# ENVIRONMENTAL MANAGEMENT PLAN FOR PROPOSED EXPLORATION ACTIVITIES ON EPLS 6123 & 5600 NEAR SESFONTEIN, 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 EPLs 6123, 5600 near Sesfontein, 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	<ul> <li>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"</li> <li>Article 95 (I) deals with the "maintenance of ecosystems, essential ecological processes and biological diversity" and sustainable use of the country's natural resources.</li> </ul>	•
Environmental	Environmental Management Act 7 of 2007	<ul> <li>States that, projects with significant environmental impacts are subject to an environmental assessment process (Section 27).</li> <li>Requires for adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions on a project (Section 2).</li> </ul>	<ul> <li>activities which require an EIA.</li> <li>As stated in the act, adverts should be published in two local newspapers twice.</li> <li>The public and relevant authorities should be consulted during the process of public participation as per the</li> </ul>

EIA Regulations (2012)	<ul> <li>Lists all activities, which cannot be undertaken without an EIA.</li> </ul>	<ul> <li>This project is listed under mining and quarrying activities.</li> <li>Activity 3.3 states that resource extraction, manipulation, conservation and related activities require an EIA.</li> </ul>
Convention on Biological Diversity (1992)	- Article 1 lists the conservation of biological diversity amongst the objectives of the convention.	<ul> <li>The area under study is under conservancies hence the need for the proponent to carry out the project in a sustainable manner such that the biodiversity of the area is not disturbed.</li> </ul>
Nature Conservation Ordinance No. 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants	<ul> <li>The area of study has protected plants around hence the need of the proponent to protect the plants. Indigenous and protected plants should be incorporated within the development of the project.</li> </ul>
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,	<ul> <li>The intended activity involves exploration of minerals mainly copper ore.</li> </ul>

Soil	Soil Conservation Act	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 Part 2 of schedule 1). This act covers the prevention and combating of soil erosion; the conservation,	<ul> <li>Limited trenching will leave earthed soils hence it should not be left un-</li> </ul>
	6 of 1969	improvement and manner of use of the soil and vegetation; and the protection of water sources	rehabilitated.
Water	Water Act 54 of 1956	<ul> <li>Prohibits the pollution of underground and surface water bodies.</li> </ul>	<ul> <li>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.</li> </ul>
Health and Safety	Labour Act (No 11 of 2007)	<ul> <li>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.</li> </ul>	

Public Health and Environmental Act, 2015	<ul> <li>The act mainly emphasis on proper management of the environment, to prevent negative health impacts.</li> <li>The act promotes proper waste management.</li> </ul>	<ul> <li>Proper waste management should be promoted to prevent nuisance, which can consequently affect public health.</li> <li>Recycling, reuse and reduce must be practised at all times thus if any waste is generated.</li> </ul>
Heritage Act	The Heritage Act of 2004 makes provision for the developer to identify and assess any archaeological and historical sites of significance. The 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.	<ul> <li>Within the EPLs there are no any declared heritage sites nevertheless the area might have unknown archaeological remains.</li> <li>In an event that the proponent comes across any archaeological or historical sites of significance, they should report immediately to Heritage Council</li> </ul>

#### 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.

The Environmental Method Statement referred to above will cover applicable details with regard to:

- 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	The original state of the land will be altered by exploration activities like trenching and drilling. The impact is expected to only affect the study area and if mitigation measures are not implemented the severity will be high and the likelihood will be definite. Less harm is generally expected during the exploration phase given that trenching shall be limited and done at a small scale with the use of shovels and picks. No machinery shall be used during trenching. With mitigation measures the impact is expected to reduce to low environmental significance.	<ul> <li>Limited trenching should be done to understand the surface geology but when need arise to understand the subsurface geology, drilling should be used.</li> <li>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.</li> </ul>	Exploration Phase	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	The area of Sesfontein is rich in wild animals hence the need to conduct the exploration activities in a way that do not disturb the animals. Exploration activities walking around, trenching and drilling might result in loss for animal habitancy. Noise generated from these activities might scare away animals. In addition, wild animals might also be at risk if exploration personnel practice poaching activities for meat. Pits created might pose a hazard to both animals and people therefore the proponent should stick to limited trenching and use drilling for examination of subsurface geology.	<ul> <li>Maintain shallow trenches for surface geology exploration and drilling for subsurface geology examination</li> <li>Poaching of wildlife shall not be allowed.</li> <li>A drilling interval should be established, used and adhered to</li> <li>Working hours should be limited to minimum of 8 hours per day</li> <li>Noise should be addressed and mitigated at an early stage.</li> <li>Proper and timely maintenance of machineries and vehicles to prevent noise.</li> <li>Rehabilitate the area after the exploration activities.</li> </ul>	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	Access roads to the sites are gravel roads hence movement of vehicles will generate dust. Dust is likely to be produced also during limited trenching and drilling. The severity of the impact is expected to be slight such that it will not affect by-passers or animals. Employees working in the area are the ones who might be at risk hence they are expected to cover themselves with dust masks to avoid contracting diseases like pneumoconiosis.	<ul> <li>Soil watering when soil works are being executed and where dust is emitted</li> <li>People at site should be provided with respirators</li> <li>Regular monitoring and review to ensure safe operation.</li> </ul>	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Contractors, Project Manager and appointed Environmental Control Officer

