Tortoise Environmental Consultants(TEC)
One Step @ a time

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# ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

*(Source: Wana Engineering Consulting, 2025)*

## FOR THE PROPOSED CONSTRUCTION OF DR 3604 (OSHAANGO – EPEMBE) ACCESS GRAVEL ROADS TO OKAMBUMBU SCHOOL, OKANAYIMBULA SCHOOL AND OMISHE SCHOOL, OHANGWENA REGION

*Prepared for:*

Ministry of Works and Transport

WANA ENGINEERING CONSULTING
Turning Dreams Into Reality

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| DOCUMENT INFORMATION | | |
|---|---|---|
| **Title** | Environmental and Social Management Plan (ESMP) for the Construction of DR3604 (Oshaango – Epembe) Access Gravel Roads to Okambumbu School, Okanayimbula School and Omishe School (20km) | |
| **ECC Application Reference number** | **APP- 005723** | |
| **Listed Activity** | **Activity 10: Infrastructure:**<br>10.1 The Construction of (b) Public roads<br><br>**Activity 3: Mining and Quarrying Activities:**<br>3.2 The Other forms of mining or extraction of any natural resources whether regulated by law or not<br><br>**Activity 8: Water Resource Development**<br>8.1 The abstraction of ground or surface water for industrial or commercial purposes | |
| **Location** | DR3604 (Oshaango – Epembe), Ohangwena Region | |
| **Proponent** | Ministry of Works and Transport<br>Private Bag 13341, Windhoek<br>Contact person: Helena N. Imwalwa<br>Tel: 061 2088759 / 0811427288<br>Email: helena.imalwa@mwt.gov.na<br>Website: www.mwt.gov.na | |
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*1 EAP – Environmental Assessment Practitioner*

## ACRONYMS

| | |
|---|---|
| DEA | Department of Environmental Affairs |
| DSR | Draft Scoping Report |
| EA | Environmental Assessment |
| EAP | Environmental Assessment Practitioner |
| ECC | Environmental Clearance Certificate |
| ECO | Environmental Compliance Officer |
| EIA | Environmental Impact Assessment |
| EIF | Environmental Investment Fund |
| EMA | Environmental Management Act (No. 7 of 2007) |
| EMP | Environmental Management Plan |
| ESR | Environmental Scoping Report |
| GRM | Grievance Redress Mechanism |
| I&APs | Interested and Affected Parties |
| MAFWLR | Ministry of Agriculture, Fisheries, Water and Land Reform |
| MEFT | Ministry of Environment, Forestry and Tourism |
| SM | Site Manager |
| TEC | Tortoise Environmental Consultant |

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# 1. INTRODUCTION

## 1.1. Project Background

The Ministry of Works and Transport recognizes the importance of maintaining a good road network across rural areas throughout the country. Road construction projects are generally intended to improve the economic and social welfare of people. Travelling times can then be reduced with increased road capacity which also lowers the costs of vehicle use, while further increasing access to markets, jobs, education, and health services.

The project entails the upgrading of the DR3604 to gravel standard. This will include the installation of appropriate drifts and small culvert structures to manage runoff during periods of heavy water flow. Additionally, sections of the road with sharp bends will be realigned to enhance the horizontal curve radii for improved safety and drivability.

## 1.2. Project Rationale

The development of an access road from MR121 to Okambumbu Combined School in the Ohangwena Region is motivated by the need to address key challenges faced by the local community and to promote sustainable development. The main reasons for initiating this project include (Wana Engineering Consulting, 2025):

- Okambumbu village currently lacks adequate road infrastructure, which severely limits its connectivity to surrounding areas, including important economic centers, healthcare services, schools, and administrative facilities.
- Improved road access will also create new opportunities for economic growth.
- The construction of this access road will establish a crucial link, allowing for the smooth movement of people, goods, and essential services.

## 1.3. Project Location

The proposed road traverses the Epembe and Eenhana Constituencies in Ohangwena region. It is situated on the western side of gravel road MR121.

