ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED EXPLORATION ACTIVITIES ON EPLs 8576 & 8577 IN OPUWO AREA KUNENE REGION

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1.1 BACKGROUND

Eco-Wise Environmental Consulting cc has been appointed by Precious Kaoko Prospecting (Pty) Ltd as an independent environmental consultancy to undertake the scoping Environmental Impact Assessment (EIA), develop an Environmental Management Plan and apply for an Environmental Clearance Certificate for the proposed exploration activities on EPL 8576 & 8577 in Opuwo area, near Otjiu-West in Kunene Region.

This Environmental Management Plan (EMP) has been developed to manage all the impacts, which were identified during the environmental assessment of the project. The EMP has been developed in terms of the Environmental Management Act (EMA) No 7 of 2007, EIA regulations of 2012 and other legislation binding to Namibia. Exploration is listed as an activity, which cannot be undertaken without an environmental clearance certificate. The project therefore falls under mining and quarrying activities.

1.2 PROJECT ACTIVITIES

The following activities will be done under exploration:

- Research and reconnaissance
- Limited trenching and drilling
- Geochemical sampling and analysis
- Mapping

2. EMP AIMS AND OBJECTIVES

The environmental management plan (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
- 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

Legislations are used as guiding tools during the development of an EMP. The Proponent will be required to abide to different policies, laws, regulation relating to the project. The Environmental Management Act No. 7 of 2007 and its regulation of 2012 were the main legislation, which were used as a guiding tool during the development of the EMP. Table 1, indicate the relevant legislation related to the project.

Table 1: shows 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 (l) 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).	– The EMA should guide the management 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 requirement of the act – The EMP which will guide on the management of the environment should be drafted as per the requirement of the act

	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 environmental clearance certificate.
	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.
	Nature Conservation Ordinance No. 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants	- Indigenous and protected plants should be protected within the areas of works.
	Environmental Assessment Policy of Namibia (1995)	The Policy seeks to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term "environment" is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.	- The EIA considers this term of "environment".
	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"	- The intended activity involves exploration of minerals mainly copper ore.

		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 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 un-rehabilitated.
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 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.	– In an event that, the Proponent comes across any archaeological or historical sites of significance, they should report immediately to the Monuments Council

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 (Precious Kaoko Prospecting 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 Forestry 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. Report all environmental issues to HSEO officer.

Health Safety and Environmental Site Officer (HSEO) - responsible of all environmental issues 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 MEFT: 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.

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 Measures	Project Phase	Responsibility
Landscape	During trenching and drilling, rocks will be disturbed hence affecting the general scenery view of the area.	• 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.	Exploration Phase	Precious Kaoko Prospecting Pty Ltd, Contractors, Project Manager and appointed Environmental Control Officer

2. Impact on fauna

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Fauna	The following exploration activities might disturb animals, walking, trenching and drilling. Noise generated from these activities might scare away animals. Poaching activities will also impact on animals thus if employees practise it. 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.	• 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.	Exploration Phase	Precious Kaoko Prospecting Pty Ltd, Contractors, Project Manager and appointed Environmental Control Officer

3. Dust

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Dust	Dust might accumulate during trenching, movement of vehicles and machines. People at risk are likely to be employees working on the area.	• Soil watering when soil works are being executed and where dust is emitted • People at site should be provided with dust masks • Regular monitoring and review to ensure safe operation.	Exploration Phase	Precious Kaoko Prospecting Pty Ltd, Contractors, Project Manager and appointed Environmental Control Officer

4. Impact of waste

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Impact of waste	Waste might be generated in the form of; unearthed rocks and soils, empty food containers, food leftovers, plastics, papers, bottles, contaminated soils from oil / fuel leakages.	• Contaminated wastes in the form of soil, 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 restored. • Contractor should only be allowed to store oil/fuel on site provided the site store has containment to prevent oil/fuel permeating into the soil in cases of spillages • Servicing of machinery or vehicles on site shall not be allowed • Use drip trays to capture oil drips and spills from machinery or vehicles	Exploration Phase	Precious Kaoko Prospecting Pty Ltd, Project Manager, Contractors and ECO

5. Vegetation Loss

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Vegetation Loss	No massive clearing shall be done. Vegetation might be affected when the need to create cutlines arises. Vegetation might also be affected when there is need to conduct exploration activities in an area where there is vegetation. In cases that vegetation is removed this will cause habitat destruction for both ground dwelling species and tree dwelling species.	• 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	Precious Kaoko Prospecting Pty Ltd, ECO

6. Noise

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Noise	Noise will be generated through: -Exploration drilling activities -Frequent movement of exploration vehicles Noise generated might affect animals and result in some animals changing their habitant.	• 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	Precious Kaoko Prospecting Pty Ltd, Contractors, Site Manager & appointed ECO

