MSDS copies, will be provided in areas where potentially environmentally hazardous chemicals may be used.

9.6 SPILL REPORTING

All major petroleum product spills should be reported to the Ministry of Mines and Energy (MME) on Form PP/11 titled “Reporting of major petroleum product spill”, issued by the ministry.

9.7 REHABILITATION OF CONTAMINATED SOILS

A procedural manual for rehabilitating contaminated soils on site should be developed. All soils that are contaminated with chemicals and or hydrocarbons should be taken to the rehabilitation area.

10 AIR QUALITY MANAGEMENT PROGRAMME

10.1 INTRODUCTION

This air quality management plan describes the strategies and procedures that will be implemented to ensure that the health and amenity of construction workers and nearby sensitive receptors are protected from elevated concentrations of airborne dust and other gaseous emissions (e.g. oxides of nitrogen; nitrogen dioxide, particulate matter; sulphur dioxide and carbon monoxide). Typically, the gases present in an exploration environment include carbon monoxide, hydrogen sulphide, sulphur dioxide and nitrogen dioxide. In cases where generators and other machinery are used, there will be some release of exhaust fumes that will impact the immediate vicinity but will be of short duration.

10.2 OBJECTIVES

This air quality management plan has been prepared to prevent deterioration of air quality and to minimise the potential for emitted dust and airborne pollutants. Preventative measures are listed below.

10.3 RESPONSIBILITIES

WORKFORCE AND ALL CONTRACTORS
To implement the necessary management practices in order to meet the objectives listed above.

SITE MANAGER/ ENVIRONMENTAL COORDINATOR
To ensure that the objectives listed above are being met and to provide performance feedback to the exploration manager.

10.4 AIR QUALITY MANAGEMENT PROCEDURES

Activities that may potentially emit dust and airborne pollutants during the operations include the following:

- Vehicle movements
- Machinery operations

The Proponent will minimise the potential for dust generation and the emission of airborne pollutants by undertaking the following management measures, as required:

- Appropriate speed limits will be set and enforced.
- Ground disturbance will be minimised as far as practical.
- Vehicles and machinery will be maintained so as to limit exhaust fume emissions.

Table 9 - Air Quality Mitigation Measures

Responsibility	– Environmental Manager – Site Manager
Potential issues or impacts	– Impaired visibility for drivers and employees – Respiratory related health issues
Dust and fumes	Appropriately rated and fitted dust masks should be given to personnel working in areas of dust exposure.
	Grey water should be used for dust suppression on a constant basis if available and as required.
	Maintain speed limits.

10.5 AIR QUALITY MONITORING

Visual monitoring of exploration activities can ensure the minimum discharge of airborne dust and other emissions according to the air quality management programme.

1. Daily observations

2. Air quality monitoring:

For RC drilling a dustfall monitoring network, comprising of eight (8) single dustfall units as a minimum, should be maintained and the monthly dustfall results used as indicators to tract the effectiveness of the applied mitigation measures. Dustfall collection should follow the ASTM method.

10.6 ODOURS, NOISE AND VIBRATION IMPACTS

The sensitive receptors within proximity to the site might be the surrounding communal areas. Activities related to the exploration activities have the potential to generate nuisance odours, noise and vibration that can impact the quality of life for neighbouring residents and tourism activities if located in close range. However, this potential impact is minimal due to the nature of the exploration methods employed.

Notwithstanding the above point, the Proponent should continue to ensure potential odours, noise and vibration sources are mitigated through measures such as:

- Avoid noise generating activities at night,
- Ensure appropriate measures are put in place to rectify odours, noise and vibration complaints, should they occur.
- Scheduling of works to avoid disturbance between the hours of 7:00PM and 5:00AM, and
- Procedures for receiving complaints from nearby land users or residents to be in place and mitigation measures to be implemented should construction and exploration generate excessive odours, noise, and vibration, which is unexpected.

Occupational noise and vibration are managed through the health and safety management plan and therefore not applicable to this EMP.

Table *10* below shows the environmental risks and issues, and mitigation and monitoring measures for noise aspects

Table 10 – Noise Aspects

Responsibility	- Exploration Manager - Site Manager
Potential issues or impacts	Excessive noise due to proposed Project operations.
Management/ Mitigation measures	Work hours should be restricted to between dawn and dusk where exploration involving the use of heavy equipment, power tools, and the movement of heavy vehicles is within 500 m from sensitive receptors. In the event that this is not possible, the affected community need to be consulted well in advance to agree on a mutually acceptable solution
Monitoring requirements	Sources of excessive noise will be investigated, and recommendations made for mitigation.

11 ARCHAEOLOGICAL AND HERITAGE PROGRAMME

Areas of the proposed Project is subject to a 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 in the course of development work, subsurface. 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 find" procedure is intended to ensure compliance with relevant provisions of the National Heritage Act, No. 27 of 2004), especially Section 55 (4): "a person who discovers any archaeological object must 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.

Table *11* below shows the environmental risks and issues, and mitigation and monitoring measures for Archaeological and heritage aspects.

