

**ENVIRONMENTAL ASSESSMENT
FOR
THE EXISTING KAYOVA RIVER LODGE -
NDIYONA, KAVANGO EAST REGION, NAMIBIA**



**(AMENDED) OPERATIONAL
ENVIRONMENTAL MANAGEMENT PLAN**

JULY 2021



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PROJECT DETAILS

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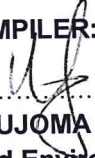

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ABBREVIATIONS

COA	Conditions of Authorisation
DWAF	Department of Water Affairs and Forestry
EAP	Environmental Assessment Practitioner
EC	Environmental Clearance
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (No. 7 of 2007)
EMP	Environmental Management Programme
EO	Environmental Officer
GIS	Geographic information system
I&APs	Interested and Affected Parties
IFC	International Finance Corporation
MEFT: DEA	Ministry of Environment, Forestry & Tourism: Department of Environmental Affairs
NEC	Namibia Environmental Consultants
OEMP	Operational Environmental Management Plan

1 INTRODUCTION

1.1 PURPOSE OF THIS EMP

This Environmental Management Plan (EMP) addresses the management of environmental impacts related to the operation of the existing Kayova River Lodge. The document should be used as a basis for managing, mitigating and monitoring the environmental impacts associated with the operational phases of the environmental study, conducted by Namibia Environmental Consultants (NEC).

The Operational Environmental Management Plan (OEMP) contains the necessary mitigation and recommended actions as well as the timeframe and person responsible for the actions. The ultimate responsibility of the implementation of the OEMP rests on the Eco-Lodge owner/operator. The OEMP is a legal binding document that is an important part of the Environmental Assessment process and needs to be strictly adhered to. Workers must be made aware of the OEMP, their responsibilities and sensitive / no-go areas. Any transgressions must be treated as serious with remedial action to be taken.

This Operational Environmental Management Plan has been compiled for the management of operational phase of the existing Kayova River Lodge. The OEMP will provide specific recommendations and mitigation measures on how to minimise negative impacts and therefore protecting the environment on a social as well as biophysical level.

1.2 OBJECTIVES AND PURPOSE OF THE EMP

The primary objectives of the EMP are as follows:

- To outline the functions and responsibilities of the responsible persons involved in the operation of the Lodge;
- Monitor and manage environmental and social impacts;
- Provide and for the conservation of the site's receiving environment;
- To indicate responsibilities, schedules and staff resources regarding the implementation of these action plans.
- To highlight a monitoring programme, that will enable review of the success of the EMP and the provision of such information to the relevant decision-makers.
- To provide specific recommendations and mitigation measures on how to minimise negative impacts and therefore protecting the environment mostly on the biophysical as well as social level.
- 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.

1.3 COMPONENTS OF THE OEMP

Environmental issues identified in this OEMP are specific to the operational phase of the Lodge. The OEMP has been prepared in an issues-based format that nominates for each environmental issue or impacting activity, the tasks that are required to be addressed during the operational phases of the Lodge, covering:

- Environmental issues
- Environmental objectives
- Environmental intent
- Control measures
- Responsibility
- Monitoring
- Reporting
- Corrective action

In terms of the Environmental Assessment Policy of 1994 and the Environmental Management Act No 7 of 2007 (EMA), certain activities have been identified, which could have a substantially detrimental effect on the environment. These listed activities require an Environmental Clearance Certificate (ECC) from the competent environmental authority, i.e. Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs (MEFT: DEA), prior to commencing. The following activities identified in the EIA Regulations (Table 1) apply to the proposed project:

Table 1: List of triggered activities identified in the EIA Regulations which apply to the proposed project

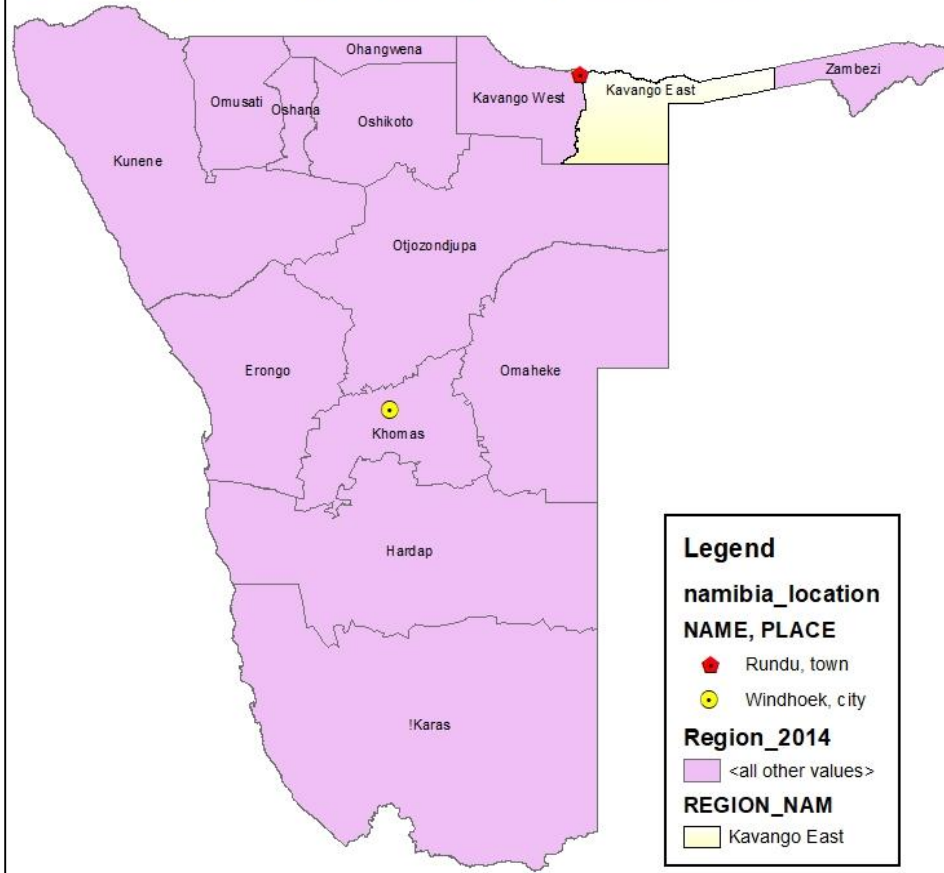
Activity description and No(s):	Description of relevant Activity	The portion of the development as per the project description that relates to the applicable listed activity
Activity 10.2 (a) (Infrastructure)	The construction of Resorts, Lodges, Hotels or other tourism and hospitality facilities.	The project involves the operational activities of the existing Lodge.

