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# **COMPREHENSIVE ENVIRONMENTAL MANAGEMENT PLAN (EMP)**



***PROPOSED REGISTRATION OF  
KAUMBANGERE, PLOT IN COMMUNAL AREA,  
OMAHEKE REGION***

***MAY 2021***



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## DOCUMENT INFORMATION

<b>Title</b>	Environmental Management Plan (EMP) for the Registration of Okaumbangere Lodge/ Plot Omaheke Region
<b>Activity</b>	Land use and development activities
<b>Location</b>	Kaumbangere lodge, Otjinene District, Omaheke Region in Central Namibia
<b>Proponent</b>	Kaumbangere Lodge & Property Development cc Mr. B. Katjatenja Mobile: 0812185649 E-mail: <a href="mailto:kaumbangere@gmail.com">kaumbangere@gmail.com</a>

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# ABBREVIATIONS

<b>DEA</b>	Department of Environmental Affairs
<b>EA</b>	Environmental Assessment
<b>EAP</b>	Environmental Assessment Practitioner
<b>ECC</b>	Environmental Clearance Certificate
<b>ECO</b>	Environmental Compliance Officer
<b>EIA</b>	Environmental Impact Assessment
<b>EMA</b>	Environmental Management Act (Act No. 7 of 2007)
<b>EMP</b>	Environmental Management Plan
<b>MET</b>	Ministry of Environment and Tourism
<b>MAWF</b>	Ministry of Agriculture, Water and Forestry
<b>SM</b>	Site Manager

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# CHAPTER 1

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## 1. INTRODUCTION

This document constitutes the Environmental Management Plan (EMP) for the proposed registration of Kaumbangere lodge plot with Lands Reform Division. The purpose of registration is to enable the Kaumbangere lodge to operate economically in an Environmental compliance manner while attracting clients & investors to the town. 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).

Moringa Environmental Consultants were appointed to carry out a comprehensive Environmental Management Plan (EMP) that will guide operational & development activities during implementation of a proposed upgrade & renovation to the facility. Furthermore, the EIA scoping and EMP reports are pre-requisites for the application of an Environmental Clearance Certificate (ECC) from the Environmental Commissioner (EC).

### 1.1 The Environmental management plan (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.

### 1.2 Purpose and objectives of the EMP

The aim of the EMP is to ensure that the impacts on the environment that may emanate from the proposed development are minimized or limited. To achieve this, the EMP has the following objectives:

- To provide guidelines for use by the responsible person to ensure that appropriate contingency plans are implemented to prevent / minimize (where possible), unacceptable and adverse environmental, social or economic impacts that may arise from the proposed development; and
- To prevent any negative impact/s (real, potential or perceived) that may result from the proposed development.

All associated activities of the proposed development must be 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 2.2*)

The EMP provides environmental guidelines to be followed throughout the lifespan of the project activities. The guideline comprises of the following:

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

### **1.3 Scope**

The EMP does not only focus, and it is not limited to the boundaries of the proposed development area, but it also includes the bigger picture and serves as a guiding tool to protecting the natural, bio-physical and socio-economic environment in the surrounding area and beyond. The bigger picture is important because some impacts may not only be confined to the boundaries of the project site.

### **1.4 Possible adjustments to the EMP**

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

This implies that, in-addition to the information contained herein, any other relevant information that may surface during construction of infrastructure, 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 Developers.

### **1.5 Implementation Framework and Accountability to the EMP**

The content of this document is binding to all parties who will have a role to play in ensuring that activities associated with establishment of the proposed development are effectively implemented.

For effective implementation of the EMP, an Institutional Framework is presented below. However, the specific roles and responsibilities are defined and broken down as presented in Sections 5 and 6, respectively.

Table 1.1: Role players, Institutional Framework

<b>Role-player</b>	<b>Company / Institution</b>	<b>Role</b>
Proponent	Kaumbangere Lodge cc	Manage subdivision activities and compliance to EMP
Developer/s	Kaumbangere lodge cc	Construction of associated infrastructure and compliance to the EMP
Environmental Consultant	Moringa Environmental Consultants	Development of the EMP
Environmental Compliance Officer/s (ECO)	Ministry of Environment & Tourism (MET) – Department of Environmental Affairs (DEA)	Monitoring Compliance to EMP: <ul style="list-style-type: none"> <li>➤ Un-announced spot checks,</li> <li>➤ Warning, penalties / fines, license suspension, etc.</li> </ul>
Public	Interested and affected parties (I&APs)	Report to the ECOs, any activity of environmental concern (e.g. Pollution, safety risks, etc.)