**GPS coordinates: Latitude -17.749053 S and Longitude 16.364787 E**

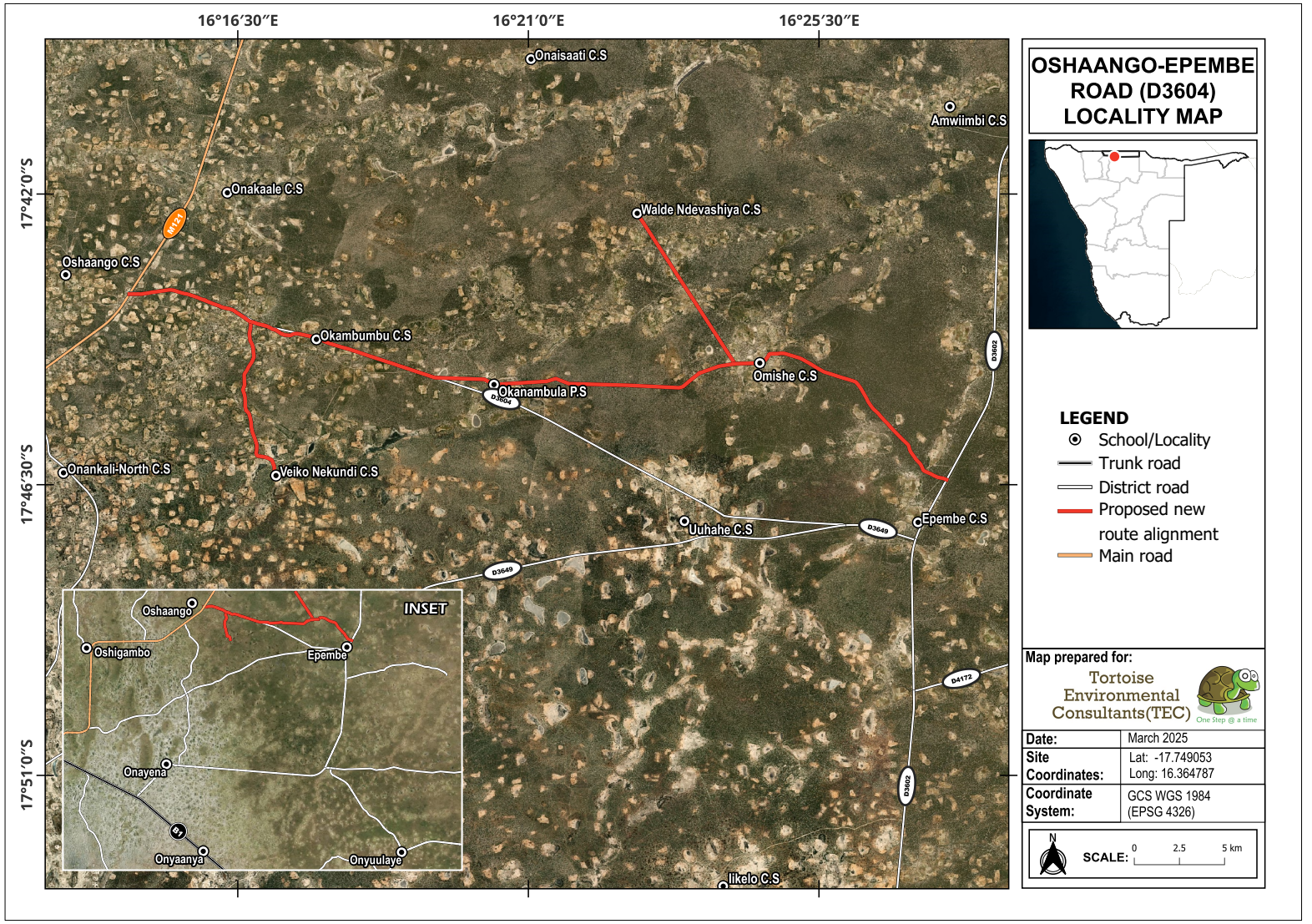


*Figure 1-1: Locality map of the proposed road*

# 2. ENVIRONMENTAL MANAGEMENT PLAN CONTEXT

This document constitutes the Environmental Management Plan (EMP), for the proposed construction of gravel road DR3604.

## 2.1 EMP Requirements

The Environmental Management Act (also referred to as the EMA), stipulates that for each developmental project, which is listed under the EIA regulations, an Environmental Impact Assessment (EIA) should be conducted.

The EMP should conform to the provisions of the Environmental Management Act (EMA), Act No. 7 of 2007 and EIA regulations of 2012 (Government Notice: 30).

The EIA Regulations defines a '*Management Plan*' as:

*"…a plan that describes how activities that may have significant impacts on the environment are to be mitigated controlled and monitored."*

*Table 2-1: EMP Requirements as outlined in Section 8 of the EIA Regulations*

| ***Requirement*** |
|---|
| *(j) a draft management plan, which includes –*<br>*(aa) information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure;*<br><br>*(bb) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and*<br><br>*(cc) a description of the manner in which the applicant intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation remedy the cause of pollution or degradation and migration of pollutants.* |

## 2.2 What is an EMP?

The Environmental Management Plan (EMP) is a tool used to mitigate potential environmental risks associated with the proposed project/activity and provides a risk management strategy and logical framework for the implementation of the activities associated with the proposed project.

The EMP recommends mitigation measures in order to ensure that the proposed activities are conducted in an environmentally friendly manner and in accordance with the provisions of the Environmental Management Act and EIA regulations.

Furthermore, the EMP outlines specific roles and responsibilities for role-players against which they can be evaluated, and non-compliance is punishable.

## 2.3 EMP Objective

The objective of the EMP is to prevent/minimize (where possible), unacceptable and adverse environmental, social or economic impacts that may arise from the proposed development. Overall, the EMP aims to minimise negative impact/s (real, potential or perceived) that may result from the proposed road construction.

The objective of the EMP is to prevent / minimize, unacceptable and adverse environmental, social or economic impacts identified during the EIA process. Overall, the EMP aims to minimise negative impact/s (real, potential or perceived) that may result from the proposed activities, throughout the project lifespan.

The aim of the EMP is to ensure that the proposed activities are conducted in accordance with the following:

i. Environmental Management Act (No. 7 of 2007),
ii. EIA regulations of 2012 (GN: 30), and
iii. International standards, and
iv. Best environmental practices (benchmarks)

## 2.4 EMP Scope

The EMP does not only focus, and it is not limited to the proposed construction and operation of the feedlot. It includes the bigger picture and serves as the guiding tool to protecting the natural, bio-physical and socio-economic environment on both the specific site and the surrounding area. The bigger picture is important because some impacts may not be confined to the project site.

## 2.5 Possible adjustments to the EMP

The EMP is an open-ended document and may be considered inconclusive. In other words, the EMP should allow room for adjustments if new information becomes available at a later stage, in which new/additional mitigation measures may become necessary.

The necessity of possible adjustments to the EMP at a later stage may be attributed to:

a) Lack of information at the time of drafting the initial EMP,
b) Evolution or addition of new activities, or
c) Unintended omission of potential impacts during the initial EIA scoping exercise and development of the initial EMP.
d) Development of industry best practices.