2 PROJECT LOCATION AND DESCRIPTION

2.1 PROJECT LOCATION

Kayova River Lodge is located in Kayova Village within the Ndiyona Constituency which is about 110 km out of Rundu towards Divundu. The Lodge is situated on eastern side of the D3402 gravel road leading to Katere in Kavango East Region. The Lodge is further located on the western side of the Kavango River bank – refer to **figure 1** for the locality map below.

Locality Map for Kayova River Lodge, Kavango East Region



LOCALITY MAP FOR KAYOVA RIVER LODGE, KAVANGO EAST REGION

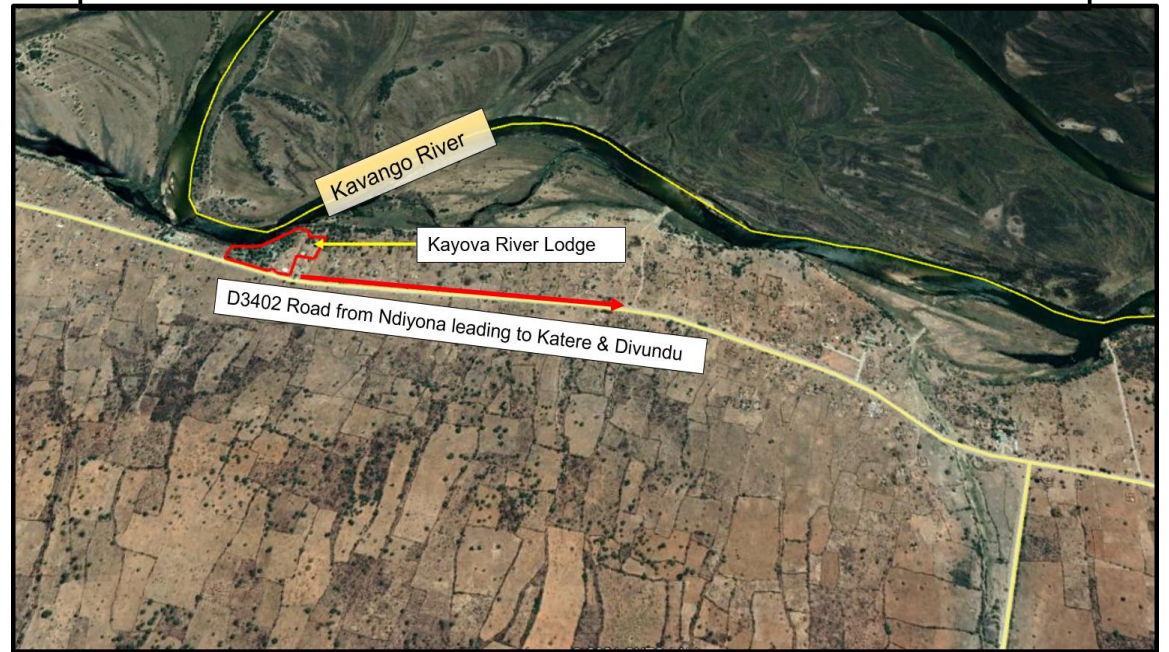


Figure 1: Locality map for Kayova River Lodge

2.2 PROJECT DESCRIPTION

Kayova River Lodge is a lodge that forms part of the Kayova Community Development Foundation (KCDF). The Foundation (under its original name, Father-Denner-Foundation) was founded by Father Denner, a priest of the Mainz Diocese in Germany, 2005. Since the operation of the Lodge, four kindergartens have been built which are maintained and funded by KCDF. In addition, the Foundation has a water project that now provides 28,000 people (community members of Kayova) with fresh potable water as part of their social responsibility. Another aspect of their social responsibility is the orphanage (Hompa Shiyambi Children's home) – which is home to approximately 60 children and adolescents from the community as well as other nearby communities. Kayova River Lodge has been in operation for 14 years (from 2008 to date).

Given the size of land allocated to KCDF by the local chief (Hompa Shiyambi) (then), the Foundation has used part of the land to set up an agricultural project which benefits both the orphanage and the Lodge with fresh vegetables. However, the agricultural project also serves as an educational project for the local people.

Kayova River Lodge (proponent) is of the intention to renew and acquire an Environmental Clearance Certificate (ECC) and has appointed Namibia Environmental Consultants to undertake the Environmental compliance exercise in order to renew and obtain the ECC for the existing operations of the Lodge. The competent authority is the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs (MEFT: DEA).

The process will be undertaken in terms of the gazette Namibian Government Notice No. 30 Environmental Impact Assessment Regulations (herein referred to as EIA regulations) in terms of the Environmental Management Act (No 7 of 2007) (herein referred to as the EMA).

2.2.1 Existing Operations of Kayova River Lodge

Kayova Rive Lodge has created approximately 108 job opportunities for the local community people. It has a variety of plant species that are used for shade purposes as well as small animals such as ground squirrels. The Lodge is situated on the western boundary of Kavango River (about 5 metres away from the river). The Lodge extracts water from the river basically to be used for irrigation purposes only (**refer to Annexure C of this document**).

2.2.2 Engineering Services for the Lodge

Engineering services such as water, sewer reticulation and electricity are designed that they are confined in a closed system within the Lodge. With regards to sewer reticulation, the Lodge has installed drains (which accommodates 50 litres of sewage) for sewer reticulation management as can be seen from the picture below. Sewage water is further treated with chemicals and pumped out of the drains to an area that is about 60m away from the Lodge. The treated sewage does not pose any health hazards and environmental impacts given that it is treated to meet the standards of water that can be disposed off in the environment. Areas where this water is disposed off, there are no people residing in close proximity. Sewage is often treated and pumped from the drains once or twice in three months and this is dependent on the number of guests the Lodge has received or accommodating. Grey water that is generated from the laundry facility, bathrooms and washbasins is used for gardening purposes as the Lodge has a lot of vegetation on site.