# 2. COMPLIANCE AND LEGAL REQUIREMENTS

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## 2.1 Compliance to the EMP

The EMP is binding to the proponent and Developers that will be involved in the construction of infrastructure associated with the township. This implies that every entity that may have any kind of engagement or involvement should comply with the EMP throughout the project lifespan. Non-compliance may have serious consequences e.g. withdrawal of licenses by the authorities, which could mean closure of the project prior to completion of all intended activities.

## 2.2 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 a 'Management Plan' as: *“a plan that describes how activities that may have significant environments effects on the environment are to be mitigated controlled and monitored.”*

## 2.3 EMP Requirements

**Table 2.1:** EMP Requirements as outlined in Section 8 of the EIA Regulations

<b>Requirement</b>
<p><i>(j) a draft management plan, which includes –</i></p> <p><i>(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;</i></p> <p><i>(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</i></p> <p><i>(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.</i></p>

## 2.4 Listed Activities requiring EIA and EMP

The Environmental Management Act (Act No. 7 of 2007) and EIA Regulations of 2012 (Government Notice No: 30), highlights that listed activities may not be undertaken without an Environmental Clearance Certificate (ECC). The proposed township trigger activities as listed in the table below.

**Table 2.2:** Listed activities that are triggered by the proposed formalization

Activity	Description of Activity	Activity Triggers
<b>Activity 5: Land use and development activities</b>	5.1. (d) The rezoning of land from Undetermined to any other land use.	The project is located on natural land that is currently Undetermined.
<b>Activity 10: Infrastructure</b>	10.1 Construction of industrial and domestic wastewater and water supply pipelines. (b) public roads	Water and sewer pipelines will be set up to connect onto the existing bulk supply pipeline networks in Otjinene.  It is further anticipated that access roads would be constructed to extent access from trans Kalahari

Since the proposed development triggers listed activities, it implies that an Environmental Scoping Exercise should be undertaken and an EMP should be developed, and should be submitted to the Ministry of Environment and Tourism (MET) as part of the application for an Environmental Clearance Certificate (ECC).

## 2.5 Other Legal Framework relevant to the EMP

In addition to the EMA and the Environmental Assessment Policy, there exists a host of legal and policy documents and guidelines that govern environmental management as presented in table 2.3 overleaf. The proponent has the responsibility to ensure that all associated activities conform to all other relevant legal requirements.

**Table 2.3: Relevant legislation and applicability thereof**

KEY REGULATIONS/Policies	RELEVANT PROVISION	PROJECT IMPLICATION/ASPECT
The Constitution of the Republic of Namibia (1990)	Articles 91 commits the state to actively promote and maintain the welfare of Namibians by promoting sustainable development.	The proposed activity should not pose a threat to the natural and human environment.
Environmental Management Act (No 7 of 2007), and its Regulations	Provides guidance on how environmental assessments should be undertaken for "Listed Activities" as application for an Environmental Clearance Certificate to be issued.	The proposed activity requires an Environmental Clearance Certificate.
Local Authorities Act, 1992 (Act No. 22 of 1992)	The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning and coordination of regional policies and development.	Land use and development in townlands shall be undertaken in accordance with the Town Planning Schemes.
Forest Act, 2001 (Act No. 12 of 2001, Nature Conservation Ordinance 4 of 1975	Provision of the protection of various protected plant species. (Ministry of Agriculture, Water and Forestry (MAWF), Directorate of Forestry.	Although DOF has no jurisdiction within townlands, these provisions will be used as a guideline for conservation of vegetation.
Public Health Act (Act No. 36 of 1919	According to Section 119 "no person shall cause a nuisance or shall suffer exit on any land or premises owned by him or of which he is in charge any nuisance or other conditions to be injuries or dangerous to health"	The Client should ensure compliance with this legal requirement during the operations of the proposed project activities.
Labour Act (Act No. 11 of 2007)	Section 39-47 of this regulation details the minimum wage requirements and working conditions	The Client should ensure compliance with this legal requirement during the construction of the facilities.
Town Planning Ordinance 18 of 1954	As per section of 31 of this legislation, subdivision of land situated in any area to which an approved Town Planning Scheme applies must be consistent that Scheme	The proposed land use of the project site must be consistent with the Otjinene Municipality Town Planning Scheme.
National Heritage Act 27 of 2004	As per section 38 (1) "a person may apply to the National Heritage Council for a permit to carry out works or activities in relation to a protected place object"	Any heritage resources such as human remains discovered during construction requires a permit from the National Heritage Council.

