ENVIRONMENTAL MANAGEMENT PLAN

FOR PROPOSED EXPLORATION ACTIVITIES ON EPL 6124 AROUND SESFONTEIN AREA, KUNENE REGION



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1.1 BACKGROUND

Kaoko Mining Namibia (Pty) Ltd being the Proponent, proposes to conduct the following activity: **Exploration activities on EPL 6124 around Sesfontein area, Kunene Region.**

Eco-Wise Environmental Consulting cc as an independent environmental consultancy has been appointed by the Proponent to undertake the Environmental Impact Assessment (EIA), develop an Environmental Management Plan (EMP) and apply for an Environmental Clearance Certificate for the proposed project. The EMP has been developed in terms of the Environmental Management Act (EMA) No 7 of 2007, EIA Regulations of 2012, related international environmental treaties and conventions binding to Namibia. This Environmental Management Plan (EMP) has been developed to manage all the impacts, which were identified during the environmental assessment of the project. Exploration is listed as an activity, which cannot be undertaken without an EIA. The project therefore falls under mining and quarrying activities.

1.2 PROJECT ACTIVITIES

The following activities will be done under exploration:

- Research and reconnaissance
- Trenching and drilling
- Geochemical sampling and analysis
- Mapping

2. EMP OBJECTIVES

The EMP aims to take a pro-active route by addressing potential problems before they occur. The objectives of the EMP are therefore;

- To outline mitigation measures in order to manage environmental and socio-economic impacts associated with the project
- Provide a framework for implementing the management actions recommended in the EIA for exploration activities.
- To ensure that the project will comply with relevant environmental legislations of Namibia and other requirements throughout its activities.

3. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

The proponent will be required to abide to different legislations relating to the project. The Environmental Management Act No. 7 of 2007 and its Regulation of 2012 were the main legislations used as guiding tools during the development of the EMP. Table 1, indicate the relevant legislations related to the project.

Table 1: Relevant legislation and policies related to the project

Aspect	Legislation	Relevant Provisions	Relevance to the Project
The Constitution	Namibian Constitution First Amendment Act 34 of 1998	 According to article 91(c) it provides for duty to guard against "the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia" Article 95 (I) deals with the "maintenance of ecosystems, essential ecological processes and biological diversity" and sustainable use of the country's natural resources. 	 During exploration activities, sustainable practices should be performed.
Environmental	Environmental Management Act 7 of 2007	 States that, projects with significant environmental impacts are subject to an environmental assessment process (Section 27). Requires for adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions on a project (Section 2). 	 of this project. Adverts should be published in two local newspapers twice. The public and relevant authorities should be consulted during the process of public participation as per the

EIA Regulations (2012)	– Lists all activities, which cannot be undertaken without an EIA.	 This project is listed under mining and quarrying activities. Activity 3.3 states that resource extraction, manipulation, conservation and related activities require an EIA.
Convention on Biological Diversity (1992)	- Article 1 lists the conservation of biological diversity amongst the objectives of the convention.	- The Proponent should consider the impact of the project on the biodiversity of the area. The area of study has protected plant species hence the need to conserve them during operations.
Nature Conservation Ordinance No. 4 of 1975		 Indigenous and protected plants should be protected within the areas of works.
Minerals (Prospecting and Mining) Act,1992 (Act 33 1 of 1992)	To provide for the reconnaissance, prospecting and mining for, and disposal of, and the exercise of control over, minerals in Namibia; and to provide for matters incidental thereto. "mineral" means any substance, whether in solid, liquid or gaseous form, occurring naturally in, on or under any land and having been formed by, or subjected to, a geological process, excluding-(c) subject to the provision of subsection (2), soil, sand, clay, gravel or stone (other than rock material specified in	- The intended activity involves exploration of minerals mainly copper ore.