Table 11– Archaeological and Heritage Aspects

Responsibility	- Exploration Manager - Site Manager
Potential issues or impacts	Impact on heritage features
Management/ Mitigation measures	Should a heritage site or archaeological site be uncovered or discovered during exploration, a "chance find" procedure should be applied in the order they appear below: – If operating machinery or equipment, stop work – Demarcate the site with danger tape – Determine GPS position if possible – Report findings to foreman – Report findings, site location and actions taken to superintendent – Cease any works in immediate vicinity – Visit the site and consult with any potentially affected community to determine whether work can proceed without damage to findings – Determine and demarcate the exclusion boundary – Site location and details to be added to the project's Geographic Information System (GIS) for field confirmation by an archaeologist – Inspect site and confirm addition to project GIS – Advise the National Heritage Council (NHC) and request written – permission to remove findings from work area

	– Recover, package and label findings for transfer to the National Museum
	Should human remains be found, the following actions will be required: – Apply the chance find procedure as described above – Schedule a field inspection with an archaeologist to confirm that remains are human – Advise and liaise with the NHC and Police – Remains will be recovered and removed to either the National Museum or the National Forensic Laboratory.
SPECIFIC MITIGATION DETAILS	
Archaeology	Obtain inputs from an archaeologist to identify potential archaeological sites in the area and to determine further mitigation where necessary
Monitoring requirements	1. Check that the archaeologist has given a written statement about the location of the known archaeological sites in the area vs the location of the drilling area. 2. Make sure no archaeological site is disturbed whilst excavation and recovery take place 3. Make sure everything of importance, as identified by an appropriate specialist, is removed from site and declared safe by an archaeologist before exploration can continue on the site

11.1 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

11.2 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 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.

12 IMPLEMENTATION OF THE EMP

This environmental management plan:

A. Has been prepared according to a contract with the proponent

B. Has been prepared based on information provided to ECC up to September 2022

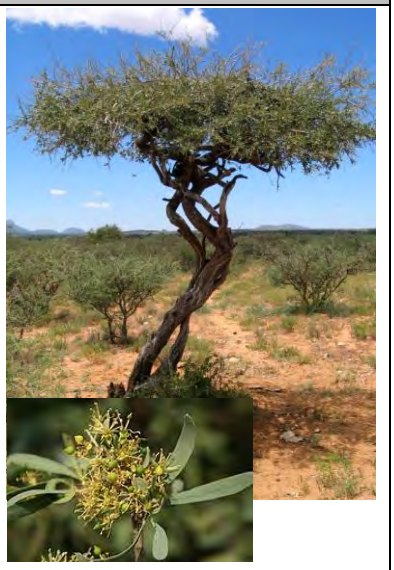
C. Is for the sole use of the proponent, for the sole purpose of an EMP

D. Must not be used (1) by any person other than the proponent or (2) for a purpose other than an EMP

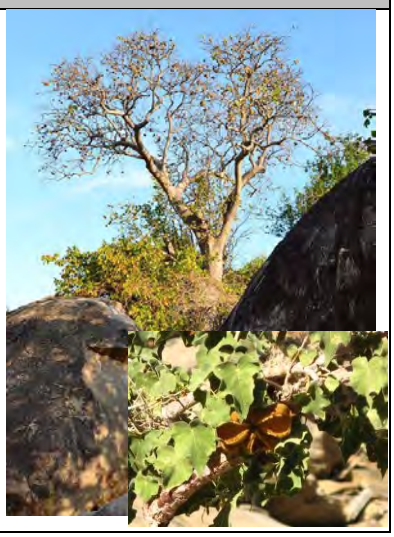
E. Must not be copied without the prior written permission of ECC.

APPENDIX A – NBRI SPECIES LIST OF ENDANGERED, PROTECTED AND VULNERABLE SPECIES

SPECIES	ENDEMISM	PROTECTED	IUCN 1	IUCN 2	IMAGE
Aloe dinteri a.berger	Near endemic	Protected			
Aloe hereroensis engl. Var. Hereroensis		Protected			
Ansellia africana lindl.		Protected			
Baikiaea plurijuga harms		Forestry protected	Near threatened	Near threatened	

SPECIES	ENDEMISM	PROTECTED	IUCN 1	IUCN 2	IMAGE
Boscia albitrunca (Burch.) Gilg & Gilg-Ben.		Forestry Protected			
Burkea africana Hook.		Forestry Protected			
Colophospermum mopane (J.Kirk ex Benth.) J.Kirk ex J.Léonard		Forestry Protected			
Cyphostemma ruacanense (Exell & Mendonça) Desc.				Near threatened	

SPECIES	ENDEMISM	PROTECTED	IUCN 1	IUCN 2	IMAGE
Cyphostemma uter (Exell & Mendonça) Desc.	Near Endemic	Protected		Near threatened	
Entandrophragma spicatum (C.DC.) Sprague		Forestry Protected			
Eremiolirion amboense (Schinz) J.C.Manning & C.A.Mannheimer	Endemic			Near Threatened	
Euphorbia chamaesycoides B.Nord.	Endemic			Vulnerable	

SPECIES	ENDEMISM	PROTECTED	IUCN 1	IUCN 2	IMAGE
Euphorbia insarmentosa P.G.Mey.	Endemic			Near Threatened	
Faidherbia albida (Delile) A.Chev.		Forestry Protected			
Gonialoe dinteri (A.Berger) Boatwr. & J.C.Manning	Near Endemic	Protected			
Maerua schinzii Pax		Forestry Protected			
Pachypodium lealii Welw.	Near Endemic	Protected			
Sterculia africana (Lour.) Fiori var. africana		Forestry Protected			

SPECIES	ENDEMISM	PROTECTED	IUCN 1	IUCN 2	IMAGE