### 3. PROJECT INFORMATION

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#### 3.1 Project Location

Kaumbangere Lodge plot is in the south-eastern direction of Otjinene Town along trans kalahari (see Figure 2). The property covers an extent of 61 ha and is zoned as Undetermined. It is located approximately 5 km from the town, about 200m south- east of the new fuel station.

Access to the site is 500m from the new filling station on Trans Kalahari highway and all future access points will be obtained from that high way as well as from the main entrance. This has already been clarified with the Roads Authority. A single sewer line with two manholes traverses the property while a water-line traverses north of the project area.

#### 3.2 Proposed Activities

The increased demand for lodge facility for residents & industrial or commercial properties is of national concern and the town of Otjinene has not been spared from this predicament. The Kaumbangere lodge therefore identified the property part of the lodge as a suitable site for provision of temporally accommodation facilities that will be composed of various amenities.

The proposed upgrade of lodge facility & temporally accommodation will ultimately address the housing shortage over the whole spectrum of the property market that is experienced in the town of Otjinene. The Lodge will also provide an opportunity for access to urban services in an orderly approach with an intention of maximising the use of land while minimizing the cost of development. The dominant land use proposed at the plot will be temporally residential facilities for lease with a density of 1:600m<sup>2</sup> a total of. These erven are intended to cater for residents that desire to live in a low-density area while others will be reserved for high density development. The aim for general residential is to promote and encourage high density lifestyle within a small town like Otjinene.

#### 3.3 Alternatives considered

According to the EMA EIA Regulations alternatives must be considered during the EIA process. These Regulations state that “*alternatives, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity.*” There are no alternatives to the proposed upgrade of the facility to a mixture of recreation facility & accommodation.

## No-go Alternative

The implication of the 'No-go' alternative on the socio-economic environment of the study area will simply be that none of the positive and or negative impacts associated with the proposed township will be realised. Similarly, the potential contributions predicted with regards to cumulative impacts will also be negated.

The implication of the 'No-go' alternative on the socio-economic environment of Otjinene will simply mean that the status quo will prevail with the lack of residential structures in the town. Similarly, the potential contributions predicted with regards to cumulative impacts such as investment opportunities will also be negated. As the 'No-go' alternative is the baseline against which potential impacts are measured as such, the *status quo* shall prevail.

### 3.4 Socio-economic Profile

Otjinene is a small & newly proclaimed town and it being the main prospective employment hub in the area, it has been experiencing an influx by people in search of better living conditions and jobs. Based on the National Sensus of 2011, the population of Otjinene Town was estimated to be 2 102 with the growth rate expected to increase by 50% in teen years (NPC Sensus Report, 2011). This number could however be skewed because of migratory work patterns from surrounding rural areas.

The town of Otjinene is situated between Gobabis and Grootfontein. It serves as an important gateway to SADC countries through the new tared road to the Trans-Kalahari Highway which connects Okavango Delta with the rest of Namibia. The economy of Otjinene town heavily relies on three main activities; cattle, goats, sheep farming transport and logistics as well as tourism activities.