		Part 2 of schedule 1) .	
Soil	Soil Conservation Act 6 of 1969	This act covers the prevention and combating of soil erosion; the conservation, improvement and manner of use of the soil and vegetation; and the protection of water sources	- Limited trenching will leave earthed soils hence it should not be left unrehabilitated.
Water	Water Act 54 of 1956	 Prohibits the pollution of underground and surface water bodies. 	 If drilling activities go below the level of the water table, they might be possibilities of pollution. Hence the pollution of water resources should be avoided during the exploration process.
Health and Safety	Labour Act (No 11 of 2007)	 This act emphasizes and regulates basic terms and conditions of employment, it guarantees prospective health, safety and welfare of employees and protects employees from unfair labour practices. 	 The Proponent will be obliged to create a safe working environment for the employees.
	Public Health and Environmental Act, 2015	 The act mainly emphasis on proper management of the environment, to prevent negative health impacts. The act promotes proper waste management. 	 Proper waste management should be promoted to prevent nuisance, which can consequently affect public health. Recycling, reuse and reduce must be practised at all times thus if any waste is generated.
	Heritage Act	 The Heritage Act of 2004 makes provision for the developer to identify and assess any archaeological and historical sites of significance. The 	 In an event that the Proponent comes across any archaeological or historical sites of significance, they should report immediately to National Heritage Council

existence of any such sites should be	
reported to the Monuments Council as	
soon as possible. The Council may serve	
notice that prohibits any activities as	
prescribed within a specified distance of	
an identified heritage/archaeology site.	

4. ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION FRAMEWORK

4.1 ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN ADMINISTRATION AND TRAINING

This Environmental Management Plan (EMP) shall clearly state the roles and responsibilities of all stakeholders to ensure that the EMP is fully implemented. The proponent shall appoint an overall responsible person (Environmental Control Officer) to ensure the successful implementation of the EMP. The Environmental Control Officer needs to have qualifications and knowledge in environmental management implementation.

4.2 ROLES AND RESPONSIBILITIES

Proponent (Kaoko Mining Namibia Pty Ltd): has the overall responsibility for all financial and work force provisions, which will facilitate the implementation of this EMP. The proponent is responsible for the appointment of other personnel responsible for the implementation of this EMP.

Competent and Monitoring authority (The Department of Environmental Affairs: Ministry of Environment and Tourism): Responsible for the review and approval of the EIA and EMP documents.

Project Manager - required in carrying out the overall responsibility for the implementation of the EMP to ensure that all required resources and mechanisms for environmental management are in place.

Health Safety and Environmental Site Officer (HSEO) - responsible of all environmental issues (waste management) and safety of employees. The HSEO should record and report all incidents on site.

Environmental Control Officer (ECO) - required to take independent responsibility of the implementation of this EMP. ECO is contracted to conduct periodic auditing of the sites, compilation of all reports to be submitted to MET: DEA for renewal of the environmental clearance certificate.

Employees - required to follow requirements as directed by the project manager. Report any potential environmental issues to the project manager or HSEO.

Contractors - all contractors (including subcontractors) and service providers are ultimately responsible for:

• Complying with the Environmental Management Plan specifications where applicable;

- Provide Environmental; Method Statements to the Project Manager with regards to how certain activities on-site will be conducted.
- Adhering to any environmental instructions issued by the Project Manager
- Arrange that all the contractor's employees receive training. Trainings have to be appropriate for the level of the tasks and functions undertaken.

<u>The Environmental Method Statement referred to above will cover applicable details with regard to:</u>

- Equipment to be used;
- Getting the equipment to and from site;
- How the equipment will be moved while on-site;
- How and where material will be stored;
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- Identified potential impacts of the activity and mitigation measures thereof;
- Compliance/non-compliance with the Environmental Specifications; and
- Any other information deemed necessary by the Project Manager.

5. ENVIRONMENTAL MANAGEMENT PLAN

The following tables form the core of this EMP for the exploration phase. The below information shown in the tables, should be used as a checklist on site.