Figure 2: Drainage System (Sewer Reticulation)

Water Consumption:

Kayova River Lodge has about 5 boreholes for consumption purposes. Two of these boreholes are specifically for the Lodge and the other three are for Kayova and other nearby communities.



Figure 3: One of the boreholes used by the Lodge



Figure 4: Borehole used by the community

Waste Management:

Solid waste is managed in such a way that the Lodge has a small pit where they dispose of the day-to-day waste generated from the Lodge. This pit is emptied on a weekly basis where waste is transported to the local dumping site of the community (Ndiyona). Waste that is generated from the Lodge is strictly solid waste.

Access Road:

Access to the Lodge can be obtained from the D3411 gravel road that passes through Ndiyona Constituency.

2.2.3 Status Quo of the Lodge Operations

Below are key points that relate to the current operations of the Lodge:

- There are additional structures to the Lodge that were constructed in the period of 2017 – 2019 as highlighted below:
 - New ablution facilities for the conference centre, Guardhouse and for the Kitchen staff;
 - Two bedroom houses (one is a German self-catering house and the other is a staff resident mainly for the chefs);
 - A new workshop building (The workshop is mainly for different types of activities such as mechanics, welding etc). The workshop has contributed to the creation of job opportunities for the community residents.
- Other than the added infrastructure, the Lodge operations and maintenance remains the same.
- With regards to waste management, the Lodge still makes use of the existing pit on site which still has adequate capacity for waste generated from the Lodge. Waste is still being transferred from the pit on site to the community disposal site on a weekly basis.

- The management of Kayova River Lodge does not intend to change the scope (as *initially applied for*) of operation for the Lodge – the scope of operation will remain as is. Therefore, there are no new items on the scope to be considered.
- As per the site visit, the proponent has been in compliance with the Environmental Management Plan (EMP) and it has been effective enough thus far. In addition, the Lodge has not received any complaints from its neighbours or community members of Kayova regarding its operations.
- Mitigation measures tabled in the initial EMP have also been well implemented to any negative social nuisance and environmental damage.

Below are pictures of the added infrastructure to the Lodge.



Figure 5: Added ablution facilities for the conference hall



Figure 6: Added ablution facility for the Guardhouse



Figure 7: Added ablution facility for the kitchen staff



Figure 8: The new Workshop Building



Figure 9: Two Bedroom house self- catering



Figure 10: Staff Accommodation



Figure 11: Some of the guest rooms at the Lodge (each building has two guest rooms)



Figure 12: Trees found and managed on site



Figure 13: Reception area for the Lodge

3 LEGAL ENVIRONMENTAL FRAMEWORK

This chapter provides an overview of the legislation and policy framework for the EIA being undertaken. The EIA will be undertaken in compliance with the relevant Namibian environmental legislation as well as taking into account international best practice for impact assessments.

3.1 THE CONSTITUTION OF THE REPUBLIC OF NAMIBIA

There are two clauses contained in the Namibian Constitution that are of particular relevance to sound environmental management practice, viz. articles 91(c) and 95(l). In summary, these refer to:

- Guarding against over-utilisation of biological natural resources;
- Limiting over-exploitation of non-renewable resources;
- Ensuring ecosystem functionality;
- Protecting Namibia's sense of place and character;
- Maintaining biological diversity; and
- Pursuing sustainable natural resource use.

The above therefore commits the State to actively promote and sustain environmental welfare of the nation by formulating and institutionalising policies to accomplish the abovementioned sustainable development objectives.

3.2 NAMIBIA'S ENVIRONMENTAL MANAGEMENT ACT (EMA)

In giving effect to articles 91(c) and 95(l) of the Constitution of Namibia, general principles for sound management of the environment and natural resources in an integrated manner have been formulated. This resulted in Namibia's Environmental Assessment Policy of 1994. To give statutory effect to this Policy, the Environmental Management Act was approved in 2007, and gazetted on 27 December 2007 as the Environmental Management Act (Act No. 7 of 2007) (EMA), Government Gazette No. 3966. Part 1 of the Environmental Management Act describes the various rights and obligations that pertain to citizens and the Government alike, including an environment that does not pose threats to human health, proper protection of the environment, broadened locus standi on the part of individuals and communities, and reasonable access to information regarding the state of the environment. Part 2 of the Act sets out 13 principles of environmental management, as follows:

- Renewable resources shall be utilised on a sustainable basis for the benefit of current and future generations of Namibians.
- Community involvement in natural resource management and sharing in the resulting benefits shall be promoted and facilitated.
- Public participation in decisions affecting the environment shall be promoted.
- Fair and equitable access to natural resources shall be promoted.
- Equitable access to sufficient water of acceptable quality and adequate sanitation shall be promoted and the water needs of ecological systems shall be fulfilled to ensure the sustainability of such systems.
- The precautionary principle and the strategy of preventative action shall be applied.

- There shall be prior environmental assessment of projects and proposals which may significantly affect the environment or use of natural resources.
- Sustainable development shall be promoted in land-use planning.
- Namibia's movable and immovable cultural and natural heritage, including its biodiversity, shall be protected and respected for the benefit of current and future generations.
- Generators of waste and polluting substances shall adopt the best practicable environmental option to reduce such generation at source.
- The polluter pays principle shall be applied.
- Reduction, reuse and recycling of waste shall be promoted.
- There shall be no importation of waste into Namibia.
- Promotion of the coordinated and integrated management of the environment;
- The Minister of Environment and Tourism was enabled to give effect to Namibia's obligations under international environmental conventions;
- Certain institutions were established to provide for a Sustainable Development Commission and Environmental Commissioner".

As the organ of state responsible for management and protection of its natural resources, the MEFT: DEA is committed to pursuing these principles of environmental management.