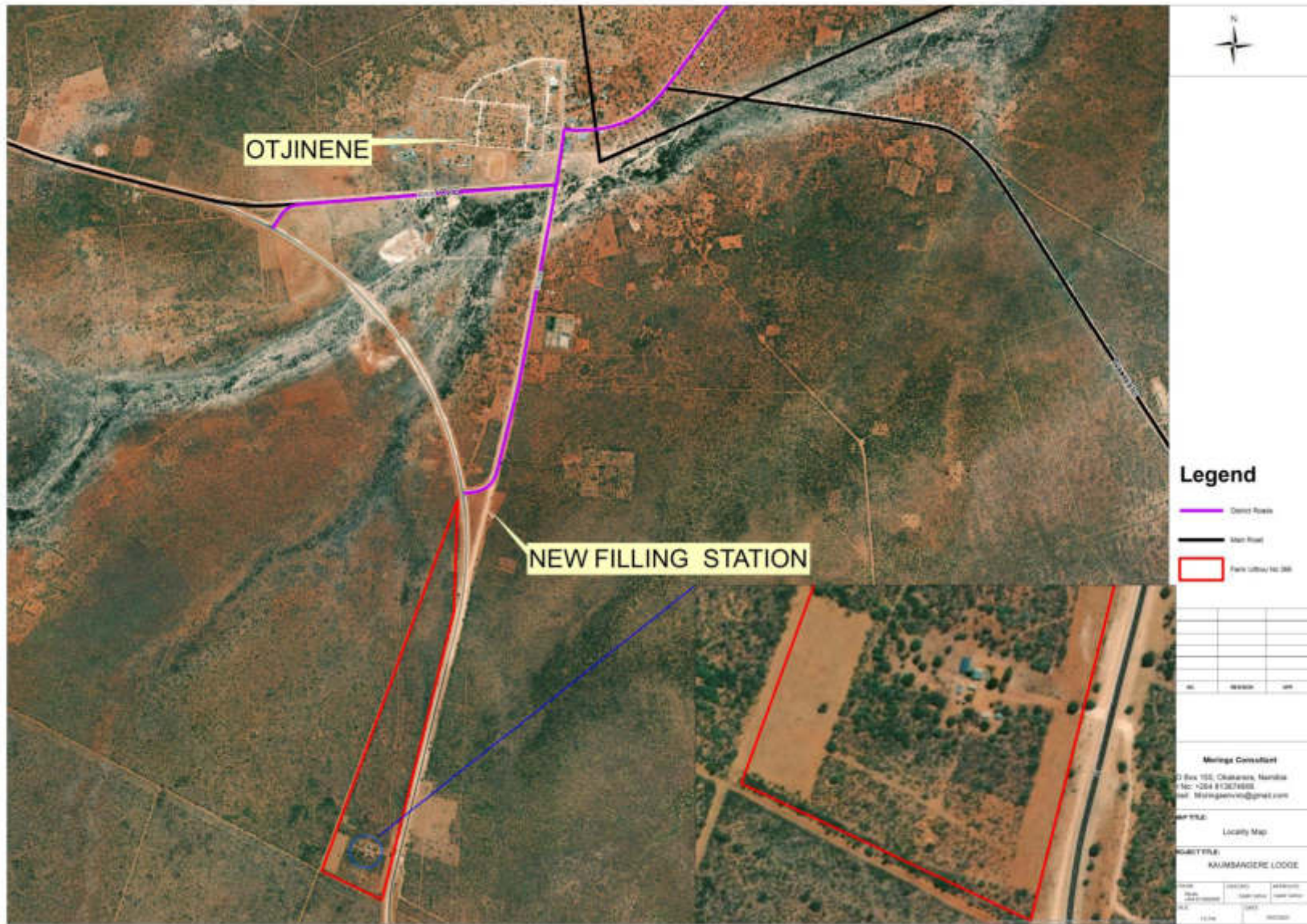


Figure 1: The locality map of Kaumbangere Lodge as demarcated with the red polygon

## 4. ROLES AND RESPONSIBILITIES

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The implementation of this EMP requires the involvement of various role players, each with specific responsibilities to ensure that the development is completed in an environmentally sensitive manner. This section outlines the roles and responsibilities of the respective key personnel responsible for the day to day activities to ensure effective implementation of the EMP. This section outlines the roles and responsibilities of the respective key personnel responsible for the day to day activities to ensure effective implementation of the EMP.

### 4.1 Roles and Responsibilities

For accountability, it is necessary to assign responsibilities and to ensure that those entrusted do take responsibility and will be held accountable. The key role-players for project implementation are;

- a) **An Environmental Compliance Officer (ECO)**: who will be responsible for environmental monitoring and auditing.
- b) **The Developer** (entity carrying out the actual construction). In this case, the Developer /Developer to be appointed by the ONTC.
- c) **The Site Manager (SM)**, will be the person responsible for the day-to-day management of the construction, and implementation of the EMP. He / she will be appointed by the Developer /Developer.