5.1 MANAGEMENT OF NEGATIVE IMPACTS ASSOCIATED WITH EXPLORATION PHASE:

1. Impact on landscape

Impacts	Description	Mitigation	Project Phase	Responsibility
		Measures		
Landscape	Exploration activities ie drilling and limited trenching will leave scars on the landscape. Disturbance on the land can consequently affect animals in the area in terms of their habitancy and also the general aesthetic value of the land. Less harm is generally expected during the exploration phase given that trenching shall be limited. Trenching shall only be used to understand the surface geology whereby picks and shovels will be used.	 Limited trenching should be done to understand the surface geology but when need arise to understand the subsurface geology, drilling should be used. Removed rocks and soil should be replaced back and levelling of the area done so as to try to restore the area to its natural state. 		Kaoko Mining Namibia Pty Ltd, Contractors, Project Manager and appointed Environmental Control Officer

2. Impact on fauna

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Fauna	Exploration activities such as walking, trenching and drilling might disturb animals. Noise generated from these activities might scare away animals. Poaching activities for meat can also be a cause of concern. Pits created might pose a hazard to animals therefore the Proponent should stick to limited trenching and use drilling for examination of subsurface geology.	 Maintain shallow trenches for surface geology exploration and drilling for subsurface geology examination Poaching of wildlife shall not be allowed. A drilling interval should be established, used and adhered to Working hours should be limited to minimum of 8 hours per day Noise should be addressed and mitigated at an early stage. Proper and timely maintenance of machineries and vehicles to prevent noise. Rehabilitate the area after the exploration activities. 	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Contractors, Project Manager and appointed Environmental Control Officer

3. Dust

Impacts	Description	Mitigation	Project Phase	Responsibility
		Measures		
Dust	The following activities might cause accumulation of dust; trenching, movement of vehicles and machines. People at risk are likely to be employees working on the area. Accumulation of	 Soil watering when soil works are being executed and where dust is emitted People at site should be provided with respirators 	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Contractors, Project Manager and appointed
	dust might lead to respiratory problems.	Regular monitoring and review to ensure safe operation.		Environmental Control Officer

4. Generation of waste

Impacts	Description	Mitigation	Project Phase	Responsibility
		Measures		
Generation	Waste might be generated from	• Contaminated wastes in the form of soil,	Exploration	Kaoko Mining
of waste	unearthed rocks and soil, oils, fuel, food leftovers, papers and plastics. It is definite that waste will be generated from unearthed rocks and soil but if mitigation measures are implemented such as making sure that after completion of exploration activities such as trenching, removed soil layers are replaced and levelling are done so	 litter and other material must be disposed off at an appropriate disposal site. Strictly, no burning of waste on the site or at the disposal site is allowed as it possess environmental and public health impacts After completion of exploration activities such as trenching, removed soil layers and rocks must be replaced and levelling must be done so that the original condition is 	Phase	Namibia Pty Ltd, Project Manager, Contractors and ECO
	replaced and levelling are done so that the original condition is restored, the impact will be of low environmental significance.	be done so that the original condition is restored.		

5. Noise

Impacts	Description	Mitigation	Project Phase	Responsibility
		Measures		
Noise	-Exploration drilling activities -Frequent movement of exploration vehicles Noise generated might disturb animals and result in some animals changing their habitant. If noise is generated, it might cause annoyance to passers-by.	 A drilling interval will be established, used and adhered to Working hours should be limited to minimum of 8 hours per day Noise should be addressed and mitigated at an early stage. Proper and timely maintenance of machineries and vehicles Employees to be equipped with ear protection equipment. 	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Contractors, Site Manager & appointed ECO

6. Disturbance of Vegetation

Impacts	Description	Mitigation	Project	Responsibility
Disturbance of vegetation	The EPL is located inside the Anabeb Conservancy. It is essential to note that the area does not have dense vegetation. However, flora might be affected during the following activities, drilling, limited trenching and creation of cut lines for accessibility of vehicles. Protected plant species are most severely affected since the slightest disruption in their habitat can result in extinction. The Proponent should therefore identify these protected species and cooperate them in the project	 Protected plant species shall not be removed Massive clearing shall not be allowed Maintain the stated boundaries, no activates shall be carried outside the demarcated boundaries All the major trees will be preserved and the activities will fit into the environment without affecting the trees. Upon completion of drilling activities, it is encouraged to plant more trees around the sites to restore the sites When necessary a permit must be obtained from the Directorate of Forestry before removing a major tree species. Exploration personnel shall not be allowed to cut trees for firewood 	Exploration Phase	Kaoko Mining Namibia (Pty) Ltd, ECO

