Draft Environmental Management Plan (EMP)

The Proposed Establishment and Operation of Ekoto Tented Camp in Orupupa Conservancy, Kunene Region, Namibia

ECC Application No.:	**APP-004797**
Document Version:	**Draft as prescribed by Regulation 8(j) of the EIA Regulations (2012) – this is a living document throughout the project life cycle**
Proponent:	**The Forgotten Valley Camps CC** **P. O. Box 130 Swakopmund, Namibia**

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DOCUMENT INFORMATION

Title: Draft Environmental Management Plan (EMP) - The Proposed Establishment and Operation of Ekoto Tented Camp in Orupupa Conservancy, Kunene Region, Namibia

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EAP* - *Environmental Assessment Practitioner*

SERJA' STATEMENT OF INDEPENDENCE

As the Appointed Environmental Consultant to undertake the EIA Study and prepare this Environmental Management Plan (EMP) for the Proposed Establishment and Operation of Ekoto Tented Camp in Orupupa Conservancy of the Kunene Region, Serja Hydrogeo-Environmental Consultants cc declare that we:

- do not have, to our knowledge, any information or relationship with The Forgotten Valley Camps (Proponent), their project partners (including design engineers) nor the Ministry of Environment, Forestry and Tourism (MEFT)'s Department of Environmental Affairs and Forestry (DEAF) that may reasonably have potential of influencing the outcome of this EMP and the subsequent Environmental Clearance Certificate applied for.
- have knowledge of and experience in conducting environmental assessments, the Environmental Management Act (EMA) No. 7 of 2007 and its 2012 Environmental Impact Assessment (EIA) Regulation as well as other relevant national and international legislation, guidelines, policies, and standards that govern the project activities as presented herein.
- have performed work related to the ECC application in an objective manner, even if the results in views and findings or some of these may not be favorable to the Proponent.
- have complied with the EMA and other relevant regulations, guidelines and other applicable laws as listed in this document.
- declare that we do not have and will not have any involvement or financial interest in the undertaking/implementation of the project, other than remuneration (professional fees) for work performed to conduct the EIA and apply for the ECC in terms of the EIA Regulations' requirement as an Environmental Assessment Practitioner (EAP).

Disclaimer: Serja Hydrogeo-Environmental Consultants will not be held responsible for any omissions and inconsistencies that may result from information that was not available at the time this document was prepared and submitted for evaluation.

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Signature:

Fredrika N. Shagama: Principal Environmental Assessment Practitioner & Hydrogeologist

Date: 14 November 2024

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
BID	Background Information Document
DEAF	Department of Environmental Affairs and Forestry
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
GG	Government Gazette

Abbreviation	Meaning
GN	Government Notice
SHE Officer	Safety, Health & Environmental Officer
I&APs	Interested and Affected Parties
IFC	International Finance Corporation
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
MME	Ministry of Mines and Energy
NHC	National Heritage Council (NHC) of Namibia
PPE	Personal Protective Equipment
Reg, S	Regulation, Section

1 INTRODUCTION

1.1 Project Background and Location

The Forgotten Valley Camps CC (hereinafter the *Proponent*) proposes to construct and operate a tourism Tented Camp (hereinafter the *Tented Camp* or *Camp*) in the Orupupa Conservancy, covering a head leasehold area of 50 hectares (Ha). The tourism facility is located on the ridgeline to the east of the Tufa cliff within a Mopane grove alongside the spring on the foothills closest to the Tufa cliff near Ekoto Village, about 15km southwest of Otjetjekua Village and 85km southeast of Opuwo in Kunene Region - Figure 1-1.

The uniqueness of the Tufa Cliff and the sheer spectacle of its size and the added attraction of tens of thousands of rosy-faced lovebirds that use the cliffs, make this the most viable location for a semi-permanent tourism fixture. The Proponents have entered into a 20-year joint venture (JV) agreement for the establishment of the Camp. Moreover, as the market to the site area, the activities will predominantly entail self-drive and overland safari type tourists (general self-drive or attracted from Etosha National Park). Therefore, the facility is mid-market value wise. Moreover, to avoid over capitalising on infrastructure, vis-à-vis the market, it is proposed to make this facility a Tented Camp. The presence of the facility in the Conservancy will enhance the profile and value that conservancies contribute to national tourism and biodiversity management efforts.

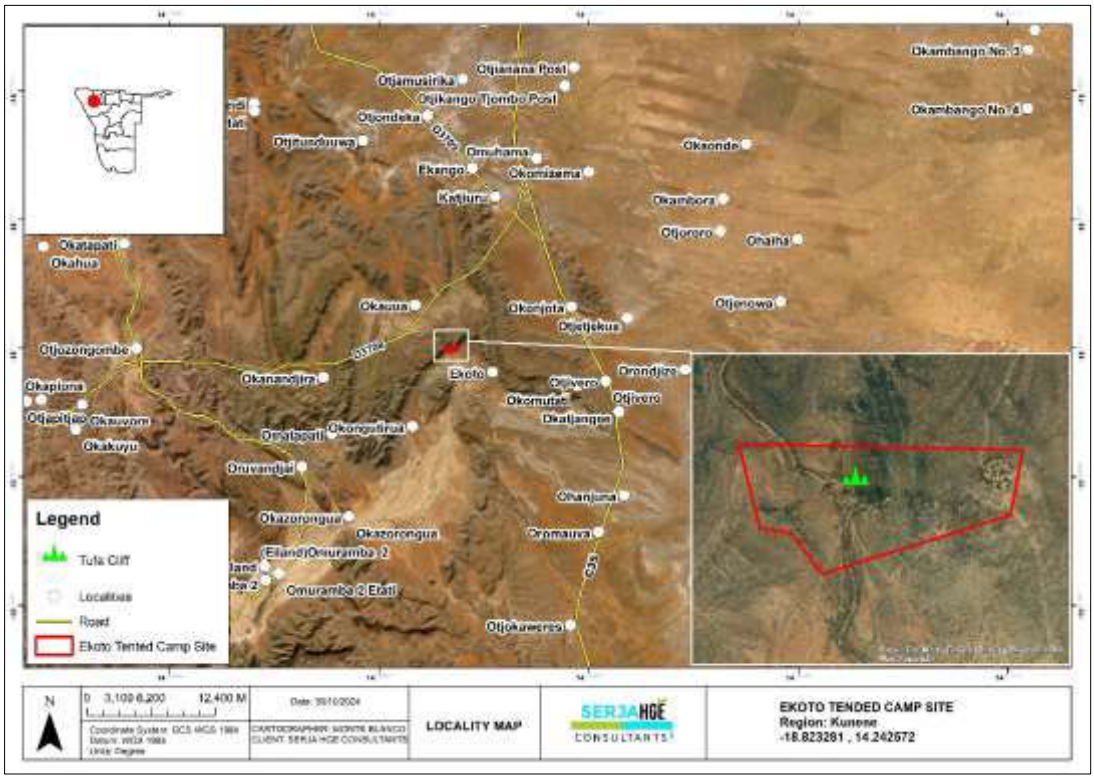


Figure 1-1: Locality map of Ekoto Tourism Tented Camp in the Orupupa Conservancy, Kunene Region

1.2 Purpose of the Draft Environmental Management Plan (EMP)

The Draft EMP is developed in accordance with Regulation 8(j) of the EIA Regulations (2012) that it should be included as part of the Environmental Assessment Scoping report. A '**Management Plan**' is defined as:

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

An EMP (herein referred to as an Environmental Management Plan (EMP)) is one of the most important outputs of the EIA process as it synthesizes all the proposed management & mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. It provides a link between the impacts identified in the EIA process and the required mitigation measures to be implemented to manage project impacts. It is important to note that an EMP is a statutory document and a person who contravenes the provisions of this EMP may face imprisonment and/or a fine. This EMP is a living document and can be amended to adapt to address project changes and/or environmental conditions and feedback from compliance monitoring.

The EMP is therefore aimed at guiding environmental management throughout the three main phases of the project activities, namely: planning & design, construction, operational & maintenance phases:

- **Planning and design** - the period during which preliminary legislative and administrative arrangements (such as appointing of the construction contractor) are carried out in preparation of the construction phase, and subsequent operational and maintenance of the Tented Camp.
- **Construction** – the period during which required operational structures and services infrastructure will be erected and installed onsite, respectively in preparation for the operational phase.
- **Operation and maintenance phase** - the period during which the Camp and associated services (utilities) and infrastructure are operational and maintenance is carried out by the Proponent.