This implies that, in addition to the information contained herein, any other relevant information that may surface during the renovation, construction and operations, through internal monitoring or auditing by the Environmental Compliance Officers (ECOs), can be added to the EMP (evolution of activities), and such changes or inclusions will be

binding to the proponent and all contractors / sub-contractors.

## 2.6 Implementation Framework and Accountability to the EMP

For effective implementation of the EMP, the Institutional roles are presented below. However, the institutional framework, as well as the specific roles and responsibilities are defined and broken down in Sections 4 and 5 respectively.

*Table 2-2: Role players, Institutional Framework*

| Role-player | Company / Institution | Role |
|---|---|---|
| Proponent | Ministry of Works and Transport | Compliance to the EMP |
| Environmental Consultant | Tortoise Environmental Consultants (TEC) | Development of the EMP |
| Environmental Compliance Officer/s (ECO) | Ministry of Environment, Forestry and Tourism – Department of Environmental Affairs (DEA) | Monitoring Compliance with EMP:<br>➢ Un-announced spot checks,<br>➢ Corrective measures, warnings, penalties/fines, license suspension, etc |
| Public | Interested and affected parties (I&APs) | Report to the ECO, any activity of environmental concern (e.g. Pollution, safety risks, etc.) |

# 3. ROLES AND RESPONSIBILITIES

This section outlines the roles and responsibilities of the key personnel responsible for the day-to-day management of activities to ensure effective implementation of the EMP.

## 3.1 Roles and Responsibilities

To ensure accountability, it is necessary to assign responsibilities. The key role-players for project implementation are;

a) The **Environmental Compliance Officer (ECO)** representing the Ministry of Environment, Forestry and Tourism (MEFT), or an appointed independent environmental officer, who is responsible for monitoring and auditing.

b) **The Proponent**: Owner / Project Manager.

c) **The Site Manager** the person responsible for the day-to-day management of the project.

### 3.1.1 The Environmental Compliance Officer (ECO):

The ECO refers to the party responsible for the environmental monitoring and auditing to ensure that the provisions of the EMP are complied with.

The ECO shall have adequate environmental knowledge to understand and interpret the EMP and pertaining environmental aspects associated with the project. The specific tasks of the ECO are as follows:

- To undertake all monitoring and auditing activities in-order to ensure compliance with the EMP.
- Conduct site inspection prior to the commencement of activities; and at reasonable intervals (e.g. every month, quarterly or annually), throughout the duration of the project. Depending on the risks, some projects may be inspected more frequently (e.g. every month).
- Conduct regular inspections (unannounced spot checks) and shall submit compliance or non-compliance reports to the respective authorities (MEFT or any other relevant authority).
- Compile Progress Reports immediately after site inspections, Compliance Reports, pertaining to any non-compliance incident/s, and a Rehabilitation Report following the conclusion a specific activity.
- The ECO shall liaise closely with all key stakeholders i.e. the Site Manager and the Environmental Commissioner.
- Shall provide guidance on any environmental management issues, incidents or emergencies that may arise throughout the project lifespan.
- Shall assist in providing recommendations for remedial action in the event of non-compliance.
- Auditing or monitoring activities may involve investigation, as well as structured observation, measurement, and evaluation of environmental data over a period of time.

### 3.1.2 The Proponent:

The specific responsibilities of the Proponent are as follows:

- Appoint a Project Manager (PM) to oversee the daily onsite activities.
- Liaise closely with the PM and ECO on any environmental management issues, incidents or emergencies.
- Ensure that all activities on and around the site are conducted in accordance with the requirements of the EMP at all times.
- Ensure that all sub-contractors and visitors to the site are conversant with the requirement of the EMP, relevant to their roles on site.
- Shall develop a **communication strategy** between The Proponent, Site Manager, workers, the ECO and any other relevant stakeholder.
- Shall develop an **organisational structure** to ensure that:
  - There are clear channels of communication;
  - There is an organisational hierarchy for effective implementation of the EMP; and
  - Conflicting or contradictory instructions are eliminated;
  - Ensure that all instructions and official communications regarding environmental matters shall follow the organisational structure as determined
  - Ensure that that EMP requirements are assigned to specific people / positions with the capacity and experience required for implementation.

### 3.1.3 The Site Manager:

The **Site Manager (SM)** should:

- Ensure that each team recruited to work at the sites, adheres to the EMP;
- Ensure that a **copy of the EMP is kept on site at all times and as it may be requested by authorities conducting spot checks at any time**.
- Ensure that all staff attend an induction session before the commencement of any work on site and that they are adequately informed of the requirements of the EMP;
- Shall take special care to prevent irreversible damage to the environment;
- Ensure that activities are within the boundaries of the proposed zones as specified in the Site Map and boundary markings (visible pegs, tape etc).
- Accident/ Incident reporting to Proponent within 24 hours of occurrence
- Ensure that staff is controlled through the implementation of appropriate security measures,

## 3.2 Instructions

All instructions and official communications shall follow the organizational structure as determined by the proponent. Based on the adopted structure, it is essential that the responsibilities outlined be assigned to specific parties with adequate capacity and experience required to implement the EMP.

### 3.3 Disciplinary Actions

The EMP is a legally binding document. Non-compliance with the EMP may result in disciplinary action being taken against the Proponent. Such actions may take the form of;

- Financial penalties, legal action, fines, and/ or Suspension of work.

The disciplinary actions shall be determined according to the nature and extend of the non-compliance, and exact penalties are to be weighed against the severity of the incident.