#### 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 to ensure compliance with the EMP.
- Shall inspect the construction site before commencement of the construction activities; at least once (1) every 2<sup>nd</sup> or 3<sup>rd</sup> week throughout the duration of the construction and at the completion of the construction period.
- Shall compile Progress Reports following any site inspections, Compliance Reports following any non-compliance incidents, and a Closure Report following the conclusion of construction activities.
- The ECO shall liaise closely with all key stakeholders i.e. the Site Manager, Developer/Developer, Otjinene Town council and MET
- 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 involve the structured observation, measurement, and evaluation of environmental data over a period of time.
- The ECO shall contact regular inspections (unannounced spot checks) and shall report on the level of compliance on non-compliance to MET and Otjinene Town council or any other relevant authority.

#### **4.1.2 The Developer:**

##### **The following are the specific responsibilities of Developer:**

- 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 the works on-site are conducted in accordance with the requirements of the EMP at all times.
- Ensure that any sub Developers or visitors to the site are conversant with the requirement of the EMP in relation to their role on-site.
- Shall develop a communication strategy between the Developer, Site Manager, workers, the financier, the ECO and any other relevant stakeholder.
- Shall develop an organizational structure be developed to ensure that:
  - There are clear channels of communication;
  - There is an organizational 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 organizational structure as determined
- Ensure that that EMP requirements are assigned to specific people / positions with the capacity and experience required to implement the EMP.

#### **4.1.3 The Site Manager:**

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

- Ensure that each team recruited to work at the construction site (including Developers / sub-Developers) adheres to the EMP;
- 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 construction works are within the boundaries of the construction site as specified with the project area boundary markings (visible pegs, tape etc.).



## 4.2. EMP Context

Environmental management is not only concerned with the final results of the Developer's operations to carry out the work, 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 standard of the day-to-day operations required to complete the work. The EMP is therefore an important tool that is necessary to mitigate / counter negative environmental or social impacts that may arise from the project. However, in the absence of audits and monitoring, an EMP becomes ineffective.

## 4.3 Disciplinary Actions

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):

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

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

## 4.4 Non-Compliance

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

- There is evidence of contravention of the EMP and its associated indicators.
- The Developer and SM have failed to comply with corrective or other instructions issued by the ECO or qualified authority.
- The Developer and SM fail to respond to complaints from the public.

## 5. ENVIRONMENTAL IMPACTS MITIGATION MEASURES

This is a fundamental part of the EMP as it sets out the environmental impacts mitigation measures of the proposed development. Adherence to these measures throughout the project duration will ensure that the environmental impacts associated with the proposed development will be mitigated to a greater extent, thus promoting sustainable development. The commitment and cooperation of the identified responsible person (s) will ensure effective implementation of the EMP.

The EMP has been structured to provide mitigation measures in accordance with the scope of work during the duration of the project. The EMP requirements should be considered at all stages / phases of the development process as follows:

- Planning and design phase
- Construction phase
- Operation and maintenance phase

### 5.1 Impact Themes and Mitigation Measures

The EMP has been categorised into different themes, which serve as a quick guide to the recommended EMP remedial actions during the Operation Phase (Table 5.1).

Table 5.1: EMP Impact Identification Themes and Associated Aspects

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 &amp; 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 – Cultural Heritage	Heritage resources / artefacts
F – Socio economic	Employment opportunities for Locals

	Alcohol and Drug use at mining site
	Working hours
	HIV / AIDS
	Security
	Rise of criminal cases ( fighting, rape, drugs etc)
G – Rehabilitation	Rehabilitate the area back to natural state as far as possible

## SECTION A: STAFF INDUCTION

**Table 5.2: Mitigation measures pertaining to staff recruitment and Induction**

<b>Potential Sources of Impacts:</b>					
<ul style="list-style-type: none"> <li>✓ Employees working without employment contracts (recipe for labour disputes)</li> <li>✓ Lack of adequate induction to inform the workers the Do's and Don'ts</li> <li>✓ No formal orientation of the site process and workers are often disoriented</li> <li>✓ Poor communication</li> <li>✓ No presentation of the EMP and workers are not aware of the content and risks associated with the activities / actions</li> </ul>					
<b>Aspect</b>	<b>Potential Impact</b>	<b>Objective</b>	<b>Mitigation Measures</b>	<b>Indicators for Monitoring and Compliance</b>	<b>Responsible Party</b>
<b>Recruitment</b>	Mal-labour practices	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 avoid labour disputes later	Copy of staff contracts	Developer / Site Manager
<b>Staff Induction</b>	Adherence to the EMP /violation of EMP requirements	To ensure that all staff / employees are conversant with the requirements of the EMP	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.	Induction Minutes and Attendance Register, Signed by each staff member	Developer /Site Manager
			Staff operating equipment (such as trucks, loaders, jack hammers, compressors etc.) shall be adequately trained and sensitised against potential hazards	Staff members appointed at a later stage should also undergo induction	
		Availability of the	Ensure that a copy of the EMP is kept	Quarterly minutes	Site Manager
				Availability of EMP	Site Manager