7. Impact on soil

Impacts	Description	Mitigation	Project	Responsibility
		Measures	Phase	
Soil	It is definite that soil shall be disturbed by exploration activities such as drilling and limited trenching. Soil might also be partly affected by oil or fuel leakages from vehicular and drilling machines.	 After completion of exploration activities such as trenching, removed soil layers must be replaced and levelling must be done so that the original condition is restored. Proper care should be taken so that there is no spill that would cause soil contamination If any hazardous waste is produced it should be properly handled and sent for disposal to appropriate disposal areas Fuels shall not be kept/stored at the site 	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Contractors, Project Manager and appointed Environmental Control Officer

8. Impact on surface and groundwater

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Surface and groundwater contamination	There will be no storage of oils and fuel on site, however there is risk of spillage of hydrocarbons from vehicles and drilling machine which may result in groundwater contamination. There is an ephemeral river (Hoanib River) which passes on the northern boundary of EPL 6124. The Proponent is therefore required to ensure that no spillages come from vehicles and machinery.	conducted in designated areas only, preferably off-site.	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Contractors, appointed HSEO

5.2 MANAGEMENT OF SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH EXPLORATION

1. Occupational Health and Safety

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
OHS	Noise, dust and occupational stress are hazards, which are likely to be encountered during exploration phase.	 Conduct Hazard identification and risk assessments Comply with all Health and Safety standards specified in the Labour Act. Provide all staff on site with protective equipment (helmets, gloves, respirators, work suits, earplugs, goggles and safety shoes where applicable). Use of dust suppression measures Reduce noise exposure by isolating noisy equipment and rotate tasks Provision of First Aid at the site Provisions of immediate accident/incident reporting and investigation. Safety Posters and slogans should be exhibited at conspicuous places. 	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Contractors

2. Heritage impact

Impacts	Description	Mitigation	Project	Responsibility
		Measures	Phase	
Heritage	The proposed exploration activities are not proposed to take place in an area that has known Heritage Sites. However, there might be unknown archaeological remains within the study area hence the Proponent should implement the chance find procedures and immediately consult the Heritage Council if they come across anything of archaeological significance.	The Proponent should consult the headman of the area before conducting any work.	Exploration Phase	Kaoko Mining Namibia (Pty) Ltd, Contractors

3. Population Influx

Impacts	Description	Mitigation	Project Phase	Responsibility
		Measures		
Population	At the stage of exploration, few	• Local employment should be a	Exploration Phase	Kaoko Mining
Influx	people will be employed hence the impact will be of low environmental significance.	priority so as to reduce the number of outsiders entering Opuwo area		Namibia (Pty) Ltd

4. Risk and spread of HIV/AIDS

Impacts	Description	Mitigation Project Phase	Responsibility
		Measures	
HIV/AIDS	Even though a few employees will be employed during this phase but the virus might still spread. The fact that people will be coming from different locations and meeting at one place can result in anti-social behaviours	Employer should allocate time for Exploration Phase employees to visit their families.	Kaoko Mining Namibia (Pty) Ltd,
	like prostitution hence the spread of HIV/AIDS.		

5. Cumulative impacts

Impacts	Description	Mitigation	Project Phase	Responsibility
		Measures		
Cumulative	Alternation of existing landscape	Limited trenching should be done to	Exploration	Kaoko Mining
impacts	caused by limited trenching and drilling might impact on unknown archaeological heritage and also result in loss of habitancy for some animals which can further affect the food web. The greatest potential impact of the proposed development on the archaeological heritage of the surrounding landscape will be during the removal of topsoil during limited trenching and drilling on identified areas of interest with possible mineral deposits. The proposed works will have a negative archaeological impact on undisturbed areas of ground where topsoil will be removed.	understand the surface geology but when need arise to understand the subsurface geology, drilling should be used. • The Proponent will need to monitor, by seeking consultation from an archaeological consultant during topsoil removal over relatively large areas so as to ensure the full recognition and recording of any buried finds or features. • Removed rocks and soil should be replaced back and levelling of the area done so as to try to restore the area to its natural state.	Phase	Namibia (Pty) Ltd

