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ENVIRONMENTAL MANAGEMENT PLAN (EMP)

(Source: TEC, 2024)

FOR THE PROPOSED DRILLING AND WATER INFRASTRUCTURE DEVELOPMENT AT OTJINGAMBU VILLAGE, ORUPEMBE CONSERVANCY, KUNENE REGION

Prepared for:

CCFN

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DOCUMENT INFORMATION		
Title	Environmental Management Plan – Environmental Clearance Certificate (ECC) application for the proposed drilling and water infrastructure development at Otjingambu village, Kunene Region	
ECC Application Reference number	**APP- 005259**	
Listed Activity	**Activity 8: Water Resource Development** 8.1 The abstraction of ground or surface water for industrial or commercial purposes	
Location	Otjingambu Village, Orupembe Conservancy	
Proponent	Orupembe Conservancy with support from Community Conservation Fund of Namibia (CCFN) P. O. Box 353, Opuwo	
Author:	**Signature**	**Date**
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Reviewer: Mr. Jonas Heita (EAP)		13th January 2025
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ACRONYMS

BID	Background Information Document
DEA	Department of Environmental Affairs
DSR	Draft Scoping Report
CCFN	Community Conservation Fund of Namibia
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
I&APs	Interested and Affected Parties
MEFT	Ministry of Environment, Forestry and Tourism
SM	Site Manager
TEC	Tortoise Environmental Consultant

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1. INTRODUCTION

1.1. Terms of Reference

The Ministry of Environment, Forestry, and Tourism (MEFT) appointed CCFN as the Project Executing Agency (PEA) for the management of a project titled "Poverty Oriented Support to Communal Conservation in Namibia." The project's primary objective is to promote biodiversity conservation and rural development by establishing sustainable Human-Wildlife-Conflict (HWC) management systems within Namibia's communal conservancies.

Tortoise Environmental Consultants has been contracted to carry out Environmental Scoping Studies and Develop Environmental Management Plans for the drilling of seven (7) boreholes and associated water infrastructure development in six (6) conservancies, in the Kunene region.

1.2. Project Rationale

The Kunene region experiences severe drought, with annual rainfall as low as 100 – 300 mm (OPM, 2008), making it one of the most affected areas in the country (DRFN and KULIMA, 2017). This extreme aridity renders the region highly vulnerable to droughts, which severely impact livestock and community livelihoods (Mendelson, 2010). Limited water resources and financial constraints further exacerbate challenges in providing adequate water supply for people, livestock, and wildlife, hindering efforts to rehabilitate and upgrade water infrastructure.

In summary, it is hoped that the proposed project will:

1. Provide drinking water to wildlife and avoid human-wildlife conflicts in the area
2. Attract wildlife back into the village.
3. Allow for the establishment of various tourism developments such as campsites in the area = income for the conservancy.

1.3. Motivation for Environmental Clearance Certificate (ECC) Application

The proposed project triggers a number of Listed Activities (activities that may not be carried out without an ECC) as set out in the Environmental Management Act, 2007 (Act No. 7 of 2007) (herein referred to as the EMA) and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) (herein referred to as the EIA Regulations).

1.4. Environment versus Development

It is important to note that, for development to take place, certain materials are required from land/environment.

This means that, for the drilling and water infrastructure development to take place some parts of the environment may be affected. This can be a result of activities such as vegetation clearing, water abstraction, etc.

1.5. Environmental Management Plan (EMP) Context

This document constitutes the Environmental Management Plan (EMP) for the application of an Environmental Clearance Certificate for the proposed drilling and water infrastructure development at Otjingambu village, Kunene Region.

The EMP has been developed in accordance with the provisions of the Environmental Management Act (Act No.7 of 2007), the EIA Regulations of 2012 and any other relevant/applicable legislation (across all sectors).