		EMP on site for ease of reference	on site and accessible by team leaders	on site and accessibility by team leaders	
		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
<b>Communication</b>	Ineffective communication	Ensure effective communication throughout the project period (project lifespan)	Develop a communication strategy (Channel & 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, Site-Notices, Minutes  List of contact numbers available on site	Site Manager
<b>Site Demarcation</b>	Illegal extensions and structures	To contain all project activities within the site boundaries and prevent construction activities from extending beyond the construction claims	Demarcate the construction site with visible marking (e.g. fence, pegs, tape etc.)	Temporary fencing or any other visible site demarcation in place  Construction activities are contained within the project site	Developer/Developer, Engineers and Otjinene Municipality
<b>Notice Board</b>	Site visibility	To warn the public of the construction site	Erect a notice board at the site entrance to notify the public of the construction activities on site	Visible notice board	Site Manager
<b>Access Control</b>	Hazards to animals and theft of construction materials	To ensure security of the site	Unauthorised entry should be prohibited. Fence the site and construction materials	Properly fenced off site	Developer, Site Manager

## SECTION B: OCCUPATIONAL HEALTH AND SAFETY

**Table 5.3: Mitigation measures pertaining to Health and Safety**

		<b>Potential Sources of Impacts:</b> ✓ Inadequate training of employees or Developers on risks associated with construction 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 construction vehicles and equipment during the construction activities			
Aspect	Potential Impact	Objective	Mitigation Measures	Indicators for Monitoring and Compliance	Responsible Party
<b>Occupational Health and Safety of the employees (injuries)</b>	Employee safety around work areas	To ensure safe working conditions and adhere to the Health and Safety Regulations, Government Notice 156/1997 (GG 1617)	Develop a Health and safety Plan Identify potential hazards and develop responses to eliminate sources of risk or minimize workers' exposure to hazards  Provide adequate and appropriate protective gear for all workers  Provide training to all workers on relevant aspects of occupational health and safety associated with their work including firefighting  Assign designated area for storage of construction material so that it does not pose danger to the staff.	Hazard risk report Safe work condition audit <i>On-going</i> Personal protective equipment issue (Distribution register) Adequate protective gear for all staff  Training schedule and attendance register	Site Manager
<b>Accidents and incidents</b>	Danger to workers and the neighbouring	To ensure safe working conditions	Clear and proper demarcation of the site for safety reasons. Document and report occupational injuries, illness and fatalities, including near misses.	Accidents and incident register (including near misses)	Site Manager

	community		<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>Root causes analysis report</p> <p>Incident review (cause and elimination of hazard)</p> <p>First aid kit availability</p>	
<b>Physical Hazards to workers</b>	Danger to workers	To ensure safe working conditions	Eliminate physical hazards to workers and mitigate any residual risks	Hazards risk report	Site Manager
<b>Road Safety</b>	Traffic congestion, inconveniences	To prevent traffic hazards / inconveniences from earth moving machinery during construction period	<p>Signage to warn motorists about construction activities and presence of earth moving machinery</p> <p>All trucks transporting construction 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 construction site</p>	Public Complaints / Incident report/s	Site Manager
<b>Ablution Facilities</b>	Sufficient ablution facilities	To reduce health risks and environmental pollution and ensure healthy working environment with appropriate and user friendly ablution facilities	<p>Ensure adequate, hygienic (clean) and user-friendly ablution facilities for all staff. Mobile chemical toilets are recommended</p> <p>Waste 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>Inspect ablution facilities regularly (daily)</p> <p>Availability of toilets, cleanliness and hygienic ablution facilities</p>	Site Manager
<b>Dust and Noise</b>	Dust and noise pollution	To mitigate dust and noise impacts to both employees and	Adopt applicable dust suppression measures to mitigate dust impacts,	Dust and Noise Incident Reports	Site Manager

		the public  To minimise noise disturbances during the construction phase.	Provide dust masks and ear muffs to all employees operating in a dusty or noisy environment  Alert the community and public of noisy undertakings prior to carrying out such activity (e.g. blasting)	Monitoring of dust and noise levels. Dust suppressing mechanisms e.g. sprinkling water to affected areas.	
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## SECTION C: POLLUTION AND WASTE MANAGEMENT