1.3 Limitations of the EMP

The term 'environment' includes the biophysical and social environment, thus, this EMP deals with both. The imitations of the EMP are as follows:

- This EMP does NOT cover equally important aspects such as customer care, financial management, stock control, etc. These 'business management' issues are outside the scope of an EMP, though of course they are critical in running a tourism enterprise properly.
- The EMP only makes provision for the management and mitigation of potential impacts that were assessed during the EIA Scoping process.
- Should amendments proposed to the project activities, these will need to be communicated and re-assessed for incorporation into the EMP and an amendment thereto submitted to the Environmental Commissioner at MEFT.

2 BRIEF DESCRIPTION OF THE PROJECT ACTIVITIES

The project phases and activities are presented below.

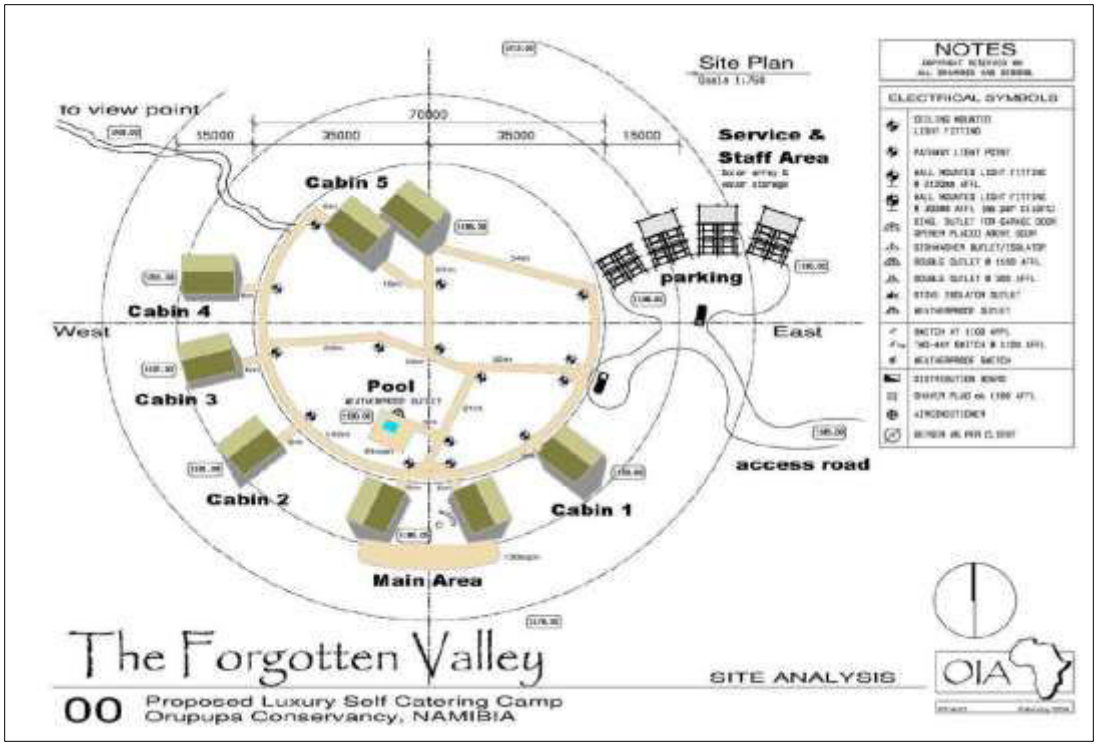
2.1 Project Overview and Design

The proposed project aims to offer a “glamping” experience and comfortable stay to clients, thus, bringing value to conservancy biodiversity and tourism assets. The main Ekoto Tented Camp concept entails ready-made safari canvas tents with a combination of wood, steel and glass structures, on wooden deck platforms. The camp will start as a self-catering facility and later transition into a full board operation once known and occupancies have picked up. The site layout and sketches are provided in Figure 2-1.

The summary of the main project components and services are as follows:

- Five tents separated by indigenous plant materials will be onsite. The actual design and placement of tents and camps will be done onsite to maximise views to the larger landscape and create privacy between tents. Internal finishes will be more luxurious to enhance the tourism experience.
- Located close to the main attraction of the cliff, there is a plan to develop a series of day walks from the Tented Camp site to viewpoints or other fly camps to see the springs, cliff and the large gatherings of lovebirds. A basic hide would be added at strategic viewing areas for photographers.
- Water supply: water will be sourced from the borehole at Ekoto Village. A solar pump and piping system can be discreetly laid to a water storage tank on the upper terrace of the area to ensure water pressure to the camp. It should be noted that maintenance and repairs will be conducted to ensure the borehole and existing pipeline to the Ekoto Village provides uninterrupted water supply to the community.
- Power supply: the camp will be 100% energy self-sufficient with solar power (a single photovoltaic installation situated within the site footprint). A diesel 7kva generator will be kept onsite and used as a backup electricity source.
- Sewage management: a septic tank system with a gravity feed to a septic tank well downhill of the camp will ensure good drainage and natural filtration and eliminate any odours close to the camp. One big sewage management system will be set up for all units (Tented Camps) with three tanks connected in series and then soak away in the garden.
- Site accessibility (roads): The site is accessible from the main C35 through existing local unpaved access roads. There is an existing road path from Ekoto Village to site. There will be minor roads works for safer and better traffic flow to/from site for the project's operations and maintenance.
- Vehicle parking: the naturally open flat area to the right of the camp will be used as parking area for safari vehicles transporting guests as well as project operations and maintenance vehicles.
- Kitchen facilities: above the parking area, there is a slightly flatter ledge space to accommodate the kitchen area.

Staff facilities: employees' facilities will be installed below the camp near the spring and Mopane grove. Facilities will be modest in size as most employees will be sourced and residing in Ekoto Village.



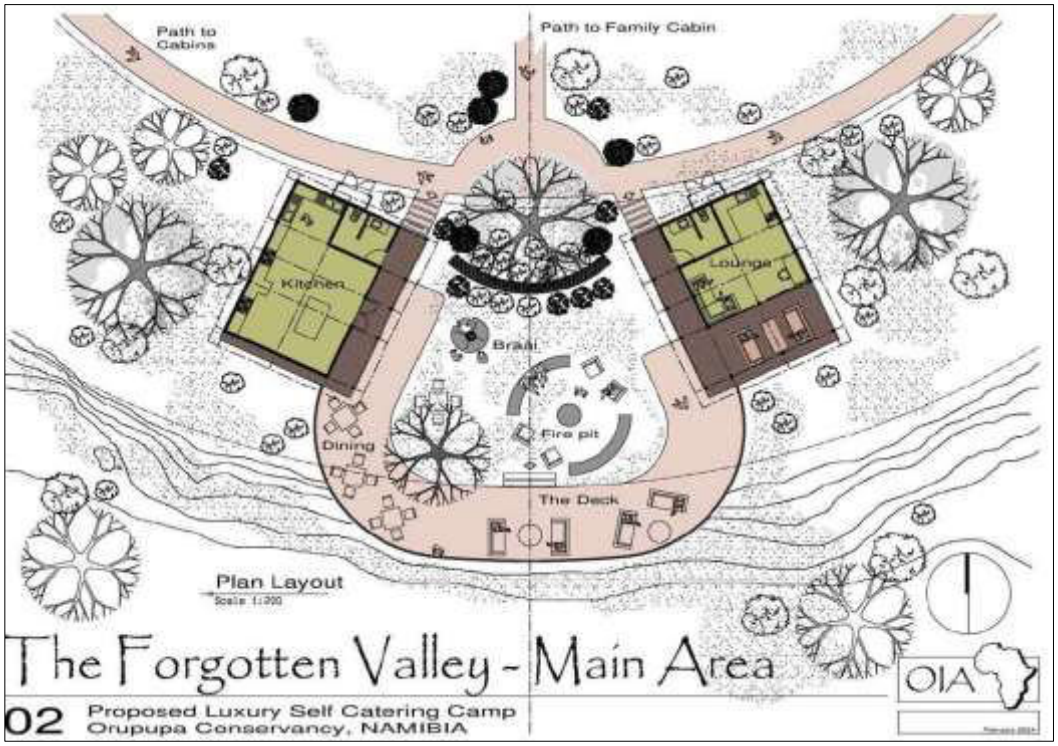


Figure 2-1: The site layout (sketch) of the proposed infrastructure for the Ekoto Tented Camp (source: Forgotten Valley Camps, 2024)

2.2 Construction Phase

2.2.1 Construction workforce and duration

The Proponent will appoint a contractor for the establishment of the Tented Camp and related facilities and infrastructure. Some illustrative photos of external finishing of the tented accommodation are as shown in Figure 2-2 below.