1.6. 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 infrastructure upgrade. This is done to minimize potential environmental and social impacts identified during the EIA process, in accordance with the provisions of the Environmental Management Act (Act No.7 of 2007), EIA Regulations of 2012 and any other relevant/applicable legislation.

As a result, the EMP recommends mitigation measures in order to ensure that the recommended project and associated 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.

1.7. Purpose of the EMP

The purpose of the EMP is to identify potential environmental and social impacts associated with the upgrading and operation activities, in-order to ensure compliance to the EMA.

The EMP aims to ensure that the activities undertaken during the proposed drilling and water infrastructure development are conducted in accordance with the following:

i. Environmental Management Act (No. 7 of 2007),
ii. EIA regulations of 2012 (GN: 30), and
iii. Best environmental practices (benchmarks)
iv. Any other applicable legislation *(as presented in Table 3.1 to 3.3)*

The EMP provides environmental guidelines to be adhered to, throughout the lifespan of the project activities.

1.8. 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 drilling and development of water infrastructure.

1.9. EMP Scope

The EMP does not only focus, and it is not limited to the proposed drilling and development of water infrastructure. 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.

1.10. 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.

1.11. 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 1-1: Role players, Institutional Framework

Role-player	Company / Institution	Role
Proponent	Orupembe Conservancy with support from the Community Conservation Fund of Namibia	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: ➢ Un-announced spot checks, ➢ 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.)

2. PROJECT INFORMATION

2.1 Project Location

The proposed drilling site is in Otjingambu Village, Orupembe Conservancy in Kunene region (Fig.2.1).

Location: GPS coordinates: Latitude -18. 180583 and Longitude 12.399900

2.2 Project area overview

Otjingambu area is located in a very isolated are far from homesteads. It is an area very close to the border between the conservancy and the Skeleton Coast National Park. The area is frequented by wildlife exclusively with sighting of ostriches and springbok observed during the field visit.