3.3 ENVIRONMENTAL GUIDELINES

The EMA, under section 5, states that if a proposal is likely to affect people, the following guidelines should be considered in Scoping / EA:

- The location of the development in relation to interested and affected parties (I&APS), communities or individuals;
- The number of people likely to be involved;
- The reliance of such people on the resources likely to be affected, the resources, time and expertise available for scoping / EA;
- The level of education and literacy of parties to be consulted;
- The socio-economic status of affected communities;
- The level of organisation of affected communities;
- The degree of homogeneity of the public involved;
- History of any previous conflict or lack of consultation;
- Social, cultural or traditional norms within the community; and
- The preferred language used within the community.

The MEFT also released a Draft Procedures and Guidelines for conducting EIAs and compiling EMPs in April 2008. These guidelines outline the procedures and principles that are to be followed. It will be consulted throughout the EIA process to ensure an effective process and an EMP that addresses all identified impacts.

3.4 NAMIBIA VISION 2030

The principles that underpin Vision 2030, a policy framework for Namibia's long-term national development, comprise the following:

- Good governance;

- Partnership;
- Capacity enhancement;
- Comparative advantage;
- Sustainable development;
- Economic growth;
- National sovereignty and human integrity;
- Environment; and
- Peace and security.

Vision 2030 states that natural environments are disappearing quickly. Consequently, the solitude, silence and natural beauty that many areas in Namibia provide are becoming sought after commodities and must be regarded as valuable natural assets. Vision 2030 emphasises the importance of promoting Healthy Living which includes that the majority of Namibians are provided with basic services. The importance of developing Wealth, Livelihood and the Economy is also emphasised by Vision 2030. This development therefore supports the goals to be achieved in Vision 2030, because the bulk services will provide the community currently living in non-favourable conditions with potable water, electricity and waste removal services. Not only will this improve their health, it will also result in further development of Kayova community.

3.5 BIODIVERSITY LEGISLATION AND POLICIES

The following policies, aimed at biodiversity, may also be relevant for the proposed project:

- Convention on Biological Diversity (2000)
- Namibian Water Corporation Act (1997)
- Pollution and Waste Management Bill (Draft)
- Soil Conservation Act (1969)
- United Nations Framework Convention on Climate Change (1992)
- Water Resources Management Act (2004)
- Climate Change Policy (Draft with Attorney General's office)

The applicability of the aforementioned policies and legislation has been explored in further detail during this EIA phase, based on the findings of the impact assessment and specialist investigations.

3.6 SOCIAL POLICIES

3.6.1 The Ministry of Environment and Tourism (MEFT) Policy on HIV & AIDS

The relevance of this policy for the proposed project stems from the fact that construction activities may involve the establishment of temporary construction workforce in Kayova community. Experience with other construction projects in a developing-world context has shown that, where construction workers have the opportunity to interact with local community, a significant risk is created for the development of social conditions and behaviors that contribute to the spread of HIV and AIDS.

In response to the threat the pandemic poses, MEFT has recently developed a policy on HIV and AIDS. This policy, which was developed with support from United States Agency for International Development (USAID), Gesellschaft für Technische Zusammenarbeit (GTZ) and

the German Development Fund, provides for a non-discriminatory work environment and for workplace programs managed by a Ministry-wide committee.

3.7 WATER ACT NO.54 OF 1956

This Act provides for Constitutional demands including pollution prevention, ecological and resource conservation and sustainable utilisation. In terms of this Act, all water resources are the property of the State and the EIA process is used as a fundamental management tool.

A water resource includes a watercourse, surface water, estuary or aquifer, and, where relevant, its bed and banks. A watercourse means a river or spring; a natural channel in which water flows regularly or intermittently; a wetland lake or dam, into which or from which water flows; and any collection of water that the Minister may declare to be a watercourse. Permits are required in terms of the Act for undertaking the following activity relevant to the proposed project:

- Disposal of waste in a manner that may detrimentally impact on a water resource in terms of Section 21 (g).

3.8 WATER RESOURCES MANAGEMENT ACT OF NAMIBIA (2004)

This act repealed the existing South African Water Act No.54 of 1956 which was used by Namibia. This Act ensures that Namibia's water resources are managed, developed, protected, conserved and used in ways which are consistent with fundamental principles depicted in section 3 of this Act. Part IX regulates the control and protection of groundwater resources. Part XI, titled Water Pollution Control, regulates discharge of effluent by permit. Thus developers are required to efficiently plan for sewage disposal.

3.9 THE DRAFT WETLAND POLICY (1993)

This policy requires that any wetlands and its associated hydrological functions form a part to be managed in such a way that their biodiversity, vital ecological functions and life support systems are protected for the benefit of present and future generations.

3.10 POLLUTION CONTROL AND WASTE MANAGEMENT BILL (IN PREPARATION)

This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill will repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) (below) when it comes into force.

The Lodge is located about five meters away from the Okavango River.

In terms of water pollution, it will be illegal to discharge of, or dispose of, pollutants into any watercourse without a Water Pollution Licence (apart from certain accepted discharges). Similarly, an Air Quality Licence will be required for any pollution discharged to air above a certain threshold.

The Bill also provides for noise, dust or odour control that may be considered a nuisance. The Bill advocates for duty of care with respect to waste management affecting humans and the environment and calls for a waste management licence for any activity relating to waste or hazardous waste management.

This bill aims to promote sustainable development and to prevent and regulate the discharge of pollutants into the environment. Once this bill is enacted it will make provision for the establishment of an appropriate framework for integrated pollution prevention and control.

The proposed development would not entail the discharge to air and or water, but might result in the generation of noise and dust during waste compaction.

3.11 FORESTRY ACT (NO. 12 OF 2001)

This Act makes provision for the protection of various plant species. Harvesting permits are required from the Directorate of Forestry to clear certain protected vegetation species from the site.

3.12 SEWAGE AND DRAINAGE REGULATIONS (AMENDMENTS) LOCAL AUTHORITIES ACT, SECTION 23 (1992)

The regulation makes provision for proper operational of pipelines in drainage lines. The regulations also stipulate the prevention of pollution and environmental damage caused by improper construction of sewage and water pipelines in drainage lines.