# 4. POTENTIAL IMPACTS AND MITIGATION MEASURES

## 4.1 Impact Themes and Recommended Mitigation Measures

The EMP has been categorised into different themes, which serve as a quick guide to the recommended EMP remedial actions during the construction and Operation stages (Table 4.1 to 4.8).

| EMP Themes | Specific Aspects |
|---|---|
| A – Socio-economic Impacts | Access |
| | Employment |
| | Local economy |
| B – Staff induction | EMP availability |
| | Staff induction |
| | Recruitment |
| C – Health and Safety | General safety at workplace |
| | Alcohol abuse and Drug use |
| | Fire Risk / Hazard |
| D – Pollution and Waste Management | Wastewater |
| | Ablution facilities |
| | Solid Waste Disposal |
| | Oil Spills |
| E – Excavation works | Excavation activities |
| | Borrow Pits |
| F – Surface and Ground water | Water sources and abstraction |
| G – Community Health and Safety | Exposure of young children to alcohol and drug use |
| | Teenage pregnancies |
| | HIV / AIDS |
| H – Cultural Heritage | Heritage resources / artefacts |
| I – Rehabilitation | Clean-up and maintain natural / original appeal |

## SECTION A: SOCIO – ECONOMIC

**Table 4-1: Identified socio-economic impacts**

**Potential Impacts:**

- ✓ Improved access to essential services
- ✓ New employment opportunities (both during construction and operation of the project)
- ✓ Rural development

| Aspect | Objective | Measures to enhance positive impacts | Indicators for Monitoring and Compliance | Responsible Party |
|---|---|---|---|---|
| **Access** | Improve access to essential services | • Ensure regular road maintenance<br>• Installation of proper drainage systems to prevent flooding and water logging during rainy seasons. | • Community access and feedback<br>• Maintenance report | Proponent / Contractor |
| **Employment** | Create employment opportunities | • Ensure recruitment of locals during Construction | • Employment records – contracts | Proponent / Contractor |
| **Local economy** | Enhance rural development and the local economy | • Ensure regular road maintenance | • Income levels and livelihood improvements<br>• Number of new businesses established | Proponent / Local Authority |

## SECTION B: STAFF INDUCTION

**Table 4-2: Mitigation measures pertaining to staff Recruitment and Induction**

**Potential Sources of Impacts:**

- ✓ No formal presentation of the EMP and employees are not aware of the content and risks associated with the activities / actions
- ✓ Lack of adequate induction to inform the workers about the Do's and Don'ts
- ✓ Employees working without employment contracts (recipe for labour disputes)

| Aspect | Objective | Mitigation Measures | Indicators for Monitoring and Compliance | Responsible Party |
|---|---|---|---|---|
| **EMP availability** | Availability of the EMP on site for ease of reference | • Ensure that a copy of the EMP is kept on site and accessible to team leaders | • Availability of EMP on site and accessibility to team leaders | Site Manager |
| **Staff Induction** | To ensure that all staff / employees are conversant with the requirements of the EMP | • Induction for all staff / employees on the provisions of the EMP before work commencement.<br>• Staff members appointed at a later stage should also undergo induction | • Induction Minutes and Attendance Register, Signed by each staff member<br>• Quarterly minutes | Site Manager |
| | Punitive measures for staff, to ensure compliance | • Adopt a disciplinary system to discipline staff for non-compliance, for offences such as littering, speeding, safety risk (both to themselves and to others), not using ablution facilities, etc. | • Number of fines issued daily / per month | Site Manager |
| | Orientation of workers about security for both equipment and themselves | • Orientate workers about security for equipment and themselves & provide contact numbers for Police and other emergency services e.g. Ambulance | • Proof of security orientation and emergency contact numbers | Site Manager |

| | | | | |
|---|---|---|---|---|
| **Recruitment** | • To ensure that all workers have employment contracts (Labour Act No. 11 of 2007)<br><br>• To ensure adherence to Labour Act No. 11 of 2007 during all phases of the project | • Formalize recruitment of all staff with Contracts, stating nature of employment, duration and remuneration to protect both parties and to avoid labour disputes later. | • Copy of staff contracts | Proponent / Site Manager |

## SECTION C: OCCUPATIONAL HEALTH AND SAFETY

**Table 4-3: Mitigation measures pertaining to Health and Safety**

**Potential Sources of Impacts:**

- ✓ Inadequate awareness of employees or contractors on general health and safety risks
- ✓ Safety hazards associated with the equipment handling
- ✓ Employees not receiving the correct Personal Protective Equipment (PPE)
- ✓ Employees not adhering to safety rules implemented at the site

| Aspect | Objective | Mitigation Measures | Indicators for Monitoring and Compliance | Responsible Party |
|---|---|---|---|---|
| **General Occupational Health and Safety of the employees (injuries)** | To ensure safe working conditions per Health and Safety Regulations, Government Notice 156/1997 (GG 1617) | • Provide adequate and appropriate personal protective equipment for all workers<br>• Training on relevant aspects of occupational health and safety. | • Adequate protective gear for all staff (issue register)<br>• Training schedule, attendance register, report, pictures, etc | Site Manager |
| **Alcohol abuse and Drug use** | Prevent alcohol and drug use at the project site | • Warn employees against alcohol abuse and use of prohibited substances e.g drugs. | • Drunk / Misbehaving employees<br>• Monitor presence of prohibited substances. | Site Manager |
| **Fire Risk / Hazard** | To mitigate fire risk | • Avail sufficient fire extinguishers and train staff on how to use them<br>• Demonstrate the use of fire extinguishers and fire hydrants, | • Availability of fire extinguishers and service record.<br>• Training report, attendance register, pictures, etc | Site Manager |