Figure 2-1:Otjingambu borehole drilling site depicted by rocks

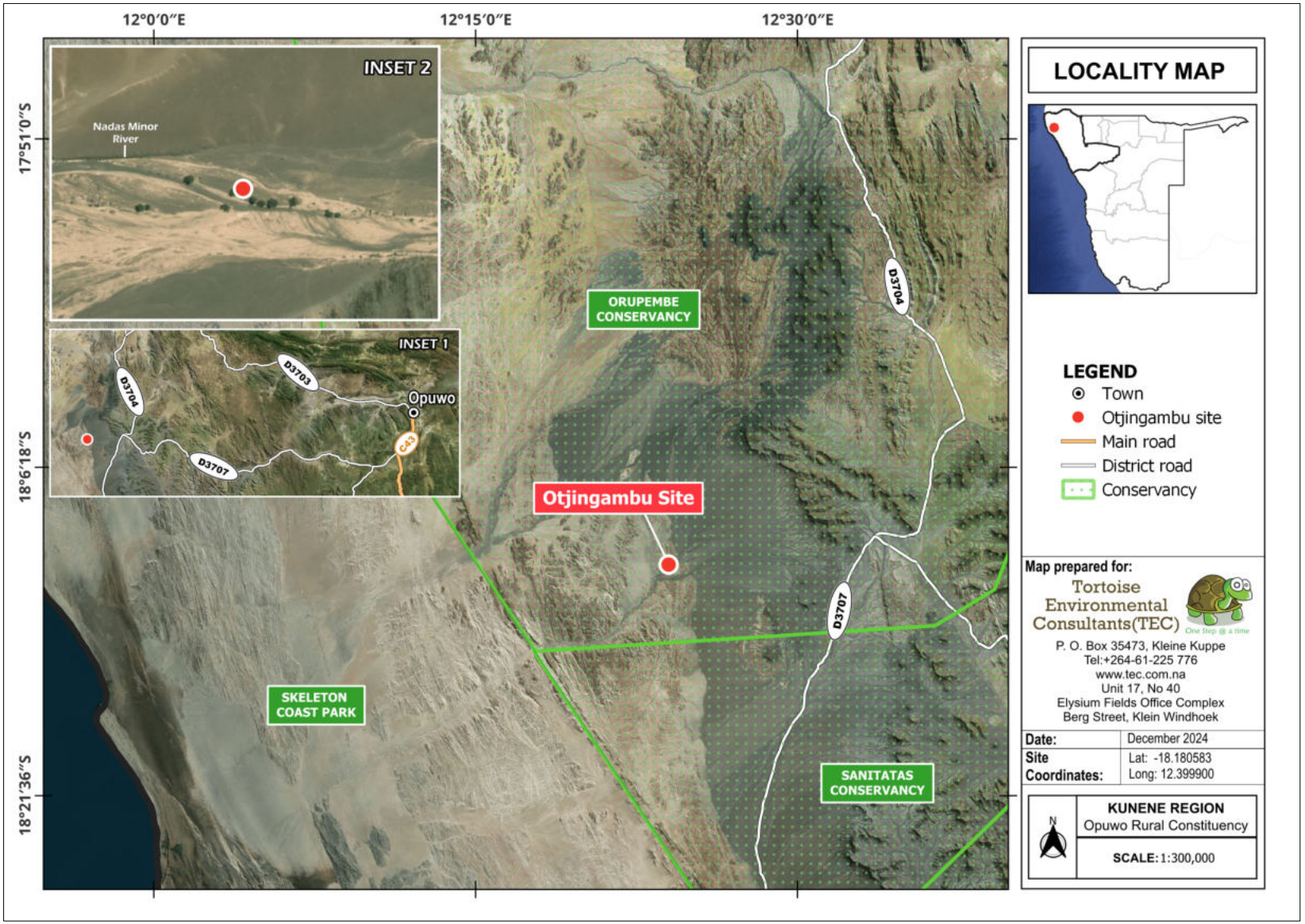

Figure 2-2: Locality map of proposed borehole site in Otjingambu Village

3. COMPLIANCE AND LEGAL FRAMEWORK

This chapter outlines the regulatory framework applicable to the proposed project. Table 3.3 provides an overview of applicable policies, plans and strategies, while Table 3.4 provides a list of other applicable national legislation.

3.1 Compliance to the EMP

The EMP is binding to the proponent, and all contractors / sub-contractors. This implies that every entity that may have any kind of engagement or involved in/with the proposed drilling and water infrastructure development, should comply with the EMP throughout the project lifespan. Non-compliance may have serious consequences e.g. license withdrawal.

3.2 Environmental Management Act (No.7 of 2007)

Section 27 of the Environmental Management Act 2007 (Act No.7 of 2007) (EMA) provides a list of activities that may not be undertaken without an Environmental Clearance Certificate (ECC) (herein referred to as listed activities). The proposed upgrading of the APU camp triggers some listed activities (table 4.2).

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."

3.3 EMP Requirements

Table 3-1: EMP Requirements as outlined in Section 8 of the EIA Regulations

Requirement
(j) a draft management plan, which includes – *(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;* *(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

(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.

3.4 Listed Activities

Listed Activities may not be undertaken without an Environmental Clearance Certificate (ECC), and hence an Environmental Impact Assessment (EIA) is required.

As the organ of state responsible for management and protection of its natural resources, the MEFT: DEA is committed to pursuing the principles of environmental management. The EMA provides a list of activities that requires an EIA and the proposed drilling is among the listed activities, or activities that may not be conducted without an ECC. The purpose of listed activities for projects is to ensure that the associated impacts on the environment are carefully considered

The proposed project triggers a number of Listed Activities as set out in the Environmental Management Act, 2007 (Act No. 7 of 2007) (herein referred to as the EMA) and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) (herein referred to as the EIA Regulations).

The EIA entails the development of the EIA Scoping Report and Environmental Management Plan (EMP), which should be submitted to the MEFT as part of the application for the ECC.

Table 3-2: Listed Activities triggered by the proposed project.

Listed Activity	Activity Description	Relevance to the proposed project
Activity 8 Water Resource Developments	8.1 The abstraction of ground or surface water for industrial or commercial purposes	The proposed project involves underground water abstraction.

3.5 Extended Developmental and Legal Framework

In addition to the EMA and Environmental Assessment Policy, there exists a host of legal and policy documents and guidelines that must be considered when undertaking an EIA as indicated in tables 5.3 and 5.4 below.

The proponent has the responsibility to ensure that the construction/operation activities conform to all other National Development Plans and legal frameworks.

Table 3-3: Policies, Plans and Strategies

Policy / Plan	Relevancy/Summary	Applicability to the Proposed Project
5th National Development Plan (NDP), Vision 2030 and HPP2	Outlines the country's national development ambitions, in line with the Harambee Prosperity Plan, and Vision 2030. NDP5 incorporates the principles and recommendations contained in the Stockholm Declaration on the Human Environment (1972) and associated Action Plan, as well as Agenda 21 which merged from the Convention on Biological Diversity, Rio De Janeiro (1992).	The proposed project is a development that forms part of the bigger picture of achieving economic progression, social transformation and environmental sustainability.

Table 3-4: Other Legal Instruments / National Statutes

National Statutes	Relevance/Summary	Applicability to the Proposed Project
Environmental Management Act, 2007 (Act No. 7 of 2007) and associated regulations, including the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011).	The Act aims to promote sustainable management of the environment and the use of natural resources by establishing principles for decision-making on matters affecting the environment. It sets the principles of environmental management as well as the functions and powers of the Minister. The Act requires certain activities to obtain an environmental clearance certificate before project development. The Act states that an EIA may be undertaken and submitted as part of the environmental clearance certificate application.	This EIA report (and EMP) documents the findings of the EIA process undertaken for the proposed project, which will form part of the environmental clearance application. The EIA process and associated report have been undertaken in line with the requirements under the Act and associated regulations.
Revised National Policy on Human Wildlife Conflict Management (HWCM)	The National Policy on Human Wildlife Conflict Management was developed in 2009 to manage human-wildlife conflict and advance socio-economic developmental needs for rural communities. The policy was revised in 2018 to enhance the HWC mitigation measures.	By drilling a new borehole, this project aligns with the policy's goal of minimizing human-wildlife conflicts by providing a separate, reliable water source that benefits both the community and wildlife. Ensuring that wildlife, such as elephants, have access to sufficient water reduces their encroachment into the homesteads, reducing potential damage to infrastructure and preventing harm to both people and animals.

National Statutes	Relevance/Summary	Applicability to the Proposed Project
Water Act, 1956	This rather out-dated Act that remains in force, provides for the control, conservation and use of water for domestic, agricultural, urban and industrial purposes; to make provision for the control, in certain respects, of the use of sea water for certain purposes; and for the control of certain activities on or in water in certain areas. The Ministry of Agriculture, Water and Land Reform (MAWLR) Department of Water Affairs is responsible for administration of the Water Act.	Water pollution is an offence as per Section 23 of the Water Act. The Act stipulates obligations in Part 13 of general provisions relating to water pollution and prohibits the discharge of wastewater, effluent or waste without licence and sets forth specific requirements for such licence. The EMP sets out measures to avoid polluting the environment.
Water Resources Management Act 2004 (Act No. 24 of 2004)	Whilst approved and published in the Government Gazette, it is not legally enforced. Based on the National Water Policy and provided for the management, development, protection, conservation, and use of water resources; and it established the Water Advisory Council, the Water Regulatory Board and the Water Tribunal	Whilst not in operation, it is best practice to adhere to the conditions in this Act. The 2013 Act would repeal this Act, therefore conditions in the 2013 Act have been reviewed.
Water Resources Management Act, 2013 (No. 11 of 2013)	Whilst enacted it has not yet come into operation, and needs approval from the Government. This Act provides a framework for managing water resources based on the principles of integrated water resource management. It provides for the management, protection, development, use and conservation of water resource, and for the regulation and monitoring of water services and for incidental matters	Whilst not in operation, it is best practice to adhere to the conditions in this Act. The Act sets out obligations in order to avoid water pollution Section 44 stipulates the requirements for a licence to be held for the abstraction and use of water. Section 68 makes provisions for water pollution. Section 69 and 72 makes provisions for

National Statutes	Relevance/Summary	Applicability to the Proposed Project
		waste water treatment plants and stipulates the requirement for a licence to operate waste water treatment plant and discharge effluent. These have been incorporated into the EMP to minimise water pollution.
Soil Conservation, 1969 (Act 76 of 1969) and the Soil Conservation Amendment Act (Act 38 of 1971)	Makes provision for the prevention and control of soil erosion and the protection, improvement and the conservation, improvement and manner of use of the soil and vegetation.	Through vegetation removal there may be the risk of affecting soil quality. Measures shall be taken to avoid this which are set out in the EMP.
Forest Act 12 of 2001 Forest Act Regulations 2015	To provide for the protection of the environment and the control and management of forest. The Act and Regulations have the following stipulations that may be relevant to the proposed project: - Approval from the Director may be required for the clearance of vegetation on more than 15 hectares (Section 23, subsection 1 (b)). - Tree species and any vegetation within 100m from a watercourse may not be removed without a permit (Section 22, subsection 1 (b)) - Provision for the protection of various plant species. This includes the proclamation of protected species of plants and the conditions under which these plants can be	There may be some vegetation removal as part of the proposed project. There is no vegetation falling within 100m of the river therefore no permit shall be obtained prior to clearance. The proponent shall undertake all activities in line with the conditions stipulated in the Permit and a valid permit shall be obtained throughout vegetation clearance activities. It is unlikely that a permit shall be required.

National Statutes	Relevance/Summary	Applicability to the Proposed Project
	disturbed, conserved, or cultivated.	
National Heritage Act, No. 27 of 2004.	The Act provides for the protection and conservation of places and objects with heritage significance.	There is potential for heritage objects to be found on the development site, therefore the stipulations in the Act have been taken into consideration and are incorporated into the EMP.

3.6 EMP Implementation Context

Environmental management is not only concerned with the final results of the Proponent's operations, but also with how such operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standards of the day-to-day operations required to complete the Works.

The EMP is an important tool and necessary to mitigate/counter negative environmental or social impacts that may arise from the project. However, in the absence of audits and monitoring, it will become ineffective.

3.7 Disciplinary Action

The EMP is a legally binding document and non-compliance with the EMP shall result in disciplinary action being taken against the perpetrator/s. Such action may take the form of (but is not limited to):

- ✓ Fines / penalties,
- ✓ Legal action,
- ✓ Withdrawal of license/s
- ✓ Suspension of work.

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

3.8 Non-Compliance

The Proponent and Site Manager shall be deemed to have **not** complied with the EMP if:

- There is evidence of contravention of the EMP and associated indicators.

- The Proponent and SM have failed to comply with corrective or other instructions issued by the ECO or qualified authority.
- The Proponent and SM fail to respond to complaints from the public.

4. 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.

4.1 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.

4.1.1 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.

4.1.2 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.

4.1.3 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,

4.2 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.

4.3 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.

4.4 EMP Implementation Context

Environmental management is not only concerned with the final results of the Proponent's operations, but also with how such operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standards of the day-to-day operations required to complete the Works.

The EMP is an important tool and necessary to mitigate / counter negative environmental or social impacts that may arise from the project. However, in the absence of audits and monitoring, it will become ineffective

5. PROJECT DESIGN AND PLANNING

The EMP provides mitigation measures in accordance with the scope of work during the construction and operations of the APU camp. The recommended mitigation measures should be considered at all stages/phases of the development process as follows:

- Design;
- Planning;
- Site preparation, and
- Construction and Operational Phase

5.1 Design phase

The design phase entails the conceptual framework (what, where, how big, etc.) and architectural design (sketch and projected image), and machinery required for the proposed development.

Already at this stage, it is important that, the Architectural and Engineering designs, should take environmental aspects and standards into consideration (e.g. aesthetic value, habitat alteration, visual / image upon completion, waste management, during both the construction and operational phases, etc.).

5.2 Planning phase

During the planning phase, it is imperative that the design is re-evaluated and if any environmental concerns are detected at this stage, corrective measures should be applied. In-addition, a contingency plan should be in place, in case, unforeseen environmental concerns are detected later.

5.3 Site Preparation

To provide a systematic guide for the development of mitigations measures, the proposed development site preparation can be broken down / sub-divided into different development stages / phases as presented in the table 5.1 below.

Table 5-1: Site Preparation Phases requiring mitigation measures

Phase	Description
Phase 1	Access roads and routes
Phase 2	Site Clearing and deployment of machinery
Phase 3	Decommissioning – Removal of all unwanted material, clean-up, landscaping, and rehabilitation

5.3.1 Environmental Permits and Approvals

Relevant environmental permits and approvals may be required. It is the responsibility of both the proponent and contractors to identify the requirements for environmental and social permits during project preparation. Such permits must be obtained from the relevant authorities. Below is a list of permits that may be required:

Table 5-2: list of permits that may be required

Permit	Descriptions
Water abstraction permit	For possible drilling of boreholes.
Wastewater discharge permit	To ensure that wastewater is properly handled to avoid possible contamination of the environment
Forestry permit	For possible tree-clearing

5.4 Construction and Operational Phase

For ease of reference and monitoring during operation, the EMP is sub-divided into different themes and for each theme, the following aspects are highlighted:

- ✓ Potential Impact,
- ✓ Environmental Management Objective
- ✓ Mitigation Measures / Management Action/s required
- ✓ Indicator/s for Monitoring and Compliance
- ✓ Party responsible for implementation

6. POTENTIAL IMPACTS AND MITIGATION MEASURES

6.1 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 6.1 to 6.5).

EMP Impact Identification Section and Associated Aspects

EMP Implementation / Potential Impact Category	**Specific Aspects**
A. Staff Induction	Induction
	Site Demarcation
	Communication
B. Occupational Health and Safety	General safety at work place
	Ablution facilities
	Ablution facilities
C. Pollution and Waste Management	General waste categorised into: Material waste (off cuts), garden waste, concrete rubble and domestic waste
	Oil and Lubricant Spills
D. Environment	Water
	Ecology
	Rehabilitation
E. Socio economic	Employment opportunities for Locals
	Alcohol and Drug abuse
	HIV / AIDS
F. Cultural Heritage	Heritage resources / artefacts

SECTION A: STAFF INDUCTION

Table 6-1: Mitigation measures pertaining to staff Recruitment and Induction

Potential Sources of Impacts:

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

Aspect	Objective	Mitigation Measures	Monitoring Indicators	Party Responsible
Recruitment	To ensure that all workers have employment contracts (Labour Act No. 11 of 2007)	Formalize recruitment of all staff with Contracts, stating nature of employment, duration and remuneration to protect both parties and to avoid labour disputes later on No recruitment of new staff will take place on site. Recruitment of staff must take place prior to commencement of work and formalized by employment contracts. Employees should be fully vetted and should keep a copy of their employment contract at all time.	Copies of staff contracts Copies of staff Identification Documents	Proponent / Site Manager
Staff Induction	To ensure that all staff / employees are conversant with the	Induction for all workers on the provisions of the EMP before work commencement, covering but not limited to: Safety, Health and Environmental (SHE) measures, emergency	Induction Minutes and Attendance Register, Signed by	Site Manager

	requirements of the EMP	response, reporting of incidents, HIV/AIDS awareness, alcohol and substance abuse, etc Staff operating equipment (such as trucks, loaders, jack hammers, compressors etc.) shall be adequately trained and sensitised against potential hazards. Conduct Quarterly induction reviews and reflect on workers conduct	each and every staff members Staff members appointed at a later stage should also undergo induction Quarterly minutes	
	Availability of the EMP on site for ease of reference	Ensure that a copy of the EMP is kept on site and accessible by team leaders	Availability of EMP on site and accessibility by team leaders	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
Communication	Ensure effective communication throughout the project lifespan	Develop a communication strategy (Chanel & medium of communication) All correspondence should be written and signed off by witnesses (e.g Site Manager / team leaders) The contact numbers for the Site Manager and Team Leaders must be available onsite (displayed) in case of emergencies.	Communication Strategy Letters, e-mail, Notices, Minutes List of contact numbers available on site	Site Manager

SECTION B: OCCUPATIONAL HEALTH AND SAFETY

Table 6-2: Mitigation measures pertaining to Occupational Health and Safety

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Responsibility
Employment opportunities from the expansion of the irrigations	Promote benefits to the local community	1. Recruit locals for unskilled labour 2. Where possible, procure materials from local suppliers	Employee structure and proportion of local employment	Proponent
Alcohol and Drug use	Prevent alcohol and drug use at the construction site	1. Provide awareness on the dangers and health impacts of alcohol and drug use 2. All employees must be screen with the breathalyser to avoid intoxicated personnel on site	Breathalyser report Monitor presence of alcohol at work place	Proponent
Working hours	Adhere to the Labour Act No. 11 of 2007	1. Operate within the prescribed working days and hours as per the Namibian Labour laws and regulations	Verification of working hours against the labour Act	Proponent
HIV / AIDS	Provide HIV / AIDS awareness to employees	1. Provide HIV / AIDS awareness at induction 2. Avail Condoms at on site	Availability of condoms at construction site	Proponent

SECTION C: POLLUTION CONTROL AND WASTE MANAGEMENT

Table 6-3: Mitigation measures pertaining to Waste Management

Environmental / Social Impact	Objective	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
Oil Spills	Manage oil spills and leak from vehicles and Machinery	1. There must be an immediate spill response kit on site 2. Ensure all vehicle and machinery must be well serviced and leak inspection are done. 3. Provide drip trays to stationary vehicle and machinery 4. The onsite re-fuelling area must be on concrete bund 5. Storage of fuel, oil and lubricants must be kept on bunded structure 6. If an oil spill occurs, collect the contaminated soil, store in drums and dispose at appropriate waste disposal site (e.g. ORTC disposal site)	Physical verification and routine monitoring	Proponent
Solid Waste	To manage solid waste, To prevent littering, pollution, contamination of water and general environmental health hazards	1. All waste produced on site should be contained and disposed as required by law. 2. There must be sufficient temporally ablution facility at the site for designated for males and female.	Scattered waste, Littering and any other unsightly waste at the site (eyesore)	Proponent

SECTION D: ENVIRONMENT

Table 6-4: Mitigation measures pertaining to Environment impacts

Aspect	Objective	Action Required	Monitoring Indicator	Party responsible
Surface Water	To avoid any potential water contamination or pollution	1. Refer to the adequate handling of oil and fuel above	Oil and grease trace in surface water	Proponent
Ground Water	To avoid contamination of underground water	1. Refer to the adequate handling of oil and fuel above	Oil and grease trace in ground water	Proponent
Water abstraction	To conserve the aquifer	1. Do not abstract more than the approved allocation as indicated in the permit 2. Install automatic measuring gauge to monitor abstraction 3. Carry out periodic pumping yield to assess aquifer sustainability	Abstraction reports	Proponent
Ecology	Rangeland Management	1. Adhere to the National Part Management Plan. 2. Create a tree database for monitoring 3. Monitor borehole yields in proximity	Inspection report	Proponent
Rehabilitation	To ensure that all disturbed areas are rehabilitated	1. All areas disturbed as a result of the borehole drilling activities should be cleaned up and rehabilitated	Physical verification	Proponent

