Application No: 250814006243

ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED WASTE DISPOSAL SITE FOR EENHANA TOWN COUNCIL, AT EENHANA TOWNLAND, OHANGWENA REGION

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ACRONYMS

DEA	Department of Environmental Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Compliance Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (No. 7 of 2007)
EMP	Environmental Management Plan
MET	Ministry of Environment and Tourism
PPE	Personal Protective Equipment
RD	Red-Dune Consulting CC
SM	Site Manager
ETC	Eenhana Town Council

1. Introduction

This Environmental Management Plan (EMP) was developed following the Environmental Impact Assessment (EIA) for the proposed new waste-disposal site (landfill) for Eenhana Town Council (ETC). A comprehensive project description is provided in the EIA report. The proposed mitigation measures are practical and have been developed with a high degree of certainty.

1.1. Purpose of the EMP

The key objective of this EMP is to ensure that all activities associated with existing ETC solid waste disposal site are carried out in an environmentally sustainable and legally compliant manner. It serves as a comprehensive risk management strategy designed to address and mitigate potential environmental impacts associated with the project. It provides a clear logical framework that outlines what needs to be done, how it will be monitored, and the steps to reduce potential negative effects on the environment. It ensures that environmental protection is integrated into every phase, operation, closure and decommissioning in alignment with relevant legal and regulatory requirements.

Furthermore, the EMP clearly defines the roles and responsibilities of all stakeholders involved in the project, including the ETC, contractors, and regulatory authorities, to ensure accountability, effective implementation of mitigation measures, and continuous environmental performance improvement.

2. Key Legal Framework

The implementation of this Environmental Management Plan (EMP) is guided by the national legal and regulatory framework governing environmental protection and sustainable development in Namibia. Compliance with these laws is essential to ensure that the project is conducted in an environmentally responsible manner and in alignment with both national priorities and international best practices. A list of KEY legislation and policies includes:

1. **Namibian Constitution:** Requires the State to actively promote and maintain the welfare of the people and to protect ecosystems, ecological processes, and biodiversity for present and future generations.
    - *Applicability: Underpins all environmental protection and biodiversity conservation* requirements.
2. **Environmental Management Act No. 7 of 2007:** Promotes sustainable environmental management and resource use; establishes environmental assessment and control processes.
    - *Applicability: Requires environmental clearance for listed activities to prevent environmental damage.*
3. **Draft Pollution Control and Waste Management Bill:** Regulates and prevents discharge of pollutants to air and water and provides for general waste management.
    - *Applicability: Aims to prevent contamination from hydrocarbons, oils, and other pollutants from vehicles and machinery.*
4. **Environmental Policy Framework (1995):** Subjects developments and projects to environmental assessment and provides guidance for conducting assessments.
    - *Applicability: Ensures potential impacts are considered and addressed during project planning and development.*
5. **National Solid Waste Strategy:** Sets out the national approach to controlling and managing solid waste.
    - *Applicability: Directly applies to solid waste disposed at the site and guides waste management practice.*
6. **Regulations Relating to the Health and Safety of Employees at Work (Reg. No. 156)**: Promotes the safety and health of employees in the workplace.
    - *Applicability: Protects workers exposed to noise, dust, and other occupational hazards at the site.*
7. **Public Health Act No. 1 of 2015:** Protects the public from nuisances and conditions dangerous or injurious to health.
    - *Applicability: Requires mitigation to prevent aesthetic nuisances and water pollution affecting public health.*
8. **Labour Act No. 11 of 2007:** Outlines labour laws, including worker protection and safety.
    - *Applicability: Governs labour requirements during site operations and decommissioning.*

9. **Regional Councils Act, 1992 (Act No. 22 of 1992):** Establishes regional councils responsible for regional planning, coordination, and development oversight.
    - *Applicability: Requires compliance with regional planning and by-laws relevant to the site.*

3. Roles and Responsibilities

To promote accountability, effective implementation of mitigation measures, and continuous environmental performance improvement, it is essential to assign clear delegation of roles and responsibilities across all levels of the project. The following outlines the key roles and their associated responsibilities to ensure the successful implementation of the EMP.
warning.