Figure 2-2: The specifications and illustrative photos of the external finishings of tented accommodation at the proposed Ekoto Tented Camp (source: Forgotten Valley Camps, 2024)

The construction crew will be housed in temporary accommodation (self-pitch tents) onsite for the duration of the construction works. However, the number of workers for construction is unknown at this stage.

The estimated duration of the construction period is approximately 7 months (maximum). However, this might be adjusted depending on local conditions. It should be noted that there is no anticipated excavations for the actual establishment of the Camp as the tents will be erected on platforms, and not in the ground.

2.2.2 Construction Services and Utilities

The services and utilities required during the construction phase include:

- Water: the water required for construction works will be sourced from the two newly drilled boreholes near the Camp. About 1m^3/day (1,000 litres per day) will be required for two months, and about 0.8m^3/day (800 litres per day) for domestic use for the rest of the construction period.
- Fuel: a small amount of fuel (for backup generators) is anticipated to be stored either in a secure mobile storage tank or in a stationary tank on an impermeable bunded surface onsite. The volume of the anticipated fuel storage tank will also determine whether or not a consumer installation will be required for it. This means that if the fule tank is 600 litres or more in volume, a consumer installation certificate will need to be applied for from the Directorate of Petroleum Affairs at the Ministry of Mines and Energy (MME).
- Electricity (power supply): electricity will be provided by generators supplied by the contractor.
- Toilets: portable toilets will be supplied by the appointed contractor onsite to manage sewage. The contractors will remove the toilets upon completion of construction works.

- Solid waste: the waste will be collected in a secure central place onsite, removed from the area and disposed of at the nearest waste management site (in Opuwo). If not possible, the waste will be transported to Windhoek's solid waste management facility as appropriate. Compost will be made from all organic waste and used in the Ekoto Village vegetable garden.
- Hazrdous waste: There is no hazardous waste yet generated from the tank at the campsite, however, measures are in place (provided in the fuel tank EMP) to mitigate and or manage potential accidental fuel spills or leakage.

  The hazardous waste (such as oil, fuels) produced particulalry during this phase will be properly captured, stored on site in designated waste containers and transported to the hazardous waste management facility (in Windhoek). Therefore, no hazardous waste will be disposed of in any other waste management facility in the project area or Kunene Region at large.
- Occupational health and safety: all project workers are supplied with appropriate and adequate personal protective equipment (PPE) while carrying project activities onsite. The site will also be equipped with one fully furnished first aid kit.
- Accidental fire outbreaks: the site will be equipped with fire extinguishers in case of accidental fire outbreaks for both establishment (construction) and operational phase.

2.3 Operation and Maintenance Phase

2.3.1 Operational phase activities

The Proponent will manage the operations of the proposed Camp. The following activities will be undertaken onsite:

- Tented accommodation for mid-range clients (tourists) as per the finished internal view in Figure 2-3.
- Self-catering amenities in a communal kitchen facility (central accommodation hub).
- Self-drive and overland safari type tourists, (general self-drive or attracted from Etosha National Park).
- Guided bird walks and day trails.
- In the later stages of the camp operations, general hospitality services (full board catering, laundry etc.) will be offered to lodging clients.
- General site maintenance works of the Camp and ensuring that the borehole and existing pipeline to the Ekoto Village provides uninterrupted water supply to the community.

Figure 2-3: An examples of internal finishings to be used in the proposed Tented Camp (source: Forgotten Valley Camps, 2024)

2.3.2 Operation workforce

The camp workforce will be accommodated in the Ekoto Village as the camp is close to the Village. Therefore, no onsite accommodation is anticipated for employees. However, there will be onsite ablution facilities for employees. The number of people anticipated for employment will prioritize local employment for locally available skills. This will be done to honor the agreement between the Proponent and Conservancy (as per the signed JV contract).

Given the fact that the facility will be initially a self-catering, the number of employees (staff) will be lower and envisaged as follows:

- One (1) Camp Manager
- Two (2) Maintenance staff
- Four (4) Cleaning staff
- Two (2) Maintenance and cleaning staff at fly-camp
- Two (2) Guides.

The Proponent will keep onsite maintenance to a minimum. All operational phase vehicles will be serviced in Windhoek, and not onsite.

2.3.3 Operational phase services and utilities

The water, wastewater and electricity requirements for the camps' operational phase have been detailed under 2.1 above. The remainder of the services requirements and other operational management activities are as follows:

- Road access: an unproclaimed road will be upgraded so that it can be used to gain access to the Camp, and this will also improve access for communities within Ekoto Village.
- Water consumption: maximum daily consumption with the full complement of guests and staff is estimated at 0.6m^3/day (600 litres per day).
- Solid waste management: will be carried out as indicated during the construction phase.

2.4 Decommissioning and Rehabilitation of Disturbed Areas onsite

Once construction is completed, the contractor will need to put site rehabilitation measures in place. Decommissioning and rehabilitation are primarily reinforced through either progressive rehabilitation while construction work is ongoing or rehabilitating disturbed site areas after completion of work, which consists of safety, health, environmental, and contingency aspects. For safety, health and environmental, rehabilitation of the site post-construction will include the following:

- Dismantling and removal of construction campsites and associated infrastructures from the project site areas,
- Carrying away all project equipment and vehicles, and
- Clean up of site working areas and transporting the recently generated waste to the nearby approved waste management facility (as per agreement with the waste facility operator/owner),

Further decommissioning and rehabilitation practice at the site will include:

- Backfilling of all holes and trenches (if any) associated with the construction activities in the area,
- Closing and capping of road construction holes to ensure that they do not pose a risk to both people and animals in the area, and
- Levelling of stockpiled topsoil which will be done to ensure that the disturbed site areas are left close to their original state as much as possible.

3 LEGAL FRAMEWORK: PERMITTING AND LICENSES

The Proponent has the responsibility to ensure that the project activities as well as the EA process conform to the principles of the EMA and must ensure that employees act in accordance with such principles. Table 3-1 below lists the requirements of an EMP as stipulated by Section 8 (e) of the EIA Regulations, primarily on specific approvals and permits that may be required for the project activities.

Table 3-1: List of legal requirements and permits to the project activities

Legislation	Provisions	Contact Details
Environmental Management Act 2007 Environmental Impact Assessment (EIA) Regulations (EIAR) (GG No. 4878)	Activities listed in Government Notice (GN) No. 29 of GG No. 4878 require an Environmental Clearance Certificate (ECC). The amendment, transfer or renewal of the ECC (EMA S39-42; EIA Regs19 & 20). Amendments to this EMP will require an amendment of the ECC. The ECC needs to be renewed every 3 years.	Mr Timoteus Mufeti: Environmental Commissioner at MEFT Tel: +264 61 284 2701
Water Resources Management Act No. 11 of 2013	License and permit requirements of the applicable water and wastewater legislation	Mr Franciskus Witbooi MAWLR: Water Affairs (Water Law Administration & Policy) Tel: +264 61 208 7226
Traditional Authority Act (Act No. 25 of 2000):	The local representatives (headmen) should be consulted for the land use consent and continuously engaged continue throughout the project	Ekoto Village Headman and Okozonguehe Traditional Authority leadership (including Senior Traditional Authority Councillors) - see the stakeholders list
Road Traffic and Transport Act 52 of 1999 and its 2001 Regulations	Provides for the control of traffic on public roads and the regulations pertaining to road transport, including the licensing of vehicles and drivers.	Mr Eugene de Paauw (Roads Authority – Specialist Road Legislation) Tel.: +264 61 284 7027