# 4. Generation of waste

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Generation of waste	Waste might be generated from 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 that the original condition is restored, the impact will be of low environmental significance.	<ul> <li>Contaminated wastes in the form of soil, litter and other material must be disposed off at an appropriate disposal site.</li> <li>Strictly, no burning of waste on the site or at the disposal site is allowed as it possess environmental and public health impacts</li> </ul>	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Project Manager, Contractors and ECO

## 5. Noise

Impacts	Description	Mitigation	Project Phase	Responsibility
		Measures		
Noise	Noise will be generated through: -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.	<ul> <li>A drilling interval will be established, used and adhered to</li> <li>Working hours should be limited to minimum of 8 hours per day</li> <li>Noise should be addressed and mitigated at an early stage.</li> <li>Proper and timely maintenance of machineries and vehicles</li> <li>Employees to be equipped with ear protection equipment.</li> </ul>	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Contractors, Site Manager & appointed ECO

# 6. Disturbance of vegetation

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Disturbance of vegetation	The Proponent will use existing roads and in cases that the roads need improvement, they will be upgraded. No new roads will be established but cutlines might only be created for accessibility of vehicles thus when there is need. Vegetation might also be lost during limited trenching and drilling although the severity is expected to be slight. The density of the vegetation around the area is sparse, poor rains which have caused drought for many years has also affected the density and growth of vegetation in the area. However, protected plant species shall not be allowed to be cleared even in cases where cutlines need to be created.	<ul> <li>Protected plant species shall not be removed</li> <li>Massive clearing shall not be allowed</li> <li>Maintain the stated boundaries, no activates shall be carried outside the demarcated boundaries</li> <li>All the major trees will be preserved and the activities will fit into the environment without affecting the trees.</li> <li>Upon completion of drilling activities, it is encouraged to plant more trees around the sites to restore the sites</li> <li>When necessary a permit must be</li> </ul>	Exploration Phase	Kaoko Mining Namibia (Pty) Ltd, ECO

# 7. Impact on soil

Impacts	Description	Mitigation	Project	Responsibility
		Measures	Phase	
Soil	Soil will be disturbed during drilling and limited trenching. Soil might also be partly affected by oil or fuel leakages from vehicular and drilling machines. The impact is expected to affect only the study area and it will be definite that soil will be disturbed.	• 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.	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Contractors, Project Manager and appointed ECO

# 8. Impact on surface and groundwater

Impacts	Description	Mitigation	Project	Responsibility
		Measures	Phase	
Surface and	There will be no storage of oils and fuel	Implement a maintenance programme	Exploration	Kaoko Mining
groundwater	on site, however there is risk of spillage	to ensure all vehicles, machinery and	Phase	Namibia Pty
contamination	of hydrocarbons from vehicles and	equipment remain in proper working		Ltd,
	drilling machine which may result in	condition		Contractors,
	environmental contamination. The	Vehicle maintenance should be		appointed
	nearest river is the Hoanib River which	conducted in designated areas only,		HSEO
	is approximately 20km from the site.	preferably off-site.		
	Hoanib River is an ephemeral river	• Waste oils and fuels from drip trays on		
	which can flow during good rain	stationery vehicles and machinery will		
	seasons. The likelihood of surface and	be disposed of as hazardous waste at a		
	groundwater contamination happening	licensed facility by a specialist		
	will be unlikely if mitigation measures	hazardous waste handler.		
	are implemented.			