7. Impact on soil

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Soil	Soil will be disturbed during drilling and limited trenching. Soil might also be partly affected by oil or fuel leakages from machines and vehicular movement.	• 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	Exploration Phase	Precious Kaoko Prospecting 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	Possible sources which might pollute groundwater includes; oil and fuel leakages from vehicles and drilling machines that is, if spillages happen in large volumes or frequently. Drilling activities might also interact with the water table hence in such cases there will be a need for hydrogeological wells to monitor for any contamination.	• Implement a maintenance programme to ensure all vehicles, machinery and equipment remain in proper working condition • Vehicle maintenance should be conducted in designated areas only, preferably off-site. • Waste oils and fuels from drip trays on stationery vehicles and machinery will be disposed of as hazardous waste at a licensed facility by a specialist hazardous waste handler. • Proper monitoring should be done so that if events when drilling activities goes beyond the water table happen, they are captured and reported to MEFT	Exploration Phase	Precious Kaoko Prospecting 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 the 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	Precious Kaoko Prospecting Pty Ltd, Contractors

2. Heritage impact

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Heritage impact	At the site, there are no known heritage areas or artefacts deemed to be impacted by the exploration activities.	• The Proponent should consult the traditional authority of the area before conducting any work. • All works are to be immediately ceased should an archaeological or heritage resource be discovered. • The National Heritage Council of Namibia (NHCN) should advise with regards to the removal, packaging and transfer of the potential resource.	Exploration Phase	Precious Kaoko Prospecting Pty Ltd, Contractors

3. Population Influx

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

4. Risk and spread of HIV/AIDS

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
HIV/AIDS	Even though a few people will be employed at this stage, the disease might still spread.	• Employer should allocate time for employees to visit their families. • Free distribution of condoms	Exploration Phase	Precious Kaoko Prospecting Pty Ltd,

5. Cumulative impacts

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Cumulative impacts	Alternation of existing landscape caused by limited trenching and drilling might result is loss of habitancy for some animals which can further affect the food web of the ecosystem.	• 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.	Exploration Phase	Precious Kaoko Prospecting Pty Ltd

5.3 POSITIVE IMPACTS ASSOCIATED WITH THE PROJECT

1. Local empowerment

Impacts	Description	Enhancement Required	Project Phase	Responsibility
Local empowerment	Precious Kaoko Prospecting (Pty) Ltd is a Namibian company hence supporting the project means promoting local empowerment.	• Continue to promote locals	Exploration Phase	Precious Kaoko Prospecting Pty Ltd

2. Employment creation

Impacts	Description	Enhancement Required	Project Phase	Responsibility
Employment creation	Even though few people will be employed during the exploration phase, but if medium to minable deposits are found and mining activities start, many people will be employed. This project therefore is definitely going to be beneficial in future.	• Employ locals in all casual labour and ensure gender equality. • Equity, transparency, to be put into account when hiring and recruiting	Exploration Phase	Precious Kaoko Prospecting Pty Ltd

3. Generation of Revenue

Impacts	Description	Enhancement Required	Project Phase	Responsibility
Generation of Revenue	The Proponent will pay tax hence generating revenue.	• The contractors to pay taxes as stipulated by the law of Namibia.	Exploration Phase	Precious Kaoko Prospecting Pty Ltd, appointed contractors

5.4 MANAGEMENT OF IMPACTS AT POST-EXPLORATION PHASE

1. Impact on landscape

Impacts	Description	Mitigation Measures	Project Phase	Responsibility
Post-exploration stage (Landscape)	The stage of exploration is expected to have minimum damage to the environment as compared to mining. However, the major issue which need to be looked after the phase of exploration is how the project has 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. Holes created during drilling should be sealed.	• All pits shall be backfilled or contoured to a stable angle of repose. • Stockpile disturbed bedrock on site in a safe and stable manner. • Exploration boreholes should be sealed	Post-exploration Phase	Precious Kaoko Prospecting Pty Ltd

6. ENVIRONMENTAL MONITORING

A monitoring programme will be in place to ensure conformance with the EMP. The Environmental Control Officer will ensure compliance with the EMP, and carry out monitoring 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	Period of trenching and drilling
Impact on fauna	Environment	• Inspection	Period of trenching and drilling
Surface & groundwater Pollution	Environment	• Tests on the nearby surface water body and boreholes	Once in a year
Noise	Employees Surrounding areas	• Noise monitoring	During drilling
Vegetation loss	Environment	• Inspection of protected plant species and incorporate them into the development	Period of limited trenching, drilling and creating cutlines.
Heritage	Land	• Inspection	Period of exploration
O.H. S	Employees	• Site inspection • Conducting Hazard and Risk Assessments • Health and safety incident monitoring	Daily
Generation of waste (solid)	Land	• Site inspection on housekeeping • Regular collection of waste	• Daily • Weekly
HIV/AIDS	Employees	• Free testing	• Annually

7. CONCLUSIONS

It is the applicant's responsibility to ensure that this EMP is made binding on the contractor by including the EMP in the contract documentation. The contractors should thoroughly familiarise themselves with the requirements of the EMP.

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.