## SECTION D: POLLUTION AND WASTE MANAGEMENT

**Table 4-4: Mitigation measures pertaining to Waste Management**

**Potential Sources of Impacts:**

- ✓ Poor waste disposal (often considered insignificant e.g. littering, oil spills, cement mixers, wash, wastewater, etc
- ✓ Leaking or broken sewerage pipes
- ✓ Storage of unwanted waste (e.g. old / waste tyres)

| Aspect | Objective | Mitigation Measures | Indicators for Monitoring and Compliance | Responsible Party |
|---|---|---|---|---|
| **Waste Water** | • To avoid effluent discharge into the environment | • Refer to regulations on effluent disposal and recommended septic tank and drainage design<br>• Be on the look-out and repair any leaking or broken sewer pipes (regardless of how small it may be perceived) | • No leakage of sewer pipes | Site Manager or dedicated Plumber |
| **Ablution facilities** | • To avoid open defecation, environmental pollution and washing of faecal waste into water streams | • Recommend Flushing toilets with provision of a containerized septic tank, honey sucked for disposal at approved oxidation ponds, or<br>• Adequate pit latrines: Ventilated (closed air-vent), slab (removable), toilet pot (closed). | • Ablution facilities (Flushing toilets)<br>• Containerised septic tank | Site Manager |
| **Solid Waste** | • To prevent pollution and maintain a clean environment | • Adequate solid waste management (contain – drums / bins, sort, burn combustible materials and recycle non-combustible materials). | • Scattered waste, Littering and any other unsightly waste at the site (eyesore) | Site Manager / dedicated Waste Disposal Officer |

| | | | | |
|---|---|---|---|---|
| | | • Ensure appropriate waste collection and removal from the site and dispose at appropriate municipal waste disposal sites. | | |
| **Oil Spills** | • Ensure waste oil is managed appropriately and pollution is prevented at all costs | • Build a concrete bunding around fuel tanks that is at least 20% larger than the tanks to allow safe working space and prevent spills from spreading.<br>• Use of sheeting to prevent soil contamination (e.g. during vehicle servicing).<br>• Waste oil should not be stored onsite indefinitely and should be recycled (transfer to oil recycling companies).<br>• If an oil spill occurs, collect the contaminated soil, store in drums and dispose at appropriate waste disposal site (e.g. Municipal disposal site). | • Concrete bunding at all fuel storage and handling sites<br>• Drums or containers for oil recycling and proof of oil transfer to recycling companies | Site Manager |

## SECTION E: EXCAVATION WORKS

**Table 4-5: Mitigation measures pertaining to excavation works and borrow pits**

**Sources of impacts:**

- ✓ Loss of top fertile soil
- ✓ Dust and noise
- ✓ Risk of people and animals falling into borrow pits and drowning (if it collects water)

| Aspect | Objective | Mitigation Measures | Indicators for Monitoring and Compliance | Responsible Party |
|---|---|---|---|---|
| **Excavation activities** | **To prevent loss of top fertile soil** | • Develop and implement excavation procedure for topsoil soil trimming and stockpile | • Overburden for possible rehabilitation | Site Manager |
| | **Dust and noise** | • Adopt applicable dust suppression measures.<br>• Provide dust masks and earmuffs to all employees operating in a dusty or noisy environment.<br>• Adherence to site standard/safe operating procedure (cover trucks when transporting sand)<br>• Prevent abnormal noise from earthmoving machinery *(below the recommended noise levels of -85dB (A)).*<br>• Alert the community and public of noisy undertakings prior (e.g blasting). | • Dust fallout and dust chemical analysis<br>• Use of respirable dust samplers,<br>• Community complaints | Site manager |

| | | | | |
|---|---|---|---|---|
| **Borrow pits** | | • Fence off the borrow pits and put a notice board to warn the community against entering.<br>• Smoothen the borrow pit edges to ensure that the angles are not steep sloped, but rather gentle sloped at less than < 30° slope angles.<br>• Borrow pit edges should be gentle so that there is no tipping point, where people or livestock can fall in. | Fenced off borrow pits | Site manager |

## SECTION F: SURFACE AND GROUND WATER

**Table 4-6: Mitigation measures pertaining to water abstraction**

| **Sources of impacts:**<br><br>✓ Water source<br>✓ Over-abstraction | | | | |
|---|---|---|---|---|
| **Aspect** | **Objective** | **Mitigation Measures** | **Indicators for Monitoring and Compliance** | **Responsible Party** |
| **Water sources and abstraction** | Determine water sources (boreholes, oshanas, pipeline) and avoid over-abstraction | • Abstraction volumes to be within licensed and sustainable limits.<br>• Conduct borehole testing to determine borehole yield and optimum water abstraction rates.<br>• Allow borehole resting for recharge | • Water abstraction volumes | Site Manager |