**Table 5.4: Mitigation measures pertaining to Waste Management**

<b>Potential Sources of Impacts:</b>						
<ul style="list-style-type: none"> <li>✓ Generally, construction sites generate considerable amounts of waste, with no proper waste management and disposal systems</li> <li>✓ Disregard of the pollution impacts (often considered insignificant e.g. littering, oil spills etc)</li> <li>✓ Poor management, storage and disposal of concrete and cement or spillages from equipment used for construction (e.g. cement mixers), and general spillage of contaminated wash or wastewater</li> <li>✓ Oil spills (includes fuel, grease, etc)</li> <li>✓ Leaking or broken sewerage pipes</li> <li>✓ Storage of unwanted waste (e.g. old / waste tyres) and poor disposal systems dispose</li> </ul>						
<b>Aspect</b>	<b>Potential Impact</b>	<b>Objective</b>	<b>Mitigation Measures</b>	<b>Indicators Monitoring and Compliance</b>	<b>for and</b>	<b>Project Phase</b>
<b>Vehicle emissions</b>	Air pollution	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), to prevent emission of poisonous smoke etc.	Vehicle records  Reports of smoke emissions from machinery	service	Site Manager
<b>Solid Waste</b>	Uncontrolled and	To prevent pollution and maintain a clean	Classify waste into different categories e.g. Material waste (wood, steel,	Scattered waste, Littering and any other		Site Manager / dedicated



	scattered waste	environment	corrugated iron etc.), Building rubble (concrete), Garden Waste (tree stumps, branches etc.), and Domestic Waste (Litter – cans, plastics, tissues etc.) Each category should be disposed-off in accordance with the Municipal Regulations and in the most suitable and environmentally acceptable manner No onsite burying, dumping or burning of waste material shall be permitted.	unsightly waste at the site	Waste Disposal Officer
<b>Waste Water</b>	Unsightly waste water	To avoid effluent discharge into the environment	Refer to regulations on effluent disposal 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 5.5: Mitigation measures pertaining to environmental impacts**

	<b>Potential Sources of impacts:</b>				
	<ul style="list-style-type: none"> <li>✓ Uncontrolled routes (everyone drives wherever they want)</li> <li>✓ Disregard of environmental values, concerns and recommendations</li> <li>✓ Lack of awareness amongst workers and Developers of how their actions may impact on the environment</li> <li>✓ Soil erosion and biodiversity loss due to the clearance of vegetation, excavations etc.</li> <li>✓ Unauthorized, over-utilization and wastage of water resources</li> </ul>				
<b>Aspect</b>	<b>Potential Impact</b>	<b>Objective</b>	<b>Mitigation Measures</b>	<b>Indicators for Monitoring and Compliance</b>	<b>Responsible Party</b>
<b>Environment</b>	Disturbance to natural landscape	To minimise disturbance of the natural environment /landscape	Clearly demarcate the road, inform staff (drivers) accordingly Establish specific entry and exit routes to the project site Rehabilitate all routes used during construction that are not required once the	Instructions / Meeting Minutes, signed by drivers	Site Manager

			construction phase is completed		
	Ecological disturbances -loss of vegetation and disturbances to fauna in the area)	Remove trees only as necessary  Where possible, minimize disturbance to prevent loss biological diversity	Acquire permits from relevant authority for the removal or cutting down of protected trees (Permits to remove protected trees required from MEFT – Forestry)	Photographic records of site and regular review of such records	Site Manager
	Disturbance to the natural topography	To restore the natural topography	All the excavations should be backfilled to avoid being used as illegal dumping sites. Trenches, soil dumps, and other working areas should be rounded-off to ensure the disturbed area/s blend in with the natural environment and the possibility of erosion is minimized.		ECO, EO, Site Manager
	Land degradation and loss of topsoil leading to soil erosion	To ensure proper soil management reduce soil erosion	Minimise the length and steepness of slopes during construction Replace topsoil concurrent with construction, whenever possible. Any disturbed areas must be rehabilitated as soon as possible after construction has been completed and re-vegetated with suitable indigenous vegetation.	Photographic records of site and regular review of such records	Site Manager
	Soil erosion due to improper management of storm water onsite	To ensure adequate storm water management and to prevent soil erosion	The site must have an adequate and effective storm water management system in place	Site inspection report	Site Manager
	Pollution of surface water and groundwater	To prevent storm water from eroding the land and becoming contaminated	Rubble, sand and waste material resulting from the construction activities must be cleared up but not disposed in any stream or drainage channels as it will impede on	Drainage system/channel in place	Site Manager