## 5.2 MANAGEMENT OF SOCIO-ECONOMIC IMPACTS ASSOCIATED WITH EXPLORATION

# 1. Occupational Health and Safety

Impacts	Description	Mitigation	Project Phase	Responsibility
Impacts OHS	Description Noise, dust and occupational stress are hazards, which are likely to be encountered during the exploration phase. Dust emitted during trenching and drilling can cause pneumoconiosis to employees thus if they are exposed to it for prolonged periods. Moreover, work pressure on employees can cause stress hence resulting into accidents.	<ul> <li>Measures</li> <li>Conduct Hazard identification and risk assessments</li> <li>Comply with all Health and Safety standards specified in the Labour Act.</li> <li>Provide all staff on site with protective equipment (helmets, gloves, respirators,</li> </ul>	-	Responsibility Kaoko Mining Namibia Pty Ltd, Contractors

# 2. Heritage impact

Impacts	Description	Mitigation	Project	Responsibility
		Measures	Phase	
Heritage impact	At the sites, there are no known heritage areas or artefacts deemed to be impacted by the exploration activities. However, there might be unknown archaeological remains within the EPLs hence the Proponent is required to follow the chance find procedures and consult the Heritage Council	<ul> <li>The Proponent should consult the headman of the area before conducting any work.</li> <li>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.</li> <li>All works are to be immediately ceased should an archaeological or heritage resource be</li> </ul>	Exploration Phase	Kaoko Mining Namibia Pty Ltd, Contractors
	immediately.	<ul> <li>discovered.</li> <li>The National Heritage Council of Namibia (NHCN) should advise with regards to the removal, packaging and transfer of the potential resource.</li> </ul>		

# 3. Population Influx

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

# 4. Risk and spread of HIV/AIDS

Impacts	Description	Mi	itigation					Project Phase	Responsibility
		M	easures						
HIV/AIDS	The fact that people will be coming	٠	Employer	should	allocate	time	for	<b>Exploration</b> Phase	Kaoko Mining
	from different locations and meeting		employees	to visit th	eir families.				Namibia (Pty)
	at one place can result in anti-social	•	Free distrib	ution of c	ondoms				Ltd,
	behaviours like prostitution hence								
	the spread of HIV/AIDS. If mitigation								
	measures are implemented, it will be								
	unlikely that the virus will spread.								

# 5. Cumulative impacts

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

have a negative archaeological impact on	done so as to try to restore the area to its	
undisturbed areas of ground where topsoil	natural state.	
will be removed.		

## **5.3 POSITIVE IMPACTS ASSOCIATED WITH THE PROJECT**

## 1. Local empowerment

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

## 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.	<ul> <li>Employ locals in all casual labour and ensure gender equality.</li> <li>Equity, transparency, to be put into account when hiring and recruiting</li> </ul>	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 not have rands to start	,	Exploration	Kaoko Mining Namibia Pty Ltd

# 4. Generation of Revenue

Impacts	Description	Enhancement Required	Project Phase	Responsibility
Generation of Revenue	Kaoko Mining Namibia Pty Ltd will pay tax hence generating revenue. More taxes will also be generated through contracted and subcontracted companies.		Phase Exploration Phase	Kaoko Mining 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		
	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.

ΙΜΡΑCΤ	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	<ul> <li>Tests on the nearby surface water body and boreholes</li> </ul>	Once in a year
Noise	Employees Surrounding areas	Noise monitoring	Daily
Vegetation loss	Environment	<ul> <li>Inspection of protected plant species and incorporate them into the development</li> </ul>	<ul> <li>Period of limited trenching, drilling and creating cutlines.</li> </ul>
Heritage	Environment	Site inspection	Period of exploration
O.H. S	Employees	<ul> <li>Site inspection</li> <li>Conducting Hazard and Risk Assessments</li> <li>Health and safety incident monitoring</li> </ul>	• Daily
Impact on soil	Environment.	Monitoring moisture content & texture of soil	Quarterly
Generation of waste (solid)	Land	<ul> <li>Site inspection on housekeeping</li> <li>Regular collection of waste</li> </ul>	<ul><li>Daily</li><li>Weekly</li></ul>
HIV/AIDS	Employees	Free testing	Annually

**Table 2:** Monitoring of identified impacts

#### 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.