Legislation	Provisions	Contact Details
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001)	Regulation 3(2)(b) states that "No person shall possess or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area" A consumer installation certificate should be applied for from the MME for the storage of fuel:	Mr Carlo Mcleod (Ministry of Mines and Energy (MME)): Acting Director – Petroleum Affairs) Tel.: +264 61 284 8291
Forestry Act (No. 12 of 2001)	Permits are required for the removal of protected plants species.	Northwest Regions Forestry Offices (MEFT) Tel: 061 208 7320 Or MEFT Head office in Windhoek Tel: +264 61 284 2111
Nature Conservation Ordinance No. 4 of 1975 (as amended)	Permits are required for the removal of protected plants species.	
Namibia Tourism Board Act 21 of 2000	The Proponent should obtain the necessary authorisation for the Tented Camp and register with the Namibia Tourism Board.	Namibia Tourism Board Tel: +264 61 290 6013 Windhoek
National Heritage Act (No. 27 of 2004)	Discovered heritage resources should be reported to the National Heritage Council.	Mrs. Erica Ndalikokule National Heritage Council: Tel: +264 61 301 903

4 EMP IMPLEMENTATION RESPONSIBILITIES

The Forgotten Valley Camps (the Proponent) is ultimately responsible for the implementation of the EMP. However, the Proponent may delegate this responsibility or part of it at any time, as they deem necessary. The roles and responsibilities of all delegates/parties involved in the effective implementation of this EMP are set in Table 4-1.

The Proponent and their appointed Project Manager, who are in charge of the whole operation, have the final responsibility for implementation of the EMP. It is important to note that, the Environmental Management Act implies that the EMP should be monitored. Monitoring needs to be more intensive (weekly) during the construction phase, while during the operational phase it can be monthly.

Table 4-1: The EMP implementation responsibilities for the proposed establishment and operations of the Ekoto Tented Camp

Role	Responsibilities
The Forgotten Valley Camps	-Managing the implementation of this EMP and updating and maintaining it when necessary. -Management and monitoring of individuals and/ or equipment on-site in terms of compliance with this EMP and issuing fines for contravening EMP provisions.
Architect (Design Engineer)	The architect's responsibilities in the EMP implementation include: -Designing aspects of the Tented Camp. -Advising the Proponent on the best and suitable Camp infrastructure designs and related services.
Project Manager	The responsibilities of this Manager during the construction phase will be to: -Implement and ensure compliance with the environmental management measures proposed in this document. -Ensure compliance with relevant environmental and related authorisations and license conditions. -Review the EMP annually and amending the document when necessary. -Maintain stakeholder engagement and grievance mechanisms -Develop and manage schedules for daily activities -Issuing fines to individuals who may be in breach of the EMP provision and if necessary, removing such individuals from the site. -Ensure relevant staff is trained in procedures entailed in their duties. -Maintain records of all relevant environmental documentation for the project.

Role	Responsibilities
Construction Contractor or simply the ''Contractor'' and by all means subcontractors	The Contractors' representative or site supervisors (as appropriate) will be required to: -Ensure that the relevant commitments contained in the EMP are adhered to. -Compile relevant procedures and method statements for approval by the Project Manager prior to initiation of project activities onsite. -Ensure that all relevant staff are trained in procedures. -Maintain records of all relevant environmental documentation applicable to their work, i.e., all occurrences or incidents which have an environmental impact
Camp Manager	The Site Camp Manager during operations will be responsible for the following: -Operating the Camp and overseeing all activities on-site during operations. -Managing and overseeing the implementation of this EMP. -Preventing non-compliance with the EMP and if necessary, dealing with perpetrators. -Liaising with relevant interested and affected parties/stakeholders. -Ensuring all incidents are recorded and documented. -Undertaking an annual review of the EMP and amending the document when necessary.
Safety, Health & Environmental (SHE) Officer or Environmental Control Officer (ECO)	The Proponent may assign the responsibility of ensuring EMP compliance throughout the project life cycle to a designated member of staff or external qualified and experienced person, referred to in this EMP as the SHE Officer. This person will be responsible for the following activities: -Planning and carrying out site inductions to workers onsite and visitors. -Ensuring that the requirements of the EMP are carried out. -Monitoring the overall implementation of the EMP and preparing EMP monitoring reports on a 6-monthly basis -Ensuring that the project activities are conducted in accordance with the International System organization (ISO) standard 14001: 2015.

4.1 Amendments of the EMP

Any party involved with the project can suggest changes to the EMP via the Environmental Consultant or Proponent. Therefore, such suggestions or changes will need to be discussed collectively. Approved changes will be drafted and incorporated into the existing EMP in the form of an appendix or amendments.

5 ENVIRONMENTAL MANAGEMENT MEASURES

5.1 Key identified Potential negative Impacts

The key potential negative impacts identified, described, and assessed in the Scoping Report and for which the management measures (action plans) have been provided are listed below:

- Potential soil and groundwater pollution from waste products.
- General environmental pollution (littering) through mishandling of project related waste.
- Air pollution by potential dust from unpaved areas owing to the movement and operation of heavy vehicles and machinery and excavations during construction.
- Disturbance of local fauna and flora during construction.
- Physical land (soil) disturbance and soil erosion during construction.
- Illegal hunting of wildlife particularly during construction phase
- Impact on local services infrastructure such as roads and water.
- Occupational and community health and safety: improper handling of materials and equipment may cause health and safety risks to workers and locals

The management and mitigation measures are provided under the next chapter for implementation

5.2 Environmental Management and Mitigation Measures

The management actions are aimed at avoiding the above-listed potential negative impacts, where possible, and where it is impossible to avoid these impacts, measures are provided to reduce the impacts' significance. Management and mitigation measures recommended for the potential impacts in the Scoping Report were based on the:

- Planning and design phase (Table 5-1),
- Construction phase (Table 5-2), and
- Operations and maintenance phase (Table 5-3).

5.3 Planning and Design

Objective: The Tented Camp and its associated structures should fit into the natural environment, making full use of the natural features of the site and adding to the 'sense of place'.

Environmental performance indicator: Guests who visit the Camp site attractiveness and 'environment-friendly' design of the Camp as reasons why they do so.

Who is responsible: The Architect (Design Engineer) and the Proponent must design the Camp for minimal impact on the available resources and sensitivity to the sense of place

5.3.1 Management and mitigation measures for the Planning and Design Phase

The measures proposed for implementation to manage and mitigate the environmental impacts associated with planning and design phase are provided in Table 5-1.

Table 5-1: Management and mitigation measures for the planning and design phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
EMP implementation and training: Lack of EMP awareness and implications thereof	-All site personnel should be aware of necessary health, safety, and environmental considerations applicable to their respective work. -The implementation of this EMP should be monitored. The site should be inspected weekly, and reporting done monthly throughout **the project activities and** compliance audit done **bi-annually for overall EMP implementation.** -EMP non-compliance penalty system should be implemented.	-Training of project personnel on the EMP	-Project Manager	Pre-construction
Aesthetics: Visual or aesthetic issues	-The Camp buildings (structures) should be aesthetically pleasing, in a style that fits in with the natural environment. -Use shapes that do not contrast with the surroundings. -Use colours that are sympathetic (i.e. do not contrast) with the environment. -Use natural materials as much as possible (e.g. rocks from the area, wooden poles and thatch).	-All the designs are done as recommended or better	-Architect (Design Engineer)	Pre-construction

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-Place television signal receptors, solar panels, water tanks and other necessary features at sites that make them inconspicuous from the access roads and approaches. -Where possible, camouflage installations such as water tanks using elements from the surrounding environment, or construct a rough pole screen around tanks so that they are not conspicuous. -Camp signs should not be intrusive, e.g., a parking sign could be painted on a rock, rather than metal made. -Avoid neon signs and anything that flashes light. -Lighting along the walkways should be modest and should be directed downwards to minimise interference with starlight and the moon, and to prevent creating a 'glow' into the night sky. Do not place lights to intentionally light up trees or rocks. -Avoid excessive lighting at swimming pool(s). -Walkways should be demarcated simply by rocks along the edges. -Walkways must not be straight, but rather winding, taking care to go around major obstacles (trees). -Avoid razor wire, security fences and burglar bars as much as possible. -Minimise the use of shade cloth – rather use reeds or poles (shade cloth becomes shabby after a short while). -Specify that all services (e.g. pipes and cables) are to be buried underground as far as possible. -Place service areas (e.g. parking, storage, clothes drying) out of sight of tourists			
Water efficiency: use and management: Over-abstraction and over-use of water	-Design all toilets to drain into properly designed septic tanks (i.e. using the relevant South African National Standard) and placed at least 5 metres from any structure. -The borehole should not be pumped at rates beyond the sustainable yield. This is to ensure that groundwater flow directions are not altered or induced toward the borehole. -As far as possible install only showers in the Camp, not baths, to reduce water consumption.	-All the designs are done as recommended or better	-Architect (Design Engineer)	Pre-construction