	resources		the flow in these channels.		
	Soil and groundwater pollution due to poor management	To prevent and minimise soil and water pollution as a result of poor management and accidental spills of hazardous chemical substances including fuel, greases and oils used onsite.	<p>Identify all hazardous chemical substances used onsite including fuel, greases and oils.</p> <p>Keep a stock inventory register of all chemicals in the store and should be properly labelled.</p> <p>Safety signage including (e.g. No Smoking, Danger 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>Inventory register for all chemicals</p> <p>ECO to verify implementation of the mitigation measures proposed in this EMP and compile the report</p>	Site Manager
	Poor waste management , including Nuisance caused by odours and unsightly appearance of waste onsite.	To prevent pollution due to poor waste management	<p>The management of waste must be in accordance with the waste disposal regulations (if available)</p> <p>Installation of sufficient waste bins, skips or bulk containers. Containers must be present on site at all times.</p> <p>General waste material should always be stored or disposed-off</p> <p>No littering is permitted, and site clean-ups must be regularly undertaken.</p>	Site inspection / Audit reports	Site Manager

## SECTION E: CULTURAL HERITAGE

**Table 5.6: Mitigation measures pertaining to Cultural Heritage impacts**

<b>Sources of impacts:</b>					
✓ Disregard of Cultural Heritage and artefacts					
<b>Aspect</b>	<b>Potential Impact</b>	<b>Objective</b>	<b>Mitigation Measures</b>	<b>Indicators for Monitoring and Compliance</b>	<b>Responsible Party</b>
<b>Heritage Resources / artefacts</b>	Destruction of heritage resources	To reduce the impacts of contraction and associated earthworks on heritage resources / artefacts	Report heritage remains or artefacts discovered on site 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 Monitoring reports	Site Manager

## SECTION F: SOCIO-ECONOMIC

**Table 5.7: Mitigation measures pertaining to Socio Economic impacts**

<b>Sources of impacts:</b>					
<ul style="list-style-type: none"> <li>✓ Unfair labour practices and unwillingness to recruit locals</li> <li>✓ Lack of awareness on HIV-AIDS</li> <li>✓ Drug and alcohol abuse</li> </ul>					
<b>Aspect</b>	<b>Potential Impact</b>	<b>Objective</b>	<b>Mitigation Measures</b>	<b>Indicators for Monitoring and Compliance</b>	<b>Project Phase</b>
<b>Employment</b>	Employment opportunities for Locals	To promote benefits to the local community Promote benefits to local communities	Recruit locals for unskilled labour where feasible Where possible, procure materials from local suppliers	Employee structure and proportion of local employment	Site Manager
<b>Alcohol and Drug use</b>	Alcohol and drug abuse	Prevent alcohol and drug use at the construction site	Ban and warn the employees against the use of alcohol and drugs at construction site  Provide awareness on the dangers and health impacts of alcohol and drug use	Drunk / Misbehaving employees  Presence of alcohol at the construction site	Site Manager
<b>Excessive working hours</b>	Overworked employees	Adhere to the Labour Act No. 11 of 2007	Operate within the prescribed working days and 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

<b>HIV / AIDS</b>	Safe working conditions	Provide HIV / AIDS awareness to employees	Provide HIV / AIDS awareness at induction Avail Condoms in Toilets at site	Availability of condoms at construction site	Site Manager
<b>Security</b>	Safe working conditions	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

## 5.2. Recommendations

The EMP recommends measures to be implemented by the Developer in order to manage the construction activities 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.

Specific responsibilities have been assigned to role players in-order to ensure that the EMP is implemented, non-compliance against the EMP is punishable. The key role-players (Proponent, Developer, 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 EP, ECO or relevant authority,
- Ensure implementation of the recommended mitigation measures, and
- Communicate defaults / challenges to the Environmental Compliance Officer (ECO) as soon as possible.

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