3.13 PUBLIC HEALTH ACT 36 OF 1919 AND SUBSEQUENT AMENDMENTS

The Act, with emphasis to Section 119 prohibits the presence of nuisance on any land occupied. The term nuisance for the purpose of this EIA is specifically relevant specified, where relevant in Section 122 as follows:

- Any area of land kept or permitted to remain in such a state as to be offensive, or liable to cause any infectious, communicable or preventable disease or injury or danger to health; or
- Any other condition whatever which is offensive, injurious or dangerous to health.

3.14 NATIONAL HERITAGE ACT (NO.76 OF 1969)

The Act calls for the protection and conservation of heritage resources and artefacts. Should any archaeological material, e.g. old weapons, coins, bones found during the construction, work should stop immediately and the National Heritage Council of Namibia must be informed as soon as possible. The Heritage Council will then decide to clear the area or decide to conserve the site or material.

3.15 CUSTOMARY LAW

A large number of Namibians live under indigenous customary law. Customary law is recognised by the Namibian Constitution under Article 66. Section 3 of the Traditional Authorities Act No. 25 of 2000, gives certain powers to traditional authorities. One of the duties of the traditional authorities is to ensure that members of the community use the environment and its resources in a sustainable manner. Thus the authority can institute measures to promote good waste management practices.

4 RESPONSIBLE PARTIES

Kayova River Lodge as the proponent will be responsible for the implementation of this Operational Environmental Management Plan (OEMP) during the operational phase of the Lodge. This responsibility, in some instances may be delegated to employees in the employment of Kayova River Lodge for practical purposes, but Kayova River Lodge will retain legal responsibility. In that capacity, Kayova River Lodge should delegate suitably qualified person(s) with the responsibility to ensure implementation of the EMP and will:

- Revise the EMP as required and inform the relevant parties of the changes.
- Protect the environment and rehabilitate the environment as prescribed in the EMP.

The following people are also required during the operation in order to implement various Environmental management related issues.

4.1 ENVIRONMENTAL CONTROL OFFICER

Given the operation of the Lodge, a suitably qualified and experienced Environmental Control Officer (ECO) shall be appointed by the Proponent to ensure that the mitigation rehabilitation measures are implemented and to ensure compliance with the provisions of the EMP.

4.1.1 Roles and Responsibilities

The role of the ECO is to oversee and monitor compliance with and implementation of the operational phase EMP. The ECO is therefore responsible for the following responsibilities:

- i. Liaison with the community, Kayova River Lodge and Environmental Authorities;
- ii. Ensuring that the requisite remedial action is implemented in the event of non-compliance;
- iii. Ensuring the proactive and effective implementation and management of environmental protection measures;
- iv. Ensuring that a register of public complaints is maintained by the proponent and that any and all public comments or issues are appropriately reported and addressed;
- v. Routine recording and reporting of environmental activities on a monthly basis;
- vi. Recording and reporting of environmental incidents;
- vii. Notifying the Environmental Authorities immediately of any events or incidents that may cause significant environmental damage or breach the requirements of the EMP;
- viii. Environmental Awareness Training courses to be conducted to the Contractor's entire team of workers.
- ix. Ensure that periodic environmental performance audits are undertaken on the project implementation.
- x. Take appropriate action if the specifications contained in the EMP are not followed.
- xi. Monitor and verify that environmental impacts are kept to a minimum, as far as possible.
- xii. Ensure that activities on site comply with all relevant environmental legislation.

4.2 THE LODGE MANAGER

Kayova River Lodge must undertake to monitor activities on a daily basis and the ultimate responsibility for satisfying the monitoring requirements. The Lodge manager is also responsible for ensuring compliance with all aspects of monitoring.

5 MANAGEMENT OBJECTIVES AND PRINCIPLES

The following objectives provide the framework for the environmental principles for environmental management of the project:

- Avoid “disturbing” noise levels (an increase in the ambient noise level of 7dB (A) or more at the border of the property from which the noise emanates).
- Minimise the use of clean water for irrigation purposes and avoid water wastage.
- Ensure that an appropriate Emergency Procedure is in place to safeguard the environment, local community and employees.
- Practise the reduction and recycling of waste materials.
- Enhance the creation of direct job opportunities for the surrounding community and contribution of the project to the local economy, especially during (any) labour intensive phases (construction and decommissioning).
- Reduce the disturbance of the surrounding community from site activities to a minimum.
- Maintain transparent relations with the Interested & Affected Parties (IAPs) (including surrounding community, authorities and employees).
- Ensure that the community and employees are not subjected to increased safety hazards.

These guideline principles will form the basis for environmental management on site. Should these principles require modification or additions during the project this should be done at the discretion of the responsible person, who will ensure that any modifications are communicated, explained to and discussed with all affected parties.

The environmental operational procedures and environmental issues are identified and managed, under different phases of the project. The different phases are:

- Operational Phase; and
- Decommissioning Phase

6 OPERATIONAL PHASE

6.1 SCOPE

The general principles contained within the EMP shall apply to all operational activities. All operational activities shall observe any relevant environmental legislation and in so doing shall be undertaken in such a manner as to minimise impacts on the natural and social environment.

6.2 GENERAL

Kayova River Lodge, as the proponent is responsible for:

- Ensuring that the objectives of the EMP are given effect;
- Ensuring that all environmental impacts are managed in accordance with the EMP;
- Ensuring that all monitoring and compliance auditing occurs in line with the EMP;
- Ensuring that the environment is rehabilitated as far as practicable to its natural state or existing land use practices;
- Any environmental damage, pollution as a result of activities both in and outside the site boundaries.

With regards to the above, Kayova River Lodge shall conduct his activities so as to cause the least possible disturbance to the existing amenities, whether natural or man-made in accordance with all the current statutory requirements. Special care shall be taken by the Company manager to prevent irreversible damage to the environment. Kayova River Lodge shall take adequate steps to educate all members of his workforce as well as his supervisory staff on the relevant environmental laws and protection requirements. Kayova River Lodge shall supplement these steps with prominently displayed notices and signs in strategic locations to remind personnel of environmental obligations.