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-Specify low-flow shower-heads for the showers. -Specify appropriate minimal-water flushing devices in the toilets.			
Energy efficiency: Over-utilization of energy	-The guest rooms (tents) should be designed to facilitate passive cooling. -Solar power systems should be used to run the Camp apparatus as much as possible. Generators should be used as little as possible.	-All energy saving measures are put in place and part of the design.	-Architect (Design Engineer)	Pre-construction
Pest control and management: Occurrence and attraction of pest onsite	-Specify fly-screens on open-able windows in the guest rooms, Camp area, kitchen area etc., so that there is less need to use insect repellents. -Design scavenger-proof storage areas for food and waste.	-The Camp designs align with pest control measures	-Architect (Design Engineer)	Pre-construction

5.4 Construction Phase

Objective: To construct the Camp with minimal disturbance to the surrounding biophysical environment

Environmental performance indicator: The environmental footprint of the Camp is limited to its area, with the surrounding areas and resources largely unaffected.

Who is responsible?

- The construction contractor (and subcontractors) must be instructed in writing by the Project Manager to implement the mitigation measures. It is then his responsibility to ensure that ALL the measures are implemented.
- The Project Manager should inspect the site at least twice per month to make sure that the measures are being implemented.
- The Project Manager must do a final inspection once the Camp is built and issue the building contractor with a completion letter once s/he is satisfied that the job has been done in accordance with this EMP.

5.4.1 Management and mitigation measures for the Construction Phase

The measures proposed for implementation to manage and mitigate the environmental impacts stemming from construction works are provided in Table 5-2.

Table 5-2: Management and mitigation measures for the impacts from construction activities