## SECTION G: COMMUNITY HEALTH AND SAFETY

**Table 4-7: Mitigation measures pertaining to Socio Economic impacts**

**Sources of impacts:**

- ✓ Lack of awareness on HIV-AIDS
- ✓ Teenage pregnancies
- ✓ Exposure to alcohol and drug use

| Aspect | Objective | Mitigation Measures | Indicators for Monitoring and Compliance | Responsible Party |
|---|---|---|---|---|
| **Exposure to alcohol and Drug use** | Prevent negative influence of workers on children regarding alcohol abuse and drug use. | • Educate workers on appropriate behavior in local communities.<br>• Prohibit workers from supplying or influencing minors with substances. | • Reports or complaints from community or schools | Site Manager |
| **Teenage pregnancies** | To prevent sexual exposure of young girls to workers | • Conduct sexual health awareness (workers and the community)<br>• Discourage pursuing young girls by workers | • Awareness report, attendance register, pictures, etc | Site Manager |
| **HIV / AIDS** | Provide HIV / AIDS awareness to employees | • Provide HIV / AIDS awareness at induction<br>• Avail Condoms (e.g in toilets) | • Availability of condoms at and construction site | Site Manager |

## SECTION H: CULTURAL HERITAGE

**Table 4-8: Mitigation measures pertaining to Cultural Heritage impacts**

| **Sources of impacts:**<br><br>✓ Disregard of Cultural Heritage and artefacts | | | | |
|---|---|---|---|---|
| **Aspect** | **Objective** | **Mitigation Measures** | **Indicators for Monitoring and Compliance** | **Responsible Party** |
| **Heritage Resources / artefacts** | Reduce the impacts of and construction and associated earthworks on heritage resources / artefacts | • Heritage remains or artefacts discovered on site must be reported to the National Museum (+264 61 276800) or the National Forensic Laboratory (+264 61 240461)<br><br>• No artefacts must be removed or be interfered with prior to authorisation from the Namibian National Heritage Council (NHC)<br><br>• Recovery of heritage remains or artefacts discovered and removal thereof should be directed by the National Museum | Sighting report/s of heritage resources / artefacts | Site Manager |

# 5. REHABILITATION

## 5.1 Importance of Rehabilitation

Socio-economic development is very important for our livelihood and provides services, income and employment opportunities, and hence activities such as construction of a feedlot are vital and necessary for development.

However, such developmental activities should be conducted in a thoughtful and forward-looking manner. Therefore, to ensure that the land remains valuable for other land uses in the future, rehabilitation should be part and parcel of such developmental activity right from the beginning and throughout the project lifespan.

## 5.2 What is Rehabilitation?

Rehabilitation is the process of repairing and taking all the necessary actions to limit, minimize and mitigate the damage caused by the developmental activity, in-order to make the land suitable for other uses or to simply beautify the affected area (so that it does not become an eyesore).

Rehabilitation can also be referred to as the measures taken to repair damaged environments (example refilling of excavated pits with the overburden, re-vegetating, removal of unwanted infrastructure, cleaning up pollution etc.).

## 5.3 Designing a Rehabilitation Plan

A rehabilitation plan refers to a set of steps or measures to be taken in-order to ensure that negative impacts associated with the development at hand are mitigated. This however requires prior planning and integration of rehabilitation activities throughout the project lifespan. Meaning, rehabilitation measures should be taken right from the beginning of the project.

The environmental characteristics of an area where a project is located plays a vital role in designing a rehabilitation plan.

## 5.4 Conclusion

Construction activities should be undertaken in a responsible and environmentally friendly manner. Although balancing the demands of development and nature is not always clear cut, the importance of minimal disturbance to the natural environment is of utmost importance to safeguard the environment

## SECTION I: REHABILITATION

***Table 5-1: Potential impacts and Mitigation measures pertaining to Rehabilitation, animal exposure and closure***

| **Sources of impacts:**<br><br>✓ Landscape alteration due to lack of rehabilitation<br>✓ Loss of topsoil due to lack of restoration measures<br>✓ Construction pits may become a death trap for animals<br>✓ Waste (Left over of broken equipment, material offcuts etc) | | | | |
|---|---|---|---|---|
| **Impact Description** | **Objective** | **Mitigation Measures/** | **Indicators for Monitoring and Compliance** | **Responsible Party** |
| **Habitat alteration and permanent environmental scars of the and construction operations** | To minimize habitat alteration and environmental scars | Limit environmental damages e.g. the overburden may be collected and piled and used for re-filling of pits<br><br>Plant indigenous trees to fill the gaps for trees removed during construction | Re-filling of and construction pits with the overburden<br><br>Indigenous Trees planted | Site Manager |
| | Landscaping | Landscaping – refers to re-shaping man-made landforms to blend in with the environment and in order to limit the damage to the natural landscape | Landscaping efforts and modification towards natural state | Site Manager |
| **Waste discarded all over the place** | Clean-up | Remove any foreign objects (including infrastructure), that is not needed at site upon project completion | Clean-up after project closure | Site Manager |

# 6. ENVIRONMENTAL PERFOMANCE MONITORING

## 6.1 Environmental Performance Monitoring Plan - Overview

The purpose of this Environmental Performance Monitoring Plan is to ensure that the operational activities of the feedlot are conducted in compliance with the Environmental Management Plan (EMP), relevant environmental legislation, and best environmental practices.

**Objectives:**

- To ensure compliance with the EMP, Environmental Clearance Certificate (ECC), and applicable regulations.
- To assess the effectiveness of mitigation measures implemented.
- To ensure that environmental impacts are identified and managed proactively.
- To maintain accurate records for reporting and auditing purposes.

## 6.2 Reporting and Documentation

Bi-annual Reports will be compiled by the ECO or an appointed consultant and submitted to the Ministry of Environment, Forestry and Tourism (MEFT).

The report will include:

- Summary of monitoring results.
- Non-compliance incidents and corrective measures taken.
- Photographic evidence and data logs.
- Recommendations for improvement.

All monitoring data and reports will be stored on-site and made available during audits or inspections.