Table 1. Roles and Responsibility

Role	Responsibility
Proponent: ETC	1) Overall responsibility for ensuring that the project complies with all environmental legislation and regulations. 2) Allocate resources and budget for the implementation of the EMP. 3) Appoint an Environmental Control Officer (ECO) to oversee day-to-day environmental management on site. 4) Ensure that the EMP is regularly reviewed and updated to reflect any changes in project scope, legislation, or environmental conditions. 5) Liaise with regulatory authorities and stakeholders to report on environmental performance and address any concerns.
Environmental Compliance Officer (ECO)	1) Monitor and ensure compliance with the EMP, environmental regulations, and site-specific requirements. 2) Conduct regular site inspections to verify the implementation of mitigation measures. 3) Coordinate with project personnel to ensure proper waste management, pollution control, and safety protocols are followed.

	4) Prepare regular environmental performance reports, including monitoring results and corrective actions, and submit these reports to the project proponent and relevant authorities. 5) Lead training sessions for project staff on environmental best practices and legal obligations. 6) Act as the primary point of contact for environmental matters and regulatory agencies. 7) Modifying or improving mitigation measures for purposes of corrective action
Site Manager	1) Ensure the project's overall operations are conducted in accordance with the EMP and approved environmental permits. 2) Supervise all exploration activities to ensure they align with environmental guidelines. 3) Work closely with the ECO to implement corrective actions when environmental non-compliance is identified. 4) Ensure that all personnel are appropriately trained in environmental procedures and that they adhere to the safety protocols established in the EMP.
Contractors and Subcontractors	1) Ensure that all contracted activities comply with the EMP and all applicable environmental regulations. 2) Provide their workers with adequate environmental and safety training. 3) Monitor and report on the environmental performance of their activities. 4) Implement mitigation measures specific to their scope of work as outlined in the EMP and ensure that they are properly maintained.
Ministry of Environment, Forestry and Tourism (MEFT)	1) Review and approve the EMP. 2) Conduct inspections and audits to ensure compliance with environmental laws and regulations. 3) Provide oversight and guidance on environmental compliance.

4. The EMP

The EMP is divided into three phases; Construction, Operation and Decommissioning.

4.1. Construction Phase

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Induction	To ensure that all employees are familiar with the requirements of the EMP	1. All employees must go through an induction course for the provision of the EMP. 2. Staff operating specialised equipment and heavy vehicle must be properly trained	Induction Minutes, report and Attendance Register	Site Manager
Visual Impact	To ensure coordinated clearing of the area, and good house keeping	1. Contractors must ensure good housekeeping during construction 2. Overburden soil must be well stacked 3. All building must use dull paint to blend in with vegetation	Scattered Litter, Visual inspection	Site Manager
Air Pollution	Prevent excessive dust emission	1. Provide employees with adequate PPE such as ear muff and nose mask, 2. Apply dust suppression measure such as water sprays	Visual inspection	Site Manager
Water Pollution	To prevent surface and ground water pollution from oil spills and leakages	1. Fueling for heavy vehicle on site shall be well coordinated at designated places 2. Stationary vehicles must be provided with drip tray to capture oil, lubricants and hydraulic fluids leakages	Visual inspection	Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
		3. All vehicle and machinery must be well service to avoid leakages 4. Provide and train on oil spill emergency response 5. Servicing of vehicles and machinery must not take place on site		
Health and Safety	To ensure good health and safety for the employees and public	1. Only licensed employees should be allowed to operate specialized vehicle; 2. Provide Personal Protective Equipment (PPE) to each employee such as safety shoes, gloves, eye wear and overalls; 3. No employee must be allowed to be onsite without PPE 4. Adhere to the Labour act, non-toxic human dust exposure levels may not exceed 5mg/m3 for respiratory dust and 15mg/m3 for total dust. 5. No employees must be exposed to noise levels above the 85dB (A) limit over a period of 8 hours.	Induction Minutes Valid driver licenses for heavy vehicles Complain of health issues by employees PPE for all employees	Site Manager
Oil Leakages	Manage fuels, oils and lubricants leakages from Vehicles and Machinery to prevent pollution	1. Ensure all vehicles are well service and leak inspection are done; 2. Provide drip trays to stationary vehicle; 3. Servicing of vehicle must be done at an approve site; 4. Re-fuelling, oil replacement must be done on approved sites;	Physical verification and routine monitoring	Management or Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Loss of Biodiversity	To ensure conservation of biodiversity at the area	**Flora** 1. Use exiting access roads 2. Some of the vegetation requires permit from Ministry of Agriculture Water and Forestry to be cut down. The ECC must be issued with this condition before operation starts 3. Clearing of vegetation must strictly be limited to the area within the sand mining site; 4. Mature trees that are cut down may be donated to Eenhana Vocational Training in College for carpentry. **Fauna** 1. Fence off the perimeter with a diamond mesh wire; 2. Employ a security who shall protect the fence from theft, vandalism and ensure that, the gate is locked to prevent animals from entering the site 3. Do not kill animal, unless such animals poses eminent danger to humans	Pristine vegetation outside the waste disposal area	Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Land Degradation	To prevent land degradation during construction	1. Ensure coordinated movement of heavy vehicles 2. Movement of construction vehicles must be confined within the site boundary and only use existing access road	Visual inspection	Site Manager
Waste Generation	To ensure good housekeeping and prevent litter	1. Provide Skip bins and dustbins to collect waste and be disposed of at an existing wasted disposal site 2. Do not burry waste on site	Visual Inspection	Site Manager
Heritage Resources / artefacts	Preserve Heritage	1. Heritage, human remains or artefacts find must immediately be cordoned off and reported to the National Museum (+264 61 276800) or the National Forensic Laboratory (+264 61 240461). 2. No artefacts must be removed or be interfered with prior to authorisation from the Namibian National Heritage Council (NHC)	Sighting report/s of heritage resources / artefacts	Site Manager

4.2. Operational Phase

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Employment	To improve the socio-economics of locals	1. Employment opportunities should be given to locals for all general work 2. Provide working contract to employees 3. Gender mainstreaming must be considered during recruitment process	Record of industrial actions	Site Manager
Induction	To ensure that all students / employees are familiar with the requirements of the EMP	1. All employees must go through an induction course for the provision of the EMP. 2. Staff operating specialised equipment and heavy vehicle must be properly trained 3. Provide awareness to the employees on danger of alcohol, (HIV/AIDS) and drug abuse 4. Provide Condoms at friendly site on site, such as toilets	Induction Minutes, report and Attendance Register	Site Manager
Ecological impact	To ensure protection of animals	**Fauna** 1. Ensure that there is security to guard the perimeter who must lock the gate every time 2. No animal including pets must be allowed in the landfill site.	Visual inspection	Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Visual Impact	To prevent litter / waste scattered all over and preserve aesthetic value	1. All recyclable material should be recycled, explore memorandum of understanding with recycling companies; 2. Only appropriated vehicles with mesh that prevent waste from being blown away can be used to transport waste 3. Implement daily filling and compaction to prevent waste from being blown away; 4. Leave a buffer zone of undisturbed vegetation to act as wind breakers and protect the site from wind 5. In the absence of compaction, burn the waste in an appropriate manner that does not risk fire outbreaks	Scattered Litter, Visual inspection	Site Manager
Air Pollution	To minimise dust pollution and bad smell.	1. Implement daily waste compaction to prevent bad odours 2. Spray the access road using grey water to suppress dust; 3. Install speed humps to limit speed which must be through the road passing through Ekolola to the site 4. Keep a complaint register for dust impact 5. If necessary, explore the harvesting of Methane	Bad odours and complaints from workers	Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Land Degradation	To avoid soil erosion from surface water run off	1. Construct a storm water management to avoid erosion.	Storm water constructed and maintained	Site Manager
Traffic	To ensure coordinate movement of waste removal vehicle	1. Trucks must be installed with a rotating headlight beam lights 2. Truck must maintain a low speed to prevent excessive dust 3. The road must be maintained by scrapping and compacting 4. Install warming signs where necessary	Records of public complain Visible warning signs	Site Manager
Water Pollution	To prevent surface and ground water	1. Implement a 'Cover System' for leachate management as explained in this report; 2. The Cover System should be supported by lining the base with a high density polyethylene (HDPE) and or; 3. Hire a qualified company to Install a 'Bottom Liner system' for leachate collection as explained in this report 4. Install a leakage detection and collection layer of 150mm compacted clay liner, 150mm bases preparation layer; 5. Connect the leachate collection into the leachate drainage pipe network which drains into a leachate collection tank / pond.	Water quality baseline and monitoring	Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
		6. The collected leachate must be treated through a combination of biological and chemical treatment as explained earlier; 7. To prevent surface water pollution, construct storm water system to prevent run of water from entering the site; 8. Construct a storm water system that prevent water to flow from the site into the environmental, but channel this water a leachate collection pond.		
Health and Safety	To ensure good health and safety for the employees and public	**Health** 1. Employees must NOT be exposed to noise levels above the required -85dB (A) limit over a period of 8 hours. 2. Adhere to the Labour act, non-toxic human dust exposure levels may not exceed 5mg/m3 for respiratory dust and 15mg/m3 for total dust. 3. Supply clean drinking water to the site, such as portable water tank; 4. There must be two suitable, clean and user-friendly ablution facilities, with separate Male and female toilets.	Induction Minutes Valid driver licenses for heavy vehicles Complain of health issues by employees Minimal vermin and bad odour PPE for all employees	Site Manager

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
		5. Ensure daily compaction of waste to prevent decomposition that may attract odour, flies, rodents, which causes vermin and diseases 6. Provide employees with adequate PPE 7. Avoid waste compaction during extreme windy condition **Safety** 8. Ensure that every employee went through an induction course about safety; 9. Employees must be equipped with all necessary Personal Protective Equipment (PPE). These includes, Helmet, Overall, Safety Shoes, Safety Glasses, Gloves, Earmuff etc; 10. During operation, minor accidents are eminent, hence there must be a first aid kit; 11. Only qualified and licenced personnel must be allowed to operate machinery and vehicles; 12. No employee must be allowed to be onsite without PPE; 13. Adequate safety signs must be displayed on site;		

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
		14. To avoid field fires, smoking is only permitted at designated sites with low risk to fire; 15. Do not allow illegal recyclers on site;		
Oil Leakages	Manage fuels, oils and lubricants leakages from Vehicles and Machinery to prevent pollution	1. Ensure all vehicles are well service and leak inspection are done; 2. Provide drip trays to stationary vehicle; 3. Servicing of vehicle must be done at an approve site; 4. Re-fuelling, oil replacement must be done on approved sites;	Physical verification and routine monitoring	Management or Site Manager
Hazardous waste	To prevent disposal of hazardous waste on site	1. Hazardous waste must NOT be disposed at the site. 2. The contractor must take hazardous waste to Windhoek's Kupferberg landfill,	Visual inspection	Site Manager
I**mproved Infrastructure development**	Proper management of waste	1. Provision of leachate management system 2. Public satisfaction from the complaints of the current site		

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Heritage Resources / artefacts	Preserve Heritage	3. Heritage, human remains or artefacts find must immediately be cordoned off and reported to the National Museum (+264 61 276800) or the National Forensic Laboratory (+264 61 240461). 4. No artefacts must be removed or be interfered with prior to authorisation from the Namibian National Heritage Council (NHC)	Sighting report/s of heritage resources / artefacts	Management or Site Manager

5. Closure / Decommissioning Plan

It is envisaged that the proposed site will have a lifespan exceeding 50 years. By that time, operational procedures may change; therefore, a comprehensive decommissioning plan should be prepared when closure approaches. In general, decommissioning will follow the following guidelines:

- Site Clean up
- Site Grading and Compaction
- Final Cover
- Storm water control
- Location records
- Site Access after closure
- Summary of the site closure
- Site Monitoring
- Future use of site

6. Conclusion and Recommendations

6.1. Conclusions

The environmental assessment has identified all possible impacts that may be caused by the landfill site. In accordance with the proposed practical mitigation measures, potential impacts shall have low significance to the environment. Often, landfill sites pose dire threat to water pollution, littering and visual impacts. These major threats were successfully addressed; a leachate management system is recommended to mitigate the effect of water pollution. The proposed site is still a virgin land which have some protected trees, procedures for removal of such trees is recommended.

6.2. Recommendations

It is recommended that the project is approved and be issued with and environmental Clearance Certificate, but subject to and not limited to the following conditions:

- Proper implementation of the Environmental Management Plan / mitigation measure to ensure environmental protection;
- Acquire permit from the Ministry of Agriculture Water and Forestry for vegetation clearing, especially the protected species;
- Hire competed professional individual or companies to install the leachate management system;
- Implement ground water monitoring system around the site and;
- Undertake bi-annual environmental audit, which must include groundwater analysis.

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