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
EMP implementation and training: Lack of EMP awareness and implications thereof	-EMP trainings should be provided to all workers involved in the project and its associate activities. -All site personnel should be aware of necessary health, safety, and environmental considerations applicable to their respective work. -The implementation of this EMP should be monitored. The site should be inspected weekly, and reporting done monthly throughout **the project activities and** compliance audit done **bi-annually for overall EMP implementation.** -EMP non-compliance penalty system should be implemented.	-Records of EMP compliance/monitoring conducted bi-annually -The ECC is renewed every 3 years -Records of EMP training conducted.	-Project Manager -Contractor -SHE Officer	Throughout the phase, and when deemed necessary
Preparatory works: Site preparation, work plan notification and identification of the construction workforce	-The Contractor should mark out (e.g. on the ground or with danger tape) the areas of all Camp structures before any workers, equipment or building materials are brought in. A 2-metre buffer can be allowed around the perimeter of buildings to allow building activities. -The marked-out area should be inspected and approved by the Project Manager. Thereafter, all site staff should be clearly informed that they may not move or disturb any areas beyond those limits. -The Proponent to keep the Conservancy updated on dates and plans for construction activities so that they can arrange to have a team present in the area during construction. -The Contractor should send names, cell phone numbers and ID numbers of all workers onsite for screening to the Conservancy for records.	-All measures in place and implemented	-Contractor -Project Manager	Throughout the phase, and when deemed necessary
Sourcing of building materials	-Building sand and other locally-derived building materials should only be procured from sites that have valid ECCs. -Rocks that will be used for construction or cladding should be collected from the Camp site	-Materials are obtained from certified suppliers and rocks collected from the site area, where possible	-Contractor -Project Manager	Throughout this phase
Clearing of land	-The only land that may be cleared is the roads, the areas where buildings will be erected, parking bays, driveways and pathways. -As much land clearing as possible (e.g. the removal of rocks) should be done by hand. Heavy earthmoving equipment, which will	-All measures in place and implemented	-Contractor -Project Manager	Throughout this phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	disturb the soil, create dust, and leave tracks and scars, should be used minimally or not at all. -As far as possible, all lay-down areas, such as the areas where building materials and equipment are stockpiled, should be areas that will later be used for parking, building, or driveways. In other words, do not stockpile materials in surrounding areas beyond the actual final Camp footprint. -The construction contractor may only disturb an area up to 2m around each building site or development area (e.g. the Camp main area, rooms, staff quarters, driveway, parking area). This is enough space to move around with wheel barrows, scaffolding and other equipment. As noted earlier, this 'footprint area' should be demarcated from day 1, with metal droppers and hazard tape so that everyone on site knows exactly which areas are off-limits. -Site personnel should refrain from killing or snaring or intentionally disturbing local animals that may be found on and around the site. -Personnel should not damage or cut down vegetation that is outside the Camp footprint, and should not unnecessarily damage or remove any plants within the footprint unless required to do so for the project activities. -Movement of vehicles and machinery should be restricted to existing roads and tracks to prevent unnecessary damage to vegetation.			
Laying of pipelines and cables	-Pipelines should be buried underground or be covered with rocks where burying is not possible. -Where possible, pipelines should be laid next to Camp roads. This is to avoid the need to make another scar on the landscape, and to make it easier for staff to inspect the pipeline. -Trenches excavated should be kept open for the shortest practicable time. If practicable, trenches should be excavated in short sections at a time as opposed to the entire length of the proposed infrastructure.	-All measures in place and implemented	-Contractor	Throughout this phase
Facilities for construction workers	-All workers should be housed on a brownfield site, and where facilities such as water and energy are easily available.	-All measures in place and implemented	-Contractor -Project Manager	Throughout this phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-Wherever the workers are housed, they must be provided with water, toilet and washing facilities. -Cooking facilities must be provided, preferably with gas cookers rather than open fires. If open fires are used, these must be made in a designated cleared kitchen area so that there is no possibility veld fire breakout. Firewood should not be collected from the local environment, but should be provided by the Project manager who procures it responsibly			
Water abstraction and use	-Water should be used sparingly at all times. -All taps, pipes and tanks must be managed and maintained so that they do not leak. Conduct visual inspection so that all faulty and leaking taps and pipes shall be immediately repaired -Water reuse/recycling methods should be implemented as far as practicable. -The Proponent should adhere to any licence/permit requirements of the applicable water and wastewater legislation. -Educate the work force on sustainable and effective use of water, e.g. clean equipment in containers. -No member of the construction team is allowed to wash clothes OR vehicles on the construction site. This should be done at a dedicated area.	-Daily inspections and condition reports -Water conservation awareness to all personnel	-Contractor -Project Manager	Throughout the phase
Soils: Physical soil / land disturbance and loss of topsoil	-Stockpiled topsoil and excavated materials should be used to backfill the excavated and disturbed site areas after completion of works. -Soils that are not within the intended footprints of the Camp and its services should be left undisturbed and soil conservation implemented as far as possible. -Project vehicles/machinery should stick to access route provided and not to unnecessarily create further tracks onsite by driving everywhere causing soil compaction and erosion.	-No proliferation of informal vehicle tracks created by project activities. -No new erosion gullies. -No signs of soil compaction -No disturbance to unmarked areas onsite.	-Project Manager -Construction Contractor -SHE Officer	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Soil and water resources pollution from garbage, cement, concrete, sewage, chemicals, fuels, oils or any other objectionable or undesirable material	-Accidental spills must be cleaned immediately to avoid the pollution of the wetland, and ground water, since the soil around the site is highly permeable. -Hazardous waste should be disposed of in the prescribed manner in order to prevent contamination of soils (see waste management heading). -In case of accidental spills, the contaminated soil must be suitably disposed of in a container for hazardous waste -If fuel is stored at the construction camp, fuel tanks must be properly bunded. The volume of the bunded area must be sufficient to hold 1.5 times the capacity of the storage tanks. The floor of the bunded area must be impermeable and the sides high enough to achieve the 1.5 times holding capacity. -Drip trays should be available for all equipment that is intended to be used during construction. These trays should be placed underneath each vehicle while the vehicles are parked. The drip trays should be cleaned every morning and the spillage handled as hazardous waste. -All cleaning of equipment should take place within the construction site and the water from washing operation should be collected in a tank and disposed of in agreed manner.	Inspection daily, reporting, and regular clean up	-Project Manager -Contractor	Throughout the phase
General solid waste	-Project personnel should be sensitized to dispose of waste in a responsible manner and not to litter. -Construction waste should be stored in skips and should regularly be removed off the site for disposal at an applicable municipal waste disposal site (Opuwo or Windhoek). -The project site should be equipped with different waste bins for each waste type (except for sewage that will be contained in the provided portable toilets for construction phase). -Plastics, wrapping waste, strapping, etc. should be secured in containers for general waste to prevent wind-blown waste. -All combustible waste (e.g. empty plastic bags and papers), should be burned in a drum or enclosed container, with the necessary care taken to avoid the possibility of starting a veld fire.	-Daily inspection and clean up. -There are sufficient waste storage containers for different waste -No littering caused by project personnel -No visible litter around the project area -Provision of sufficient waste storage containers -Waste management awareness	-Contractor -Project Manager	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-All non-combustible but recyclable waste (e.g. bottles, tins, plastic packaging) should be neatly stored separately to optimise re-use and recycling or must be removed from site at least once a week. -Any waste that is stored temporarily at the site must be secured to avoid it being blown into the surrounding areas, and to prevent it being scavenged by animals. -Measures must be taken to prevent any waste from attracting scavengers (e.g. kitchen waste should not be left to rot in the open so that it generates smells which will attract animals). -Any waste that cannot be composted or re-used or recycled or burned should be dumped only at a properly managed waste disposal facility -Separate all organic waste (e.g. kitchen waste), and dump this in a designated compost heap. This should be an enclosed place where it cannot be dug out and scattered about by scavengers. -Ensure that there is no waste left scattered on site, but rather be disposed of in allocated site waste bins and thereafter to the nearest waste management facility. -No burying of waste is allowed on site or anywhere else throughout the project lifecycle. -All domestic and general waste produced on a daily basis should be contained until such time that it will be transported to designated and appropriate waste sites on a weekly basis or as required. -Provide animal-proof waste receptacles for temporary storage until transportation to the nearest approved waste facility (in Opuwo or Windhoek).	-Environmental, Health and Safety Statements and Policy are in place		
Hazardous waste	-No paint, solvents, thinners, diesel, oil or any other harmful substances may be poured onto the ground. They must be collected in a container and removed from site for proper disposal. -All fuels and other chemicals must be stored in leak-proof containers, ensuring that they cannot react with each other or be spilt into the ground. Bulk fuel and other liquid hazardous substances should be stored on an impervious bunded surface, with sufficient capacity to contain 1.5 times the volume of fuel/hazardous liquid (in the event of a significant spill/container failure).	-Daily inspection and clean up. -There are sufficient waste storage containers for different waste -No spillage on and around the project area	-Contractor -Project Manager	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-No vehicles or other equipment are to be serviced or repaired on-site. However, should this be done (in cases of emergency), any grease, oil etc. must be collected in a container and removed from the site for proper disposal (see waste management section below for details). -Spillages of any potentially toxic materials, whether by accident or through negligence, must be scooped up immediately into drums.			
Sewage management (human waste)	-Open defecation and urinating in public is strictly prohibited. Workers should be provided with appropriate toilets for the field. -Only portable chemical toilets should be used on site and at the campsite. Under no circumstances may the waste from these toilets be dumped in the veld. -The waste should be removed at least once a week to the nearest municipal sewage site for handling and treatment. Alternatively, it may be pumped out into sealable containers and stored until it can be removed by truck. If stored, the containers should be kept out of direct sunlight and should not be stored for longer than a month. People responsible for cleaning these toilets should be provided with latex gloves and masks. -Spillage or leakage to be cleaned-up and fixed immediately.	Daily inspections and clean-up. -There are sufficient toilets at the construction campsite for workers -No open defecation by project workers -There are sewage removal operators	-Contractor -Project Manager	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Biodiversity: Loss of Flora	-Avoid unnecessary removal and disturbance of site vegetation. -Vegetation found on the site, but not in the actual footprint should not be disturbed, therefore, should be avoided. -The area to be constructed on the site, as well as lay-down areas, access routes, etc. should be clearly demarcated. The workforce must be instructed to operate within these boundaries. Any activity resulting in the chopping down of trees or removal of vegetation without the required authorisation is strictly prohibited. Therefore, a permit for removing protected trees should be **obtained from MEFT's Northwest Region's Forestry Office.** -All protected tree species (Mopane trees) should be tagged so that they are visible during construction works. -Avoid leaving equipment or machinery leaning on vegetation. -Environmental awareness on biodiversity preservation (both plants and even small animals encountered onsite) should be provided to the workers and contractors during EMP induction. -No alien vegetation may be introduced to the site in the form of seeds or plants, for beautification or any other reason. -At the end of construction all alien vegetation that has established should be eradicated.	-No complaints of unauthorised vegetation removal associated with project personnel. -No intentional disturbance and destruction of site vegetation -Barricading tape (to indicate working areas)	-Construction contractor -SHE Officer	Throughout the phase