5.3 POSITIVE IMPACTS ASSOCIATED WITH THE PROJECT

1. Local empowerment

Impacts	Description	Enhancement Required	Project Phase	Responsibility
Local empowerment	The shareholders of Kaoko Mining Namibia (Pty) Ltd are all Namibian citizens who managed to group their licenses together in a bid to explore for the possible discovery of a medium to large minable copper deposit.	Continue to promote locals	Exploration Phase	Kaoko Mining Namibia (Pty) Ltd

2. Employment creation

Impacts	Description	Enhancement Required	Project Phase	Responsibility
Employment creation	It is definite that jobs will be created during the exploration phase. The type of jobs will range from skilled, semi-skilled and unskilled and locals will definitely be recruited when manual labour is required.	 Employ locals in all casual labour and ensure gender equality. Equity, transparency, to be put into account when hiring and recruiting 	Exploration Phase	Kaoko Mining Namibia (Pty) Ltd

3 Land utilisation for the benefit of people

Impacts	Description	Enhancement Required	Project Phase	Responsibility
Land utilisation for the benefit of people	Shareholders and hot have raines to start	in future	Exploration	Kaoko Mining Namibia (Pty) Ltd

4. Generation of Revenue

Impacts	Description	Enhancement Required	Project Phase	Responsibility
Generation of	Kaoko Mining Namibia (Pty) Ltd will pay	• The contractors will pay taxes as	Exploration	Kaoko Mining
Revenue	tax hence generating revenue. More taxes will also be generated through contracted and subcontracted companies.	stipulated by the law of Namibia.	Phase	Namibia (Pty) Ltd, appointed contractors

5.4 MANAGEMENT OF IMPACTS AT POST-EXPLORATION PHASE Impact on landscape

Impacts	Description	Mitigation	Project Phase	Responsibility
		Measures		
Post-	The stage of exploration is expected to have	All pits shall be backfilled or	Post-exploration	Kaoko Mining
exploration	minimum damage to the environment as	contoured to a stable angle of	Phase	Namibia (Pty) Ltd
stage	compared to mining. However, the major	repose.		
(Landscape)	issue which need to be looked after the	Stockpile disturbed bedrock on		
(Lanuscape)	phase of exploration is how the project has	site in a safe and stable manner.		
	impacted the landscape. Exploration			
	activities like limited trenching will leave			
	pits although they are expected to be			
	shallow. Pits created during limited			
	trenching need to be rehabilitated.			

6. ENVIRONMENTAL MONITORING

Monitoring will be required to ensure compliance with the EMP. It will be the responsibility of the Environmental Control Officer to ensure compliance with the EMP, and carry out monitoring/auditing activities. The Environmental Control Officer must have the appropriate experience and qualifications to undertake the necessary tasks. The Environmental Control Officer will report to the Proponent should any non-compliance be evident or corrective action necessary. The suggested monitoring details are outlined in table 2 below.

Table 2: Monitoring of identified impacts

IMPACT	RECEPTORS	TYPE OF MONITORING	PERIOD/TIME
Alternation of existing landscape	Environment	• Inspection	Period of limited trenching and drilling
Dust	Employees	Regular site inspections	Daily
Impact on fauna	Environment	Inspection	Period of trenching and drilling
Pollution	Environment	 Tests on the nearby surface water body and boreholes 	Once in a year
Noise	Employees Surrounding areas	Noise monitoring	Daily
Vegetation loss	Environment	 Inspection of protected plant species and incorporate them into the development 	Period of limited trenching, drilling and creating cutlines.
Heritage	Environment	Inspection	Period of exploration
O.H. S	Employees	 Site inspection Conducting Hazard and Risk Assessments Health and safety incident monitoring 	• Daily
Impact on soil	Environment.	Monitoring moisture content & texture of soil	Quarterly
Generation of waste (solid)	Land	Site inspection on housekeepingRegular collection of waste	DailyWeekly
HIV/AIDS	Employees	Free testing	Annually

7. CONCLUSIONS

The proponent will be responsible to oversee that the EMP is implemented and made binding to the contractor by including the EMP in the contract documentation. The above Environmental Management Plan, if properly implemented, will help to minimise adverse impacts on the environment. Where impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts.

The Environmental Management Plan should be used as an on-site reference document during the proposed development and auditing should take place in order to determine compliance with the EMP for the proposed sites. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken.