

ENVIRONMENTAL MANAGEMENT PLAN (EMP)



**FOR CONSTRUCTION OF ONGEAMA TJOVIKE, A NEW LODGE WITHIN
DAURES CONSERVANCY, ERONGO REGION**

APP-002588

MAY 2021

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ABBREVIATIONS

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 (Act No. 7 of 2007)
ESR	Environmental Scoping Report
MET	Ministry of Environment and Tourism

1 INTRODUCTION

1.1 The proposed lodge

Mr. Nico Kaoti intends to construct and operate a lodge within Ongeama Tjovike village. This village is located within Daures Constituency of Erongo Region and it falls within the jurisdiction of Zeraua Traditional Authority. As part of the authorization process, the proponent is simultaneously applying for a leasehold from the Ministry of Land Reform to enable the provision of the lodge facility (i.e. accommodation and hospitality services). The proponent obtained consent from the Zeraua Traditional Authority with no objection to the construction and operation of the proposed lodge. The lodge will consist of a reception, restaurant and dining hall, sleeping chalets, a swimming pool and staff houses. Scenic and game drives will also be offered to the tourists as the surrounding area is known to be frequented by elephants.

Ongeama Tjovike Village is located on the boundaries of Erongo and Kunene regions and is approximately 60 km southeast of Khorixas. The village is however within Daures Constituency of Erongo Region; the area is accessible via C39 from Khorixas towards Vingerklip or via C36 from Omaruru through Omatjete (see map overleaf). The GPS coordinates are: S 20°37'48.37" E 015°18'13.59".

1.2 Environmental Management Plan (EMP) Context

This document constitutes the Environmental Management Plan (EMP) for the proposed tourism enterprise within Ongeama Tjovike Village. The EMP has been developed 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 (across all sectors).

1.3 What is an EMP?

The EMP outlines mitigation measures against specific activities, steps, stages or processes of the proposed development. Thus, the EMP can be defined as the tool to prevent / minimize the impacts identified during the EIA process. Furthermore, the EMP outlines specific roles and responsibilities for role-players against which they can be evaluated and non-compliance is punishable. The EMP contains the necessary mitigation and recommended actions as well as the timeframe and persons responsible for the actions. The ultimate responsibility of implementing the EMP rests with the proponent.

1.4 Purpose

The (EMP) is a tool aimed at mitigate potential environmental risks associated with the proposed project / activity. The EMP provides a risk strategy and logical framework for implementation during the construction and operation of the proposed tourism development project, in order to mitigate potential environmental and social impacts.

The aim of the EMP is to ensure that the activities undertaken during the tourism 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 followed throughout the lifespan of the tourism development activities. The guideline comprises of the following:

- a) Environmental Aspects,
- b) Management Objective,
- c) Mitigation Measures / Actions Required,
- d) Monitoring Indicators, and
- e) Party Responsible

1.5 Objective

The objectives of this EMP are:

- To outline functions and responsibilities of the persons in charge of construction and operations of the proposed lodge;
- To state standards and guidelines which are required to be achieved in terms of environmental legislation;
- To outline mitigation measures and environmental specifications which must be implemented to ensure environmental and social protection of the surrounding environment; and
- To prevent long-term or permanent environmental degradation.

1.6 Scope

The EMP does not only focus, and it is not limited to the boundaries of the proposed zones and tourism development activities, but it includes the bigger picture, and serve as the guiding tool to protect the natural, bio-physical and socio-economic environment both in the surrounding area, and beyond the scope of the tourism development

activities. The bigger picture is important because, most impacts (e.g. water pollution, noise pollution, ecological impacts, solid waste etc.) may not be confined to the boundaries of the tourism development sites.

1.7 Possible adjustment to the EMP

The EMP is an open-ended document and maybe 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 project design and development of the initial EMP.
- d) Development of industry best practice.

This implies that, in-addition to the information contained herein, any other relevant information that may surface during the construction 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 PROJECT INFORMATION

2.1 Project description

Ongeama Tjovike & Tourism cc intends to embark on developing better service delivery techniques in accordance with international standards and as per requirements of the Namibia Tourism Board. The Proponent aims to provide a conducive working environment with lucrative wages to local members of the community and will in turn provide world-class affordable leisure and accommodation facilities to the visitors. The proposed lodge will further create a better future for the surrounding community members and it will benefit many individuals during construction and operation phases of the lodge. The lodge will also contribute towards poverty alleviation strategies, uplift living standards of local people and address objectives of the Harambee Prosperity Plan.

The ultimate objective is to create a “home away from home” environment for the visitors. Tourists have always been attracted to the Ugab River because of the beautiful landscape and prevalence of elephants as well as the rock paintings in the surrounding mountains. Guided scenic game drives, quad biking, camping, hiking and nature walks will be offered to the lodge visitors. The lodge facilities will include the following;

- Lodge with approximately 35 chalets of various sizes
- Campsite and ample parking area
- Conferencing and restaurant
- Reception and administration building
- Ablution and sewerage facilities (grey water will be treated through an in-house wastewater treatment plant prior to discharge)
- Swimming pool and staff quarters
- Internal roads, and
- A solar park to supply electricity to the facility.

The buildings will be designed and constructed in a camouflaged manner to blend in with the surrounding environment. Thatching grass, rocks and wood will be the main materials to be used. Construction of the lodge and associated facilities is expected to be undertaken within six months. There will be minimal earthworks other than for the new underground drainage lines and access to wastewater tanks.

The lodge shall operate all year round, and is expected to have peak periods in the months of March, July and October. Approximately thirty-three (33) employees will be hired to run the facility.

2.2 Current status

The village is used for residential purposes albeit sparsely inhabited. The main land use in the area is cattle and small stock farming. The site where the lodge is to be established is seldom used for cattle grazing because it is on a steeping slope. There is no infrastructure on the proposed site.

There will be a need to clear some bush in areas where the bungalows and associated facilities will be constructed. Clearance of bush will however be kept to the bare minimum and this will be in accordance with the Forest Act.

2.3 The Affected Environment

Daures Constituency encompasses Namibia's highest mountain peaks. Mean annual rainfall varies between 75mm and 125mm but with a large variation in the amount and distribution of rainfall. Daily temperature is less extreme than the Namib Desert, but the thermal environment may be more challenging due to prolonged high temperatures from October to January in excess of 40°C during the day and more than 20°C at night. The general surrounding is dissected by numerous small drainage systems, all with shallow soils.

Daures Constituency has a population of approximately 12000 of which the majority depend on communal subsistence farming for their livelihood. Population density in the Daures constituency is only 0.6 persons per km², which is one of the lowest for an inhabited area in the world, with only 6,932 adult residents in 2011. The settlement pattern in this constituency is sparsely populated and the distances between farms are vast. These demographic statistics illustrate the relative importance of livestock for food security in an area with very limited agricultural potential. The many specimens of Fauna and Flora, the Brandberg mountain and other beautiful scenery like the desert elephants along Ugab river makes this constituency very attractive for tourists and many opportunities still exist in the hospitality industry to cater for them. Local inhabitants capitalize on this tourism opportunity to compliment the income lost during times of drought.

The general vegetation in the area is dominated by thorny trees and a substantial density of grass. This is a typical Savanna Biome as it is characterised by semi-arid, summer-rainfall conditions. The area has received exceptionally high rainfall and the abundance of grass is evidence thereof. Trees and shrubs are dominant accompanied by a variety of perennial and annual grass species.

3 COMPLIANCE AND LEGAL REQUIREMENTS

3.1 Compliance to the EMP

The EMP is binding to the proponent, and all contractors / sub-contractors to be engaged in the development of the tourism facility. This implies that each and every entity that may have any kind of engagement or involved in / with the activities of the tourism development should comply with the EMP throughout the project lifespan. Non-compliance may have serious consequences e.g. withdrawal of licenses by the authorities, which means project closure.

3.2 Environmental Management Act (No. 7 of 2007)

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 an ‘*Environmental 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 Requirement

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

Requirement
<p>(j) a draft management plan, which includes –</p> <p>(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;</p> <p>(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</p> <p>(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 and to remedy the cause of pollution or degradation and migration of pollutants.</p>

3.4 Listed Activities

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).

Listed Activities may not be undertaken without an Environmental Clearance Certificate (ECC), and hence an Environmental Impact Assessment (EIA) is required. The EIA entails the development of the EIA Scoping Report and Environmental Management Plan (EMP) which should be submitted to the MET as part of the application for the ECC.

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

Activity	Description of the Activity	Operation of the Activity
Activity 2. Waste Management, Treatment, Handling and Disposal Activities	The construction of facilities for waste sites, treatment of waste and disposal of waste	Accommodation units to have a septic tank for the collection of sewage
Activity 4 Forestry Activities	The clearance of forest areas, deforestation, afforestation, timber harvesting or any other related activity that requires authorization in terms of the Forest Act, 2001 (Act No. 12 of 2001) or any other law.	Some vegetation clearance may be required during construction. This is however unlikely to reach the thresholds as set out in the Forest Act.
Activity 5 Land use and Development	The construction of a lodge on an open space to accommodation and hospitality facility	The proposed site falls within open land which will need to be rezoned to accommodate the tourism activities
Activity 6 Tourism Development	The construction of resorts, lodges, hotels or other tourism and hospitality facilities.	Construction of a lodge and other tourism associated facilities
Activity 8 Water resources development	8.1 abstraction of ground or surface water for industrial or commercial purposes	A borehole will need to be drilled to enable the lodge to have access to water. The process to obtain the permit from the department of water affairs can be undertaken concurrently.

3.5 Water abstraction and wastewater discharge Permits

An abstraction and discharge permit will be applied for at the Department of Agriculture Water and Forestry for the abstraction of water from the borehole to be drilled, the operations of the waste water treatment plant and the discharge of waste water as per the Water Resources Management Act, 2013 (No. 11 of 2013).

3.6 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.

3.7 None 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 Site Manager have failed to comply with corrective or other instructions issued by the ECO or qualified authority.
- The Proponent and Site Manager 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 and Tourism (MET), 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 (MET 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 Site Manager (SM) to oversee the daily onsite activities.
- Liaise closely with the SM 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 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 Site Map and boundary markings (visible pegs, tape etc.).

4.2 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 proposed tourism development. 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, already at this stage, the Architectural and Engineering design, should take environmental aspects and standards into consideration (e.g. aesthetic value, habitat alteration, visual / image upon completion, waste management – both during 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 concern is 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 Environmental Awareness

Environmental awareness training must take place before construction of the lodge commences. It is important that workers are informed of the no-go areas and strictly abide by the EMP, health and safety regulations, as well as conditions as stipulated in the environmental authorisation, if granted by the competent authority. It is further recommended that an environmental awareness plan be implemented for both construction and operational phases.

5.4 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 after the Site Manager of houses, clean-up, landscaping, and rehabilitation

5.5 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

5.6 Waste Management Plan

To ensure that waste is properly managed both during the construction and operation of the proposed tourism development, a Waste Management should be considered for development.

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 6.7).

EMP Themes	Specific Aspects
A – Staff induction	Induction
	Site Demarcation
	Communication
B – Health and Safety	General safety at work place
	Road Safety
	Ablution facilities
	Dust and Noise
C – Pollution and Waste Management	General waste: <i>Material waste (off cuts), concrete rubble, garden & domestic waste,</i>
	Vehicle emissions (smoke)
	Oil Spills
	Any other waste
D – Environment	Limited access roads
	Soil and Water Pollution
	Ablution facilities
	Waste Disposal
E – Socio economic	Employment opportunities for Locals
	Alcohol and Drug use
	Working hours
	HIV / AIDS
	Safety and Security
F – Cultural Heritage	Heritage resources / artefacts
G – Rehabilitation	Clean-up and maintain natural / original appeal

SECTION A: STAFF INDUCTION

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

Potential Sources of Impacts:				
<ul style="list-style-type: none"> ✓ Employees working without employment contracts (recipe for labour disputes) ✓ Lack of adequate induction to inform the workers about the Do's and Don'ts ✓ Lack of formal orientation of the construction workers process (confusing and disorientation of workers) ✓ Poor Communication ✓ No formal presentation of the EMP and employees are not aware of the content and risks associated with the activities / actions 				
Impact	Objective	Mitigation Measures	Indicators for Monitoring and Compliance	Responsible Party
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	Copy of staff contracts	Proponent / Site Manager
Staff Induction	To ensure that all staff / employees are conversant with the requirements of the EMP	<p>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 response, reporting of incidents, HIV/AIDS awareness, alcohol and substance abuse, etc.</p> <p>Staff operating equipment (such as trucks, loaders, jack hammers, compressors etc..) shall be</p>	<p>Induction Minutes and Attendance Register, Signed by each and every staff member</p> <p>Staff members appointed at a later stage should also undergo induction</p>	Site Manager

		adequately trained and sensitized against potential hazards		
		Conduct Quarterly induction reviews and reflect on workers conduct	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 and construction period (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
Site Demarcation	To contain all project activities within the site boundaries and prevent and construction activities	Demarcate the and construction site with visible marking (e.g. fence, pegs, tape etc.)	Temporary fencing or any other visible site demarcation in place	Site Manager

	from extending beyond the and construction claims	If need be, obtain permission from relevant authorities to make use adjacent land e.g. for temporary staff accommodation or machinery warehouse	and construction activities are contained within the project site	
Notice Board	To warn any person (employees and public) entering the and construction site	Erect a notice board at the site entrance to notify employees and the public that they entering a and construction site	Visible notice board	Site Manager

SECTION B: OCCUPATIONAL HEALTH AND SAFETY

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

<u>Potential Sources of Impacts:</u>				
<ul style="list-style-type: none"> ✓ Inadequate training of employees or contractors on risks associated with tourism development activities ✓ Safety hazards may occur if equipment is not handled in the correct manner ✓ Employees not receiving the correct Personal Protective Equipment (PPE) for their specific responsibilities. ✓ Employees not adhering to safety rules implemented at the site ✓ Noise generated by vehicles and equipment during the proposed activities 				
Impact	Objective	Mitigation Measures	Indicators for Monitoring and Compliance	Responsibility
General Occupational Health and Safety of the employees (injuries)	To ensure safe working conditions and adhere to the Health and Safety Regulations, Government Notice 156/1997 (GG 1617)	<p>Develop a Health and safety Plan</p> <p>Identify potential hazards and develop responses to eliminate sources of risk or minimize workers' exposure to hazards</p> <p>Provide adequate and appropriate personal protective equipment for all workers</p> <p>Provide training to all workers on relevant aspects of occupational health and safety associated with their daily work</p> <p>Provide sufficient fire extinguishers and train staff on how to use them and the applications thereof</p>	<p>Health and Safety Plan</p> <p>Hazard risk report</p> <p>Safe work condition audit</p> <p>Personal protective equipment issue (Distribution register)</p> <p>Adequate protective gear for all staff</p> <p>Training schedule and attendance register</p> <p>Availability of fire extinguishers and evidence training (e.g.</p>	Site Manager

			minutes, training pictures etc.	
Accidents and incidents	To ensure safe working conditions	<p>Document and report occupational injuries, illness and fatalities, including near misses.</p> <p>Investigate causes and take appropriate action to eliminate risks where possible</p> <p>Provide adequate access to first aid and medical assistance in cases of work related accidents or injuries</p>	<p>Accidents and incidents register (including near misses)</p> <p>Root causes analysis report</p> <p>Incident review (cause and elimination of hazard)</p> <p>First aid kit availability and adequacy audit report</p>	Site Manager
Physical Hazards to workers	To ensure safe working conditions	Eliminate physical hazards to workers and mitigate any residual risks	Hazards risk report	Site Manager
Road Safety	To prevent traffic hazards / inconveniences from earth moving machinery during and construction period	<p>Signage for vehicles and earth moving machinery</p> <p>All trucks transporting materials (e.g. sand / gravel) should be covered with suitable material (e.g. net, tarpaulin, canvas etc.)</p> <p>Adhere to traffic rules and speed limits both on and off the and construction site</p>	Public Complaints / Incident report/s	Site Manager
Ablution Facilities	To reduce health risks and environmental pollution and ensure	Ensure adequate, hygienic (clean) and user-friendly ablution facilities	Inspect ablution facilities regularly (daily)	Site Manager

	<p>healthy working environment with appropriate and user-friendly ablution facilities</p>	<p>for all staff. Mobile chemical toilets are recommended</p> <p>Waste water should be discharged in accordance with the effluent discharge regulations. No faecal waste should be discharged on site</p> <p>Acts of excretion and urination, other than at the toilet facility provided, shall be strictly prohibited.</p> <p>Appoint a cleaner or rotate cleaning responsibilities among workers. If necessary, designate Male and Female toilets</p> <p>Ablution facilities must be located at least 100 m away from streams or freshwater systems and regularly serviced</p>	<p>Availability of toilets, cleanliness and hygienic ablution facilities</p> <p>Incidents or complaints of waste discharge into the environment</p>	
Dust and Noise	<p>To mitigate dust and noise impacts to both employees and the public</p> <p>To minimize noise disturbances during the and construction phase.</p>	<p>Adopt applicable dust suppression measures to mitigate dust impacts,</p> <p>Provide dust masks and ear muffs to all employees operating in a dusty or noisy environment</p> <p>Alert the community and general public of noisy undertakings prior to</p>	<p>Dust and Noise Incident Reports</p> <p>Monitoring of dust and noise levels using modern equipment such as: <i>Galvometric Dust Sampler, Personal Dust Monitor, Data Ram,</i></p>	Site Manager

		carrying out such activity (e.g. blasting)	<i>Sound Level Meter, etc.</i>	
Fire Risk / Hazard	To mitigate fire risk	<p>Use and Contain fire for cooking purposes and apply caution to prevent an un-controlled fire throughout the project lifespan.</p> <p>Any fire outbreak could lead to loss of life, property and grazing</p> <p>The same fire caution should be adopted by smokers (smother the cigarette bud before disposing in appropriate waste bin or burry underground.</p> <p>Provide / install Fire extinguishers in accordance with safety regulations</p>	<p>Staff induction to demonstrate the use of fire extinguishers and fire hydrants</p> <p>Adequate and Service record</p>	Site Manager

SECTION C: POLLUTION AND WASTE MANAGEMENT

Table 6-3: Mitigation measures pertaining to Waste Management

<u>Potential Sources of Impacts:</u>				
<ul style="list-style-type: none"> ✓ Disregard of the pollution impacts (often considered insignificant e.g. littering, oil spills etc.) ✓ Poor management, storage and disposal of concrete and cement or spillages from equipment (e.g. cement mixers), and general spillage of contaminated wash or wastewater ✓ Oil spills (includes fuel, grease, etc.) ✓ Leaking or broken sewerage pipes ✓ Storage of unwanted waste (e.g. old / waste tyres) and poor disposal systems dispose 				
Impact	Objective	Mitigation Measures	Indicators for Monitoring and Compliance	Responsible Party
Vehicle emissions	Reduce greenhouse gas (GHG) emissions from poorly maintained or malfunctioning equipment (vehicles / machinery)	All vehicles and equipment shall be kept in good working order and serviced regularly (in accordance with the servicing frequency of the specific machinery), in order to prevent emission of poisonous smoke etc.	Vehicle servicing records Reports of smoke emissions from machinery	Site Manager
Oil Spills	Ensure waste oil is managed appropriately and pollution is prevented at all costs	Provide concrete bunding for fuel storage and transfer on site. The bunding should be bigger than the fuel storage tank/s to allow a bit of working space around tank/s (e.g. 20% bigger than the tank/s) Use of sheeting to prevent soil contamination (e.g. during vehicle servicing)	Concrete bunding at all fuel storage and handling sites	Site Manager

		<p>The fuel tanks should stand on a concrete slab to prevent the leakage of contaminants into the soil.</p> <p>Concrete slabs should be installed at each point where hazardous materials are handled.</p> <p>Waste oil should not be stored onsite indefinitely and should be recycled (transfer to oil recycling companies)</p> <p>If an oil spill occurs, collect the contaminated soil, store in drums and dispose at appropriate waste disposal site (e.g. Municipal disposal site)</p> <p>All vehicles and machinery should be fitted with oil drip trays to prevent oil dripping to the ground</p>	<p>Drums or containers for oil recycling and proof of oil transfer to recycling companies</p> <p>Oil drip trays for each vehicle</p>	
Solid Waste	To prevent pollution and maintain a clean environment	<p>Classify waste into different categories e.g. Material waste (wood, steel, corrugated iron etc.), Building rubble (concrete), Garden Waste (tree stumps, branches etc.), and Domestic Waste (Litter – cans, plastics, tissues etc.)</p> <p>Each category should be disposed in the most suitable and environmentally acceptable manner</p>	Scattered waste, Littering and any other unsightly waste at the site (eyesore)	Site Manager / dedicated Waste Disposal Officer

		<p>No onsite burying, dumping or burning of waste material shall be permitted.</p> <p>Ensure appropriate waste collection and removal from the site and dispose at an approved waste disposal sites</p>		
Waste Water	To avoid effluent discharge into the environment	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

SECTION D: ENVIRONMENT

Table 6-4: Mitigation measures pertaining to Environmental impacts

Potential Sources of impacts: <ul style="list-style-type: none"> ✓ Uncontrolled routes (everyone drives wherever they want) ✓ Disregard of environmental values, concerns and recommendations ✓ Lack of awareness amongst workers and contractors of how their actions may impact on the environment ✓ Soil erosion and biodiversity loss due to the clearance of vegetation, excavations etc. ✓ Unauthorized, over-utilization and wastage of water resources 				
Impact Description	Objective	Mitigation Measures	Indicators for Monitoring and Compliance	Responsible Party
Landscape alteration (damage)	Limit the number of access roads	Only create access routes as necessary (in line with the site layout plan) and instruct drivers to stick to demarcated roads	Instructions / Meeting Minutes, signed by drivers	Site Manager
Ecological disturbances (both fauna and flora)	<p>Remove trees only as necessary (if it obstructs the and construction process)</p> <p>Where possible, minimize disturbance to prevent loss biological diversity</p>	Acquire permits from relevant authority for the removal or cutting down of protected trees (Permits to remove protected trees required from MAWF – Forestry)	<p>Photographic records of site before and construction commencement</p> <p>Regular review of photographic records</p>	Site Manager
High Water Demand and wastage of water resources	Limit water abstraction and water use	Obtain water abstraction permits from MAWF – Water Affairs.	Water demand and records for water use, water saving	Site Manager

	Recycle and re-use water as far as possible		mechanisms and recycling efforts	
Land degradation and loss of topsoil leading to soil erosion	To reduce soil erosion	Adopt soil protection measures to mitigate soil erosion against storm water (run-off) Compacted soil should be ripped to ensure effective re-vegetation	Photographic records of site before commencement	Site Manager
Pollution of surface and groundwater resources		Prevent, control and manage contaminate runoff from the construction site Rubble, sand and waste material resulting from the and construction activities must be cleared up but not disposed in any stream or drainage channels as it will impede on the flow in these channels Train staff on the cautious use of all hazardous chemical substances used onsite including fuel, greases and oils Safety signage including (e.g. No Smoking, Danger	Adequate drainage system/channel in place Inventory register for all chemicals ECO to verify implementation of the mitigation measures proposed in this EMP and compile the report	Site Manager ECO

		<p>etc.), to be clearly displayed in areas housing chemicals.</p> <p>Personnel handling hazardous chemicals and hazardous materials are to be issued with the appropriate Personal Protective Equipment (PPE).</p>		
<p>Poor waste management, including Nuisance caused by odours and unsightly appearance of waste onsite.</p>	<p>To prevent pollution due to poor waste management</p>	<p>Containers (bins, skips or bulk containers) utilized for the disposal of general and hazardous waste must be demarcated accordingly.</p> <p>General waste material should always be stored or disposed of separately from hazardous waste material (e.g. oil, diesel) and disposed at a licensed landfill site on a weekly basis or more often if required.</p> <p>No littering is permitted and site clean-ups must be regularly undertaken</p>	<p>Regular site inspections Internal audits against this EMP must be conducted every 3 months and records kept onsite Shortcomings must be addressed immediately</p>	<p>Site Manager</p>
<p>Soil and groundwater pollution from</p>	<p>To prevent soil, and groundwater pollution</p>	<p>Sufficient ablution facilities shall be provided – minimum of 1 toilet per 15 workers.</p>	<p>Availability of adequate, clean and hygienic</p>	<p>Site Manager</p>

unsanitary conditions onsite	from unsanitary conditions onsite.	Ablution facilities are to be serviced weekly or more frequently if required. Toilet paper must be provided at all times.	sanitary facilities (toilets) on each and construction site	
Soil and groundwater pollution from leaking or broken sewerage pipes.	To prevent soil and groundwater pollution from leaking or broken sewerage pipes	Ablution facilities should be maintained to prevent blockage and leakages. Create employee awareness about the proper use of ablution facilities and the importance of proper hygiene. No cigarette butts, fat, oil, paper towels etc. may be disposed of into toilets or washbasins.	Regular site inspections. Internal audits against this EMP must be conducted every 6 months and records kept onsite. Shortcomings must immediately be addressed	Site Manager
Visual Impact	Minimize / limit visual impact	Limit Landscape alteration Color Schemes for infrastructure (buildings, walls, fences etc.) should blend in with the natural environment	Colour Schemes presented and approved by authorities	Proponent (Architect)

SECTION E: SOCIO-ECONOMIC

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

Sources of impacts:				
<ul style="list-style-type: none"> ✓ Unfair labour practices and unwillingness to recruit locals ✓ Lack of awareness on HIV-AIDS ✓ Drug and alcohol abuse ✓ Lack of bridges to cross river streams during rainy season 				
Impact Description	Objective	Mitigation Measures / Management Actions	Indicators for Monitoring and Compliance	Responsible Party
Employment opportunities for Locals	Promote benefits to the local community Promote benefits to local communities	Recruit locals for unskilled labour For all other jobs it should be specified in the contractor's contract that all positions shall only be filled by non-locals if it can be demonstrated that the required capacity is not available locally Where possible, procure materials from local suppliers	Employee structure and proportion of local employment	Site Manager
Alcohol and Drug use	Prevent alcohol and drug use at the tourism development site	Ban and warn the employees against the use of alcohol and drug at the site	Drunk / Misbehaving employees	Site Manager

		Provide awareness on the dangers and health impacts of alcohol and drug use	Monitor presence of alcohol at the site	
Excessive working hours	Adhere to the Labour Act No. 11 of 2007	Adhere to prescribed working hours as per the Namibian Labour laws and regulations. Provision for overtime or compensatory time off for long hours worked	Verification of working hours against the labour Act	Site Manager
HIV / AIDS	Provide HIV / AIDS awareness to employees	Provide HIV / AIDS awareness at induction Avail Condoms (e.g. in toilets)	Availability of condoms at and construction site	Site Manager
Security	Orientation of workers about security for both equipment and themselves	Orientate all staff about the security of 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

SECTION F: CULTURAL HERITAGE

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

Sources of impacts:				
✓ Disregard of Cultural Heritage and artefacts				
Impact Description	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)	Sighting report/s of heritage resources / artefacts	Site Manager
		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		

Table 6-7: Heritage Remains Chance Find Procedure

CHANCE FIND PROCEDURE FOR DISCOVERY OF UNEARTHED HERITAGE REMAINS		
Responsible Heritage Resources Authority	National Heritage Council of Namibia 52 Robert Mugabe Avenue, Windhoek, Private Bag 12043, Ausspannplatz, Windhoek. Tel +264 - 61 - 244 375 Email info@nhc-nam.org Web http://www.nhc-nam.org	
Potential finds	Human remains (e.g. bones), cultural and archaeological items (e.g. physical artefacts and intangible attributes of the Namibian society such as indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), and natural heritage items (e.g. fossils, subfossil wood).	
Protocol	1. Once alerted to occurrence(s): alert site supervisor, stop work in area immediately (<i>N.B.</i> safety first!), safeguard site with security tape / fence / sand bags if necessary.	
	2. Contact the Group Manager	
	3. Record key data while finds are still <i>in situ</i> : <ul style="list-style-type: none"> • Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo • Context – describe position of finds within stratigraphy (rock layering), depth below surface • Photograph find(s) <i>in situ</i> with scale, from different angles, including images showing context (e.g. rock layering) • Send finds to the Group Manager if they cannot visit the site. 	
	4. Group Manager to identify if a suitably qualified specialist such as an archaeologist needs to visit the site. Group Manager to liaise with National Heritage Council of Namibia to determine next steps and obtain the correct approval (e.g. a permit).	
	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;"> 4. If feasible to leave <i>in situ</i>: <ul style="list-style-type: none"> • Ensure site remains safeguarded until clearance is given by the Authority for work to resume </td> <td style="width: 50%;"> 4. If <i>not</i> feasible to leave <i>in situ</i> (emergency procedure only): <ul style="list-style-type: none"> • <i>Carefully</i> remove finds, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock) • Photograph finds against a plain, level background, with scale • Carefully wrap finds in several layers of newspaper / tissue paper / plastic bags • Safeguard finds together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist Liaise with the National Heritage Council of Namibia, move finds to National Museum or other location as advised. </td> </tr> </table>	4. If feasible to leave <i>in situ</i> : <ul style="list-style-type: none"> • Ensure site remains safeguarded until clearance is given by the Authority for work to resume
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5. Implement any further mitigation measures proposed by the National Heritage Council of Namibia		

7 REHABILITATION

7.1 Importance of Rehabilitation

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

However, such developmental activities should be conducted in a thoughtful and forward-looking manner. In other words, developmental activities, such as tourism development should consider the future land use after such activity has come to an end. 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.

7.2 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).

7.3 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.

7.4 Conclusion

Construction activities should be undertaken in a responsible and environmental 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 in order to safeguard the environment.

SECTION G: REHABILITATION

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

<u>Sources of impacts:</u>				
<ul style="list-style-type: none"> ✓ Landscape alteration due to lack of rehabilitation ✓ Biodiversity loss due to lack / poor rehabilitation ✓ Loss of topsoil due to lack of restoration measures ✓ Steep edges of and 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 and re-use 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), that is not needed at site upon project completion	Clean-up after project closure	Site Manager

8. CONCLUSION

The EMP recommends measures to be implemented by the proponent, the contractor and sub-contractors in order to manage the tourism development activities of Ongeama Lodge, 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 and construction process at the end of the and 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) 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.