Biodiversity: Impact on fauna: livestock, wild animals such as reptiles, birds, etc.	-The killing, snaring, trapping and stealing of community livestock is strictly prohibited. -Refrain from disturbing or killing small soil and animal species found on and around the site. -Visible breeding sites for birds and animals occurring on and around the site should not be destroyed nor disturbed. -Refrain from removing or destroying the bird nests on trees. -Construction holes and trenches should be secured and backfilled or levelled upon completion of works to prevent animals from falling into trenches. -The recommended speed of 40km/hr around, to and from site should be adhered to while looking out for animals and people (especially children) in the community.	No complaints of stolen and killed livestock by the project workers. -No intentional disturbance and destruction of habitats and faunal species	-Construction contractor -SHE Officer	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-One or two members of staff should receive training on how to handle snakes. This will ensure that snakes can be safely removed from site when necessary as opposed to being killed. -Any suspected poaching activities should be immediately disciplined, and should be reported to the nearest law enforcement officers. -The Proponent should work together with local law enforcement staff and any local anti-poaching initiatives in the area to combat this crime. -Anti-poaching awareness should be raised among the site workers to inform them of the impacts of poaching on the environment and the functionality of the Conservancy. -Incorporate Environmental awareness and biodiversity preservation into the employment contracts of all workers.			
Soil and water resources pollution from garbage, cement, concrete, sewage, chemicals, fuels, oils or any other objectionable or undesirable material	-Accidental spills must be cleaned immediately to avoid the pollution of the wetland, and ground water, since the soil around the site is highly permeable. -Hazardous waste should be disposed of in the prescribed manner in order to prevent contamination of soils (see waste management heading). -In case of accidental spills, the contaminated soil must be suitably disposed of in a container for hazardous waste -If fuel is stored at the construction camp, fuel tanks must be properly bunded. The volume of the bunded area must be sufficient to hold 1.5 times the capacity of the storage tanks. The floor of the bunded area must be impermeable and the sides high enough to achieve the 1.5 times holding capacity. -Drip trays should be available for all equipment that is intended to be used during construction. These trays should be placed underneath each vehicle while the vehicles are parked. The drip trays should be cleaned every morning and the spillage handled as hazardous waste. -Cement should not be mixed on open soil. A designated metal container should be made available for this purpose.	Inspection daily, reporting, and regular clean up	-Project Manager -Contractor -SHE Officer	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-All cleaning of equipment should take place within the construction site and the water from washing operation should be collected in a tank and disposed of in agreed manner.			
Air quality: Dust proliferation due to fines content of soil resulting in localized poor air quality and bad visual	-All construction areas and soil stacks should be regularly wetted. -A reasonable amount of water should be used to suppress the dust -Vehicles should be driven at a speed of 40km/hr to avoid the generation of dust owing to high speeds. This is also to ensure road safety due ongoing road works and many detours.	-Visual monitoring for dust nuisance and safety -Daily monitoring. -Complaints from the community are addressed	-Project Manager -Contractor	Throughout the phase
Noise from vehicles and construction activities	-Noise from vehicles and equipment on site should be reduced to acceptable levels. -Construction activities, excavation and transporting of materials should be done between 08AM and 5PM to prevent noise generated by equipment and movement of heavy vehicles. -When operating excavators and other noise generating machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.	-Daily monitoring. -Complaints from the community are addressed -Workers operating machinery and noisy equipment are equipped with noise protection equipment	-Project Manager -Contractor	Throughout the phase
Vehicular traffic safety: Presence of heavy vehicles in the area	-Vehicles drivers and equipment operators should be in possession of valid and appropriate driving licenses or operating permits and adhere to the road safety rules. -Drivers should drive slowly (40km/hour and less) while onsite. -Vehicles should be in a road worthy condition and serviced regularly to avoid accidents owing to mechanical faults. -Vehicle drivers should only make use of designated site access roads provided and as agreed. -Vehicle drivers should not be allowed to operate vehicles while under the influence of alcohol. -Project vehicles should be parked within the boundary or demarcated areas for such purpose onsite. -Deliveries from and to site should be done optimally during weekdays and between the hours of 8am and 5pm.	-No complaints from members of the public regarding vehicular traffic issues related to the project activities. -All personnel operating the project vehicles and machinery are appropriately licensed and possession of valid driving licenses. -Demarcated areas for parking, offloading, and loading zones onsite.	-Project Manager -Contractor	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Occupational and health and safety associated with project activities	-During induction, personnel should be provided with an awareness training of the risks of mishandling equipment and materials on site. -An emergency preparedness plan should be compiled and all personnel appropriately trained. -Train all employees and subcontractors on environmental awareness, the Proponent's internal Environmental Health and Safety Policy, and this EMP. -Appropriate and clearly written warning signage should be placed onsite, where visible. -A fully furnished first aid kit should be placed at each working site to attend to minor injuries, while major injuries should be attended to at a nearby health centre (clinic and hospitals). 2 or 3 site personnel should be trained on how to administer first aid. -Projected loads should be securely fastened to vehicles to avoid falling off and injuring people. -Heavy vehicle and equipment should be properly secured to prevent any harm or injury to both project personnel and locals. -When working on site, employees should be properly equipped with personal protective equipment (PPE) such as coveralls, masks, gloves, safety boots, earplugs, safety glasses, and hard hats. -Personnel should not be allowed to consume alcohol or other intoxicants prior to and during working hours as this may lead to mishandling of equipment resulting in health and safety risks.	-Comprehensive health and safety plan for the activities is compiled. -Availability of fully furnished first aid kits -Trained worker to administer first aid	-Project Manager -Contractor -SHE Officer	Throughout the phase
Community health and safety	-Construction trenches should be backfilled after completion of works. -Ensure that goods and projected loads are securely fastened to vehicles to avoid falling and injure people near the site (along the road). -Warning signage should be erected at danger site areas such as open trenches on the road. -Make provision for temporary crossroads at growth centres or where a community vehicle access paths cross over the road so that the community can cross over safely.	The construction holes and trenches are backfilled -There are sufficient, clear and appropriate warning signs near risk site areas -The community are warned of construction works and encouraged to stay away and exercise precautions at all times	-Project Manager -Contractor	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-The site areas that are considered temporary risks should be equipped with "danger" or "cautionary" signs clearly written in languages such as Otjiherero and may be English. -Loads upon vehicles must be properly secured to avoid items falling off the vehicle at any time. -All materials (e.g. bricks, poles, stones, pipes, etc.) must be stored at a central storage area on site so that the site is neat and orderly, and to avoid a situation where materials are lying scattered about on the project site. -All fuels, paints, solvents and other chemicals must be stored in watertight containers, ensuring that they cannot react with each other or be spilt onto the ground.	when crossing the road or walking nearby		
Potential increase of prevalence of HIV and AIDS, as well as other sexually transmitted diseases (STDs) prevalence	-Engage workers in sexual health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections. -Provision of condoms and sex education through distribution of pamphlets and health trainings. These pamphlets can be obtained from the nearest local health facility in Opuwo. -Emphasize on the continued recruitment of locals to avoid the influx of out-of-area people into the community for casual work that can be carried out by local people. Thus, reducing the creation of new sexual relations between local women and out-of-area men resulting in the potential local transmission of STDs and HIV/AIDS.	-No new infections recorded linked to project workers -Occupational health and safety personnel -Sex and Health Education/Awareness -Provision of condoms at the campsite	-Project Manager -Contractor	Throughout the phase
Fire management: Accidental fire outbreaks	-Portable and serviced fire extinguishers should be availed onsite and campsite. -No open fires should be created by project personnel onsite. -Consider using gas or paraffin cooks to prepare food instead of open fires. The cooks/stoves fire should be put out before leaving the camp. -Personnel and visitors alike must be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials (e.g., rubbish, plastics, papers, clothing, dry vegetation, and hydrocarbon-soaked soil) near hazardous substances' containment and handling areas. In other words, these flammable materials should not be left or thrown near	-No veld fires recorded (due to presence of project personnel) -Fire extinguishers (1 per vehicle) and at the campsite	-Project Manager -Contractor	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	the areas. Regular inspections should be carried out to check for these materials at the site. -Make provision for smoking areas for crew members who smoke. This is to ensure that the cigarettes' fire is completely put out to and disposed of in allocated bins at the smoking area. -Potential flammable areas and structures such as fuel storage tanks should be marked as such with clearly visible signage. -Raise awareness to workers on the impact of careless handing of fires and flammable substances in the fire.			
Archaeology and heritage: Accidental disturbance of archaeological or heritage objects	-If any archaeological materials or human burials or skeletal remains are uncovered during earthworks, the work in the immediate area should be halted, the finds would need to be reported to the NHC may require inspection by an Archaeologist. The ECO should have the area fenced off and contact NHC (Tel: +264 61 244 375), National Forensic Laboratory (+264 61 240 461) immediately. Please refer to Appendix 1. -Avoid direct damaging of archaeological or heritage such that may be encountered during excavations. -All accidental discoveries shall be reported immediately to the Project Manager so that an investigation and evaluation of the finds can be made and inform the HNC for the necessary actions to be taken. -Contractor and their subcontractor should adhere to the provisions of Section 55 of the National Heritage Act in the event significant heritage and cultural features are discovered in the course of project activities.	-Preservation of all artefacts and objects that are discovered onsite -Salvage equipment -Flag tapes -GPS (site marking)	-Project Manager -Contractor	As and when required