A suitably qualified independent ECO shall be appointed by the company manager to undertake the following tasks:

- Monitoring of all activities for compliance with the various environmental requirements at regular intervals;
- Routine environmental auditing and reporting of the Lodge performance against the EMP;
- Reporting of environmental incidents and routine reporting of environmental issues associated with construction activities and
- Identifying environmental non-conformances and initiating measures to remedy such issues.

6.3 ENVIRONMENTAL AWARENESS AND COMPETENCE

It is important to ensure that all personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental harm.

6.3.1 Environmental, Health and Safety Induction Course

The Lodge manager is responsible for informing employees of their environmental obligations in terms of the EMP and for ensuring that employees are adequately experienced and properly trained in order to execute the works in a manner that will minimise environmental impacts.

The Lodge manager shall ensure that all his employees attend an Environmental, Health and Safety Induction Course. This course shall be structured to ensure that attendees:

- Acquire a basic understanding of the key environmental features on the site and its immediate environs;
- Become familiar with the environmental controls contained in the EMP;
- Are made aware of the need to conserve water and minimise waste;
- Receive pertinent, written instructions regarding compliance with the relevant environmental management requirements (viz. typical environmental “do’s” and “don’ts”);
- Are aware that a copy of the EMP is readily available on site and that all site staff are aware of the location and have access to the document;
- Are informed that employee information posters, outlining the environmental “do’s” and “don’ts” (as per the environmental awareness training course) will be placed at prominent locations throughout the site.

6.3.2 Human Resource and Opportunities Management

Job creation, inward migration of workers and accommodation of a workforce within a small community have the potential to result in significant social impacts.

Given that Kayova community will be most affected by the project, it is consistent with international best-practice standards (such as the Performance Standards of the IFC) that they should be given special consideration in terms of the benefits arising from the operations of the Lodge. In order to enhance the benefits of employment creation for these communities, it is recommended that the following measures be implemented:

- The Lodge manager shall establish a formal and organised recruitment process.
- The Lodge manager should be encouraged to employ local labour (i.e. from Kayova) where possible.
- The Lodge manager should be encouraged to recruit Namibian labourers.

6.3.3 Working Times

Given the operational phase of the Lodge, the Lodge manager is expected to adhere to working times of employees. Working shifts must be strictly implemented even on public holidays.

6.4 ENVIRONMENTAL CONSIDERATIONS PERTAINING TO SITE LAYOUT - WHERE APPLICABLE

6.4.1 Solid Waste Management

The Lodge manager shall provide sufficient number of rubbish bins with secured lids. Rubbish bins shall always be placed in pairs to ensure that one is always present while the other is being emptied. Areas where rubbish is likely to be generated in higher quantities shall be equipped with additional rubbish bins according to the activities occurring there and the volume of waste being generated.

No waste materials, including domestic, organic or construction wastes shall be burnt, dumped or buried on the Site. Bins shall be emptied daily or as required. Waste may be stored

temporarily on site in a central waste area that is weather and scavenger proof. The Lodge manager shall, at his/her own cost make available the time and resources required in recovering any litter or other wastes that have been dispersed as a result of the activities within the Lodge.

The central waste storage (waste pit on site) shall be emptied weekly or as necessary.

6.4.2 Equipment Maintenance and Storage (at the Workshop)

All equipment shall be kept in good working order and shall be operated by designated and competent operators. Leaking or damaged equipment shall be repaired immediately or removed from the Site. Where emergency, *in situ* maintenance operations are required, the Lodge manager shall ensure that the soil does not become contaminated.

The Lodge manager shall ensure that oil and lubricant containers used in the workshop are stored in an area where the ground has been protected or well-surfaced. The containers shall be inspected regularly to ensure that no leakage occurs. The dispensing mechanism of the oil / lubricant storage container shall be stored in a waterproof container when not in use. The Lodge manager shall take all reasonable precautions to prevent accidental and incidental spillage during the use of oils.

6.4.3 Fire Control

Fires are only permitted in designated areas and shall not be left unattended. Cooking places shall be located at a safe distance from fuel/hazardous materials storage area and vehicle parking areas. Fire extinguishers shall be readily available in the operational areas of the Lodge. Any fires that occur outside of designated areas shall be reported to the Lodge manager immediately.

The Lodge manager shall be responsible for ensuring that immediate and appropriate actions are taken in the event of a fire and shall ensure that employees are aware of the procedures to be followed. The Lodge manager shall ensure that there is at least one fire extinguisher at the entrance of each accommodation facility or unit.

All fire extinguishers shall be serviced at the specified intervals and all other fire-fighting equipment shall be maintained in a good state of repair.

6.4.4 Emergency Procedures

The Lodge manager shall ensure that employees are aware of the procedure to be followed for when dealing with leaks and spills which shall include notifying the Lodge manager. The Lodge manager shall ensure that the necessary materials and equipment for dealing with leaks and spills are available at the Lodge premises at all times.

In the event of a hydrocarbon spill, the source of the spillage shall be isolated and the spillage contained. The affected areas shall be cordoned off and secured. The Lodge manager shall ensure that there is always sufficient supply of absorbent material on site to absorb/breakdown or encapsulate at least a 200ℓ liquid hydrocarbon spill. Any soil contaminated by such a spill must be removed and disposed off at an appropriately registered waste site.

Emergency equipment including spill kits and fire extinguishers shall be positioned at accessible locations near areas or facilities where such emergencies may arise.

6.4.5 Erosion, Water Quality, and Storm Water Control

The Lodge manager shall take all reasonable steps to prevent or remediate damage to the environment resulting from the works in the form of erosion and sedimentation. The Lodge manager shall immediately remedy any situation that is or has the potential to result in soil erosion, water pollution and sedimentation from the works as a result of storm water flows. A preventative approach must be adopted whereby the extent of clearance and disturbance is limited to those areas required at that time.