## 6.3 Auditing and Review

Internal audits will be conducted annually to assess the EMP implementation. The Environmental Monitoring Plan will be reviewed and updated as needed, based on audit findings, regulatory changes, or operational adjustments.

# DATA SHEET
## Monitoring / Environmental Audit Report

## SECTION A: STAFF INDUCTION

**Table 6-1: Monitoring of measures pertaining to staff Recruitment and Induction**

| **Potential Sources of Impacts:**<br><br>✓ No formal presentation of the EMP and employees are not aware of the content and risks associated with the activities / actions<br>✓ Lack of adequate induction to inform the workers about the Do's and Don'ts<br>✓ Employees working without employment contracts (recipe for labour disputes) | | | | |
|---|---|---|---|---|
| **Aspect** | **Objective** | **Mitigation Measures** | **Indicators for Monitoring and Compliance** | **Comment + Evidence (Pictures)** |
| **EMP availability** | Availability of the EMP on site for ease of reference | • Ensure that a copy of the EMP is kept on site and accessible to team leaders | • Availability of EMP on site and accessibility to team leaders | |
| **Staff Induction** | To ensure that all staff / employees are conversant with the requirements of the EMP | • Induction for all staff / employees on the provisions of the EMP before work commencement.<br>• Staff members appointed at a later stage should also undergo induction | • Induction Minutes and Attendance Register, Signed by each staff member<br>• Quarterly minutes | |
| | Punitive measures for staff, to ensure compliance | • Adopt a disciplinary system to discipline staff for non-compliance, for offences such as littering, speeding, safety risk (both to themselves and to others), not using ablution facilities, etc. | • Number of fines issued daily / per month | |
| | Orientation of workers about security for both equipment and themselves | • Orientate workers about security for equipment and themselves & provide | • Proof of security orientation and | |

| | | | | |
|---|---|---|---|---|
| | | contact numbers for Police and other emergency services e.g. Ambulance | emergency contact numbers | |
| **Recruitment** | • To ensure that all workers have employment contracts (Labour Act No. 11 of 2007)<br><br>• To ensure adherence to Labour Act No. 11 of 2007 during all phases of the project | • Formalize recruitment of all staff with Contracts, stating nature of employment, duration and remuneration to protect both parties and to avoid labour disputes later. | • Copy of staff contracts | |

## SECTION B: OCCUPATIONAL HEALTH AND SAFETY

**Table 6-2: Monitoring of measures pertaining to Health and Safety**

**Potential Sources of Impacts:**

- ✓ Inadequate awareness of employees or contractors on general health and safety risks
- ✓ Safety hazards associated with the equipment handling
- ✓ Employees not receiving the correct Personal Protective Equipment (PPE)
- ✓ Employees not adhering to safety rules implemented at the site

| Aspect | Objective | Mitigation Measures | Indicators for Monitoring and Compliance | Comment + Evidence (Pictures) |
|---|---|---|---|---|
| **General Occupational Health and Safety of the employees (injuries)** | To ensure safe working conditions per Health and Safety Regulations, Government Notice 156/1997 (GG 1617) | • Provide adequate and appropriate personal protective equipment for all workers<br>• Training on relevant aspects of occupational health and safety. | • Adequate protective gear for all staff (issue register)<br>• Training schedule, attendance register, report, pictures, etc | |
| **Alcohol abuse and Drug use** | Prevent alcohol and drug use at the project site | • Warn employees against alcohol abuse and use of prohibited substances e.g drugs | • Drunk / Misbehaving employees<br>• Monitor presence of prohibited substances. | |
| **Fire Risk / Hazard** | To mitigate fire risk | • Avail sufficient fire extinguishers and train staff on how to use them<br>• Demonstrate the use of fire extinguishers and fire hydrants, | • Availability of fire extinguishers and service record.<br>• Training report, attendance register, pictures, etc | |

## SECTION C: POLLUTION AND WASTE MANAGEMENT

**Table 6-3: Monitoring of measures pertaining to Waste Management**

| **Potential Sources of Impacts:**<br><br>✓ Poor waste disposal (often considered insignificant e.g. littering, oil spills, cement mixers, wash, wastewater, etc<br>✓ Leaking or broken sewerage pipes<br>✓ Storage of unwanted waste (e.g. old / waste tyres) | | | | |
|---|---|---|---|---|
| **Aspect** | **Objective** | **Mitigation Measures** | **Indicators for Monitoring and Compliance** | **Comment + Evidence (Pictures)** |
| **Waste Water** | • To avoid effluent discharge into the environment | • Refer to regulations on effluent disposal and recommended septic tank and drainage design<br>• Be on the look-out and repair any leaking or broken sewer pipes (regardless of how small it may be perceived) | • No leakage of sewer pipes | |
| **Ablution facilities** | • To avoid open defecation, environmental pollution and washing of faecal waste into water streams | • Recommend Flushing toilets with provision of a containerized septic tank, honey sucked for disposal at approved oxidation ponds, or<br>• Adequate pit latrines: Ventilated (closed air-vent), slab (removable), toilet pot (closed) | • Ablution facilities (Flushing toilets)<br>• Containerised septic tank | |
| **Solid Waste** | • To prevent pollution and maintain a clean environment | • Adequate solid waste management (contain – drums / bins, sort, burn combustible materials and recycle non-combustible materials).<br>• Ensure appropriate waste collection and removal from the site and dispose at appropriate municipal waste disposal sites | • Scattered waste, Littering and any other unsightly waste at the site (eyesore) | |

| | | | | |
|---|---|---|---|---|
| **Oil Spills** | • Ensure waste oil is managed appropriately, and pollution is prevented at all costs | • Build a concrete bunding around fuel tanks that is at least 20% larger than the tanks to allow safe working space and prevent spills from spreading.<br>• Use of sheeting to prevent soil contamination (e.g. during vehicle servicing).<br>• Waste oil should not be stored onsite indefinitely and should be recycled (transfer to oil recycling companies).<br>• If an oil spill occurs, collect the contaminated soil, store in drums and dispose at appropriate waste disposal site (e.g. Municipal disposal site). | • Concrete bunding at all fuel storage and handling sites<br>• Drums or containers for oil recycling and proof of oil transfer to recycling companies | |