SECTION E: SOCIO-ECONOMIC

Table 6-5: Mitigation measures pertaining to Socio-Economic impacts

Social Impacts	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Responsibility
Employment opportunities from the expansion of the irrigations	Promote benefits to the local community	3. Recruit locals for unskilled labour 4. Where possible, procure materials from local suppliers	Employee structure and proportion of local employment	Proponent
Alcohol and Drug use	Prevent alcohol and drug use at the construction site	3. Provide awareness on the dangers and health impacts of alcohol and drug use 4. All employees must be screen with the breathalyser to avoid intoxicated personnel on site	Breathalyser report Monitor presence of alcohol at work place	Proponent
Working hours	Adhere to the Labour Act No. 11 of 2007	2. Operate within the prescribed working days and hours as per the Namibian Labour laws and regulations	Verification of working hours against the labour Act	Proponent
HIV / AIDS	Provide HIV / AIDS awareness to employees	3. Provide HIV / AIDS awareness at induction 4. Avail Condoms at on site	Availability of condoms at construction site	Proponent

SECTION F: CULTURAL HERITAGE

Table 6-6: Mitigation measures pertaining to Cultural Heritage impacts

Sources of impacts: ✓ Disregard of Cultural Heritage and artefacts				
Aspect	**Objective**	**Action Required**	**Monitoring Indicator**	**Party Responsible**
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). No artefacts must be removed or be interfered with prior to authorisation from the Namibian National Heritage Council (NHC) 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

7. REHABILITATION

8.1 Importance of Rehabilitation

Socio-economic development is very important for our livelihood and provides services, income and employment opportunities, and hence activities such as township establishments 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.

8.2 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.).

8.3 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.

SECTION G: REHABILITATION

Table 7-1: Potential impacts and Mitigation measures pertaining to Rehabilitation

Sources of impacts: ✓ Landscape alteration due to lack of rehabilitation ✓ Loss of topsoil due to lack of restoration measures ✓ Construction pits may become a death trap for animals ✓ 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 Plant indigenous trees to fill the gaps for trees removed during construction.	Re-filling of and construction pits with the overburden 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, equipment, bricks and concrete, machinery and equipment remains), that is not needed at site upon project completion	Clean-up after project closure	Site Manager

8. CONCLUSION

It is important to note that, development takes place on land and certain materials are required from the land / environment.

This implies that, for development to take place, some part of the environment may be affected e.g vegetation clearing, water abstraction, sourcing of building sand and gravel, etc.

Thus, the proposed activities should be undertaken in a responsible and environmental friendly manner.

The EMP recommends measures to be implemented by the proponent, the contractor and sub-contractors in order to manage the infrastructure development activities at Leeudrink APU Camp on behalf of MEFT (the Proponent), in an environmental friendly manner, and in accordance with the provisions of the Environmental Management Act and EIA regulations.

In-addition, the aim of the EMP is to ensure legal compliance to prevent environmental fatal flaws as mitigation for any impacts arising from the construction process at the end of the construction phase.

Non-compliance against the EMP is punishable and specific responsibilities has been assigned to role players, in-order to ensure that the EMP is implemented. The key role-players (Proponent, Contractor, Site Manager and ESHS) as defined under section 4 should:

- ***Read*** the EMP (particularly the Site 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.

It is recommended that an Environmental Control Officer (ECO) should monitor (conduct periodic and unannounced EMP audits) throughout the development phase, in-order to ensure compliance in-accordance with the mitigation measures prescribed in the EMP.