6.5 PROTECTION OF NATURAL FEATURES AND HERITAGE RESOURCES

6.5.1 Protection of Freshwater Ecosystems

Contaminated runoff from the Lodge should be prevented from entering the water courses such as the Kavango River as far as possible. Where pipelines cross streams, they should do so in a manner that does not impede or divert the flow in the channels.

The following mitigation measures are proposed for the protection of watercourses:

- Contaminated runoff from the Lodge should be prevented from entering the river as far as possible.
- Avoid the use of herbicides in the area due to the location of the Lodge and many other tributaries draining the ephemeral drainage lines in the area.
- Avoid development in and destruction of the drainage lines throughout the area.
- Disposal of waste from the sites should be properly managed.

6.5.2 Protection of Natural Systems

The Lodge manager shall ensure that the disturbance of vegetation and faunal communities and their habitats is kept to a minimum. The following mitigation and management measures are prescribed in this regard:

- The Lodge manager shall ensure that the disturbance of vegetation is kept to a minimum.
- Vegetation shall only be removed where it is absolutely necessary.
- Avoid the use of herbicides in the area due to the location of the Lodge and many other tributaries draining the ephemeral drainage lines in the area/the Kavango River in the area.
- Prevent the introduction of potentially invasive alien ornamental plant species such as; Lantana, Opuntia, Prosopis, Tecome etc, as part of the landscaping as these species could infestate the water bodies further over time.
- Recommend the planting of local indigenous species of flora as part of the landscaping as these species would require less maintenance than exotic species (*Cunningham, 2013*).
- Employees found guilty or eve suspected to be guilty of poaching or setting traps shall not be allowed to continue with work at the Lodge and shall be immediately removed from the working team.

6.6 COMPLIANCE AND PENALTIES

6.6.1 Compliance

Environmental management is concerned with the results of the proponent's operations to carry out the control of how the operations of the Lodge 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.

It is thus required that the Lodge manager shall comply with the environmental requirements on an on-going basis and any failure to do so will entitle the ECO to certify the imposition of a penalty as detailed below, if such non-compliance is not corrected within a period of one week of notification thereof.

6.6.2 Penalties

Penalties will be issued for certain transgressions. Penalties may be issued per incident at the discretion of the ECO. Such penalties will be issued in addition to any remedial cost incurred as a result of the non-compliance with this specification. The ECO will inform the Lodge manager of the contravention and the amount of the penalty and shall be entitled to deduct the amount from the monies due under the Contract.

Penalties for the activities detailed below will be imposed by the ECO on the proponent.

a) Failure to implement specified noise controls	N\$ 2,000
b) Failure to empty waste bins on a regular basis	N\$ 2,000
c) The use of inappropriate methods for refuelling, resulting in spillages.	N\$ 2,000
d) Deliberate lighting of illegal fires on site.	N\$ 2,000
e) Hunting, trapping and collection of animals (per unit taken)	N\$ 10,000
f) Employees not making use of site ablution facilities.	N\$ 2,000
g) Unauthorised removal of vegetation.	N\$ 500
h) Damage to vegetation or ground arising from equipment leaving designated haul or access routes.	N\$ 5,000
i) A spillage, pollution, fire or any damage to the environment resulting from negligence on the part of the proponent.	N\$ 5000,00

For each subsequent similar offence, the penalty shall be doubled in value to a maximum value of N\$ 20,000. The ECO shall be the judge as to what constitutes a transgression in terms of this clause.

6.7 ENVIRONMENTAL INCIDENT REPORTING

All environmental incidents occurring at the proposed site will be recorded. The incident report will have to include time, date, location and nature of the incident, extent of the incident, actions and personnel involved.

All complaints received from the neighbouring community should be directed to Kayova River Lodge management. In addition, the proponent's management should also be able to respond to the complainant within a week (even if pending further investigation).

It is important that the issues raised are considered and that the complainant feels that their concerns have been addressed to and whenever possible actions taken to address these. All

complaints should be entered in the environmental register and all responses and actions taken to address these should be recorded.

6.8 ENVIRONMENTAL MONITORING

Periodic environmental monitoring must be taken on a regular basis. Monitoring should be done in order to ensure compliance with all aspects of the EMP. Findings should be liaised with to all responsible officers as chain command.

6.9 NON-COMPLIANCE OF THE EMP

Problems may occur in carrying out mitigation measures or monitoring procedures that could result in non-compliance of the EMP. The responsible personnel should encourage staff to comply with the EMP and address acts of non-compliance and penalties.

Kayova River Lodge is responsible for reporting non-conformance with the EMP to the ECO. The proponent's management in consultation with the ECO must thereafter undertake the following activities:

- Investigate and identify the cause of non-conformance.
- Report matters of non-conformance to Kayova River Lodge (depending on the severity of the incident)
- Implement suitable corrective action as well as prevent recurrence of the incident.
- Assign responsibility to corrective and preventative action.
- Any corrective action taken to eliminate the causes of non-conformance shall be appropriate to the magnitude of the problems and commensurate with the environmental impact encountered.

6.10 SUMMARY OF OPERATIONAL PHASE MANAGEMENT ACTIONS

The table below is only a summary the management actions to be taken in order to minimise negative impacts. Please turn back to the relevant section above for more details on the various management actions to be taken for each impact.