## SECTION D: EXCAVATION WORKS

**Table 6-4: Monitoring of measures pertaining to excavation works and borrow pits**

| **Sources of impacts:**<br><br>✓ Loss of top fertile soil<br>✓ Dust and noise<br>✓ Risk of people and animals falling into borrow pits and drowning (if it collects water) | | | | |
|---|---|---|---|---|
| **Aspect** | **Objective** | **Mitigation Measures** | **Indicators for Monitoring and Compliance** | **Comment + Evidence (Pictures)** |
| **Excavation activities** | **To prevent loss of top fertile soil** | • Develop and implement excavation procedure for topsoil soil trimming and stockpile | • Overburden for possible rehabilitation | |
| | **Dust and noise** | • Adopt applicable dust suppression measures.<br>• Provide dust masks and earmuffs to all employees operating in a dusty or noisy environment.<br>• Adherence to site standard/safe operating procedure (cover trucks when transporting sand)<br>• Prevent abnormal noise from earthmoving machinery *(below the recommended noise levels of -85dB (A)).*<br>• Alert the community and public of noisy undertakings prior (e.g blasting). | • Dust fallout and dust chemical analysis<br>• Use of respirable dust samplers,<br>• Community complaints | |

| | | | | |
|---|---|---|---|---|
| **Borrow pits** | | • Fence off the borrow pits and put a notice board to warn the community against entering.<br>• Smoothen the borrow pit edges to ensure that the angles are not steep sloped, but rather gentle sloped at less than < 30° slope angles.<br>• Borrow pit edges should be gentle so that there is no tipping point, where people or livestock can fall in. | Fenced off borrow pits | |

## SECTION E: SURFACE AND GROUND WATER

**Table 6-5: Monitoring of measures pertaining to water abstraction**

| **Sources of impacts:**<br><br>✓ Over-abstraction | | | | |
|---|---|---|---|---|
| **Aspect** | **Objective** | **Mitigation Measures** | **Indicators for Monitoring and Compliance** | **Comment + Evidence (Pictures)** |
| **Water abstraction** | Determine water sources (boreholes, oshanas, pipeline) and avoid over-abstraction | • Abstraction volumes to be within licensed and sustainable limits.<br>• Conduct borehole testing to determine borehole yield and optimum water abstraction rates.<br>• Allow borehole resting for recharge | • Water abstraction volumes | |

## SECTION F: COMMUNITY SAFETY

**Table 6-6: Monitoring of measures pertaining to community safety**

**Sources of impacts:**

- ✓ Lack of awareness on HIV-AIDS
- ✓ Teenage pregnancies
- ✓ Exposure to alcohol and drug use

| Aspect | Objective | Mitigation Measures / Management Actions | Indicators for Monitoring and Compliance | Comment + Evidence (Pictures) |
|---|---|---|---|---|
| **Exposure to alcohol and Drug use** | Prevent negative influence of workers on children regarding alcohol abuse and drug use. | • Educate workers on appropriate behaviour in local communities.<br>• Prohibit workers from supplying or influencing minors with substances. | • Reports or complaints from community or schools | |
| **Teenage pregnancies** | To prevent sexual exposure of young girls to workers | • Conduct sexual health awareness (workers and the community)<br>• Discourage pursuing young girls by workers | • Awareness report, attendance register, pictures, etc | |
| **HIV / AIDS** | Provide HIV / AIDS awareness to employees | • Provide HIV / AIDS awareness at induction<br>• Avail Condoms (e.g in toilets) | • Availability of condoms at and construction site | |

# 7. CONCLUSION

## 7.1 EMP requirements and Procedures

The aim of the EMP is to ensure legal compliance to prevent environmental fatal flaws. Various best practice and mitigation measures have been identified to avoid and reduce effects as far as reasonably practicable across the proposed project, as well as ensure the environment is protected and unforeseen effects are avoided.

On condition that mitigation measures specified in this EMP are fully implemented, an Environmental Clearance Certificate (ECC) is recommended.

However, Non-compliance is punishable.

The key role-players are defined under section 4 should:

- ***Read*** the ESMP (particularly the Project Manager) and ensure that they are fully conversant with provisions of the EMP,
- If need be, ***Ask for clarity*** from the Environmental Assessment Practitioner (EAP), Environmental Compliance Officer (ECO) or relevant authority,
- Ensure implementation of the recommended mitigation measures, and
- Communicate defaults / challenges to the ECO as soon as possible.

The ECO should monitor (conduct periodic and unannounced EMP audits) in-order to ensure compliance against the recommended mitigation measures.

## 7.2 Compliance to the EMP

Once approved by the Environmental Commissioner, EMP become binding to the proponent, and all contractors / sub-contractors. This implies that each and every entity that may have any kind of engagement or involved in / with the proposed project activities ought to familiarise themselves with the mitigations measures as outlined in the ESMP, as these as part of the license conditions.

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