Table 2: Summarized Operational Phase Management Table

Aspect	Management Objective	Management Actions	Responsibility
General	To ensure overall compliance of the EMP.	<ul style="list-style-type: none"> A maintenance plan for the Lodge must be developed to ensure that good working order is achieved. 	Lodge Manager
Monitoring	To avoid environmental pollution from potential leakages.	<ul style="list-style-type: none"> A monitoring and eradication programme should be put in place whereby the distribution and abundance of alien and invader fauna are monitored through fixed trapping points. 	Lodge Manager
Health and Safety	To ensure and maintain the safety workers on site.	<ul style="list-style-type: none"> An emergency plan (including fire management) must be developed and implemented; the relevant authority must approve this plan. Ensure that all fire extinguishers are replaced on or before their expiry dates. 	Lodge Manager
Fire Control	To prevent and maintain accidental fires at the Lodge. To reduce the risk of fires.	<ul style="list-style-type: none"> Fires are permitted in designated areas and shall not be left unattended. Accidental fires must be extinguished out immediately. Fire extinguishers shall be readily available. 	Lodge Manager
Access, Traffic and haul roads	Operational traffic shall be controlled to ensure minimal disruption to normal road users.	<ul style="list-style-type: none"> The Lodge manager shall be responsible for the control of all project related traffic including that of his/her suppliers in ensuring that vehicles associated with the project remain on designated routes and within the designated working times. Speed limits as set out by the Traffic Department of the Kavango East Regional Council should be adhered to in order to minimize accidents on the D3402 road leading to Divundu. 	Lodge Manager

Aspect	Management Objective	Management Actions	Responsibility
Noise	To limit noise levels	<ul style="list-style-type: none"> During operation, the Lodge manager must implement noise control measures such as loud music or other noise disturbances. 	Lodge manager
Air Quality	To limit air quality impacts.	<ul style="list-style-type: none"> During windy or dry periods, dust suppression techniques should be implemented. Vehicles and equipment must be properly maintained to limit the release of harmful gases. 	Lodge manager
Emergency Procedures	All employees are aware of emergency procedures.	<ul style="list-style-type: none"> The Lodge manager shall ensure that employees are aware of the procedure to be followed for dealing with (any) leaks and spills. The Lodge manager shall ensure that the necessary materials and equipment for dealing with (any) leaks and spills are available on the site at all times. 	Lodge Manager
Ecological Impacts	To minimize the disturbance of flora found within the Lodge.	<ul style="list-style-type: none"> Minimise the area of disturbance by restricting movement to the designated working areas during maintenance. Prevent illegal removal of protected vegetation. Minimize disturbance and loss of topsoil. Keep surrounding vegetation especially larger trees and shrubs to create a screen that reduces flood impacts. Remove invasive alien species on site. 	Lodge manager
Erosion, surface and ground water and Storm Water Management	<p>To avoid contamination of groundwater and surface water sources from possible leakages.</p> <p>To prevent or remediate damage to the environment resulting from the works in the form of erosion and sedimentation shall be taken.</p>	<ul style="list-style-type: none"> The Lodge manager shall take all reasonable steps to prevent or remediate damage to the environment resulting from the works in the form of erosion and sedimentation. The Lodge manager shall immediately remedy any situation that is or has the potential to result in soil erosion, water pollution and sedimentation from the works operation as a result of storm water flows. 	Lodge Manager

Aspect	Management Objective	Management Actions	Responsibility
		<ul style="list-style-type: none"> • Regular bulk services infrastructure and system inspection should be conducted. • With regards to surface water, all sills should be cleaned up as soon as possible. • The presence of an emergency response plan and suitable equipment is advised so as to react to any spillage or leakages properly and efficiently. • Proper contamination structures should be constructed to avoid any possible leakages. • Hazardous substances must be stored away from the buffer areas surrounding any water bodies on site to avoid pollution. 	
Protection of natural systems and archaeological sites	Impacts to natural systems are kept to a minimum.	<ul style="list-style-type: none"> • Disturbance of faunal communities and their habitats must be kept to a minimum. • All earthworks equipment operators shall be informed to cease operation immediately if any artefacts are unearthed and report the finding immediately to Kayova River Lodge, who in turn shall notify the National Heritage Council. • All effort must be made to minimize the disturbance of wild animals on and within the close vicinity of the Lodge. • Develop a procedure for dealing with animals encountered on site including dangerous animals and vermin. Where necessary, call in professionals to remove the animals. Personnel are to be instructed on the presence of dangerous game and the appropriate behavior and safety upon encountering such game. • Where possible, large/canopy trees should be retained (pertaining to all development areas) since they provide critical important breeding habitat for bird species. 	Lodge manager

Aspect	Management Objective	Management Actions	Responsibility
Solid Waste Management	To ensure that there is no illegal disposal of waste.	<ul style="list-style-type: none"> • The Lodge manager shall provide sufficient number of rubbish bins with secured lids. • No waste materials including domestic, organic or other lodge waste shall be burnt, dumped or buried on site. • Bins must be provided on site and coded. • Implement recycling of waste. 	Lodge Manager
Rehabilitation	When the site has reached capacity, all material, temporary structures, temporary fences, plant and equipment are completely removed from the site.	<ul style="list-style-type: none"> • Rehabilitation operations and re-vegetation of all disturbed areas shall commence as soon as possible and even run concurrently where appropriate. 	Lodge Manager
Penalties	To ensure that environmental requirements are strictly adhered to.	Penalties will be issues for certain specified transgressions.	Lodge Manager

7 ENVIRONMENTAL MONITORING

7.1 MONITORING, REPORTING AND AUDITING

Monitoring measures during the operational phase is as follows:

- Monthly visual inspections must be conducted at the Lodge to check for any environmental incidences.
- Quarterly audit reports are to be prepared by the ECO or appointed Environmental consultant and submitted to the proponent, and MEFT: DEA.
- Any change in the scope of works during the operation of the Lodge must be documented and reported to the competent authority accordingly.

8 CONCLUSION

In conclusion it should be noted that this EMP should be regarded as a living document and changes should be made to the EMP as required by project evolution while retaining the underlying principles and objectives on which the document is based.

The compilation of the EMP has incorporated impacts and mitigation measures as well as incorporating principles of best practice in terms of environmental management.

In addition, provided the operational impacts for this project are mitigated as per the EMP, the project will result in impacts that should not negatively affect the environment.

Parties responsible for transgression of this EMP should be held responsible for any rehabilitation that may need to be undertaken. Parties responsible for environmental degradation through irresponsible behaviour/negligence should receive penalties.

Environmental Clearance Certificate issued on EMPs are only valid for 3 years and will need to be reviewed and submitted to the Department of Environmental Affairs for approval.

ANNEXURE A

Curriculum Vitae of Environmental Assessment Practitioner

ANNEXURE B

Water Permit for Kayova River Lodge