5.5 Operations and Maintenance Phase

Objective: To manage the Tented Camp with minimal disturbance to the surrounding biophysical environment, and to ensure that guests to the Camp behave in a way that does not impact negatively on the environment, wildlife and other land owners or users (e.g. tourist activity).

Environmental performance indicator: Visitors/guests notice the efforts being made by the Camp to be 'environmentally friendly' and they cite this as one of the main reasons why they return to stay at the Camp in future

Who is responsible?

- The Camp (Site) Manager is responsible for ensuring that the entire operation (on and off-site) of the Camp conforms to the standards usually ascribed to 'eco-tourism'.
- The Camp owner or Proponent should write the job description for the Camp Manager, ensuring that the relevant sections of this EMP are included as his/her duties
- The Camp Manager should compile an environmental report on a regular basis (e.g. monthly) according to a prescribed format. These reports will aid in the compilation of the 6-monthly monitoring reports, which will be required when renewal of the ECC is needed after 3 years.

5.5.1 Management measures for the operations and maintenance phase

The measures proposed for implementation during the operations and maintenance phase are provided in Table 5-3.

Table 5-3: Management and mitigation measures for the operations and maintenance phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
EMP implementation and training: Lack of EMP awareness and implications thereof	-EMP trainings should be provided to all workers onsite. -All site personnel should be aware of necessary health, safety, and environmental considerations applicable to their respective work. -The implementation of this EMP should be monitored. -The ECC should be renewed every 3 years The site should be inspected daily, and a compliance audit done throughout **the project activities (monthly) and bi-annually for overall EMP implementation.** -EMP non-compliance penalty system should be implemented.	-Records of EMP compliance/monitoring conducted bi-annually -The ECC is renewed every 3 years -Records of EMP training conducted.	-Camp Manager	Throughout the phase, and when deemed necessary.
Visual: Maintaining the sense of place	Management must not cause the Camp to lose its sense of place, by specifically avoiding: -Inappropriate furniture (plastic tables and chairs, etc.).	-All recommended measures are implemented and improvements are made as needed	Camp Manager	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-Shabbiness – dirty linen, dust, dirt, poorly-dressed or unclean staff, untidiness, un-emptied ash-trays, etc. -Disrepair or dilapidated infrastructure creates a very poor impression. -Noise – no radios, TVs, hi-fi's, noisy staff, "revving" vehicles, rattling air conditioners, low-flying aircraft, motorcycles, quad bikes, etc. -Smells – make sure that waste is properly managed so that people do not smell the rubbish bins. Also keep drains etc. clean so that these are not smelly. However, avoid the use of highly potent cleaners – guests do not want to smell detergents either. -Over development – do not have too many signs, or any other objects that detract from the natural beauty of the area. Visitors to the area want a nature experience, with an uncluttered atmosphere. -Scrap – make sure there are no old vehicles or pieces of old equipment lying around. -Sterility – whilst it is important to keep the Camp clean, do not sterilize it – this is a Camp, not a hospital. -Too many people – this will quickly destroy sense of place. Guests to the Camp want a certain degree of privacy. Also, there should not be people loitering around at the Camp, whether visiting staff or looking for work.			
Human waste (sewage)	-All toilets should drain into two- or three-chambered septic tanks, which are designed according to recognised standards (e.g. South African National Standards) and able to cope with high and low flow rates. The bacteria within a septic tank require a certain minimum flow to keep active. -Notices must be placed at each toilet to remind guests not to flush foreign objects down the toilet. -Each septic tank should have a grate trap at the inflow, and this should be cleaned regularly. -Use appropriate, bio-degradable toilet cleaners that do not kill the bacteria in the septic tank (various products are available on the market).	-All recommended measures are implemented and improvements are made as needed	Camp Manager	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-Drains from kitchens must have an oil trap and a grate trap. The purpose of these is to trap oily waste, which can clog up or slow down decomposition in the septic tank, and to catch kitchen off-cuts such as scraps of meat, vegetables etc. The traps must be cleaned daily, and the scraps must be thrown into the appropriate bin. -The Proponent should adhere to any licence/permit requirements of the applicable water and wastewater legislation.			
Domestic waste (kitchen scraps, tins, bottles, plastics, paper, etc.)	-Reduce the amount of waste that is generated. In this regard, try to: *Buy supplies in large containers (e.g. cooking oil, tinned food, and cleaning materials) so as to avoid too many empty bottles, tins, etc. *Avoid purchases that are packaged excessively – e.g. rather buy 5 loose, unpackaged lettuces and put them in a cool box than buying 5 lettuces packaged individually in plastic and styrofoam. -Separate all organic waste (e.g. kitchen waste), and dump this in a designated compost heap on site. This should be an enclosed place where it cannot be dug out and scattered about by scavengers. -All recyclable waste (e.g. bottles, tins, plastic packaging, cardboard boxes, paper) should be neatly stored to optimise re-use and recycling, or must be removed from site at least once a week. -Any waste that is stored temporarily at the site must be secured to avoid it being blown into the surrounding areas, and to prevent it being scavenged by local wild animals such as jackals, hyenas etc. -Measures must be taken to prevent any waste from attracting scavengers (e.g. kitchen waste should not be left to rot in the open so that it generates smells which will attract animals).	-Daily inspections and condition reports -Waste is disposed of in designated waste containers -No littering on and around the site	-Camp Manager	Throughout the phase
Hazardous waste (batteries, paints, solvents, thinners, used or expired medical equipment)	-These types of waste must be kept separate from other waste and should not be dumped in the general waste dump. -Hazardous waste should be collected and disposed of periodically at a hazardous waste treatment facility (e.g. Walvis Bay or Windhoek).	-Daily inspections and condition reports -Waste is disposed of in designated waste containers -No littering on and around the site	-Camp Manager	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Waste transportation and disposal	-Any waste that cannot be composted or re-used or recycled or burned should only be dumped at a properly managed waste disposal site. -When transporting the waste to the dump site, ensure that there is no possibility of waste blowing or falling off the vehicle. The best solution is to load the bins onto the vehicle so there is no need to transfer the waste from one drum to another. This means that at least 2 sets of bins will be required, because set number 2 will be in operation while set number 1 is being transported to and from the dumpsite. -At the dumpsite, the bins should be completely emptied and dried. They must be returned to the Camp clean and dry	-Daily inspections -Waste is transported in a responsible manner -No littering on and around the site nor along the roads	-Camp Manager	Throughout the phase
General waste handling	-Make collaborative arrangements with the local community to streamline waste management and improve economies of scale. -All chemicals used on the site (e.g. for cleaning and polishing) should be of the biodegradable type. -Compile a purchasing policy that emphasises: (a) Organic, biodegradable products or with non-toxic ingredients, (b) Buying in bulk, (c) Using containers that can be re-used, (d) Minimal packaging and (e) avoiding disposable items which add to the amount of waste that must be recycled or disposed of.	-Daily inspections and condition reports -Waste is disposed of in designated waste containers -No littering on and around the site	-Camp Manager	Throughout the phase
Water use management: Aimed at keeping water consumption average to below the required water volumes	-Install low-flow shower heads. -Insert aerators in showers and taps – these add air to the water and reduce the amount of water that flows through. -Install minimal-water flushing devices in the toilets (e.g. dual-flush toilet systems). Do not install any automatic flushing devices anywhere. -Place a prominent notice in each room and in all staff quarters informing users about the importance of saving water. Specifically request guests to: *Take short rather than long showers *Turn taps off after washing *Use towels more than once before asking for them to be laundered	-Daily inspections and condition reports -Water conservation awareness to all personnel	-Camp Manager	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	*Not wash their vehicles whilst at the Camp *Only flush the toilet when necessary -Water reuse/recycling methods should be implemented as far as practicable -Do not create any lawns or large gardens that need to be watered (a small vegetable garden using grey water (if possible) is permitted). -Ensure that pools are covered when not in use. -Wash vehicles with a bucket, not a hose. -Clean driveways and parking areas with a broom, not with water. -Ensure that all pipes are well maintained and that leaks are repaired immediately. -Ensure that all taps are turned off after use. -Install water metres at places where consumption can be usefully monitored. Keep a register of water consumption (daily / weekly measurements) so that trends can be monitored. Use this information to gradually improve consumption levels. -Create incentive schemes for staff to reduce their water consumption			
Energy consumption management	-Use as much renewable energy as possible and limit the use of fossil fuels in the generation of energy. This can be achieved by: -Generators should be used as little as possible. -The solar energy systems should be well maintained so that they remain efficient. -Where fires are used for creating ambience in the Camp, or for warmth (during winter), use wood that comes from bush encroaching species, if possible. Ensure that there are no significant negative environmental impacts associated with the supply of wood (e.g. over-exploitation of a certain non-encroaching species or cutting of protected species). -The site generator(s) should be automatically switched on once every week so that it is / they are not idle. <u>Lights:</u>	-All recommended measures are implemented and improvements are made as needed	Camp Manager	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-Install only power-saving bulbs (e.g. compact fluorescents or LEDs (light emitting diodes). LED lighting products produce light up to 90% more efficiently than incandescent light bulbs. -Use daylight switches on all outside lights that must be on at night (so that they switch off during the day). -Use movement-activated lights outside as much as possible. -Instruct staff to switch off lights and air-conditions if guests do not do so when leaving their rooms.			
Management of tourists (guests) at the Camp	-Place information materials in each guest tent, in which tourists are informed about: -The importance of conserving water. -How to be energy-efficient. -The rules regarding feeding of animals. -Appropriate pest control (e.g. swot a fly rather than spray insecticide). -Not placing foreign objects down the toilet. -Avoiding unguided walks or wandering around the Camp in the night (risk of dangerous wildlife roaming around the Camp). Therefore, for safety reasons, tourists/guests should stay in their rooms or safe place onsite at night). -Respecting the rights of other guests (e.g. refraining from making a noise, playing radios, musical instruments, etc.).	-All recommended measures are implemented	Camp Manager	Throughout the phase
Management of tourists (guests) at the game drives with the Camp vehicles or self-drives	When tour guides see wild animals such as lions and elephants away from the roads, they might drive off the existing road tracks leading to damaging of soils and grass. The following measures are recommended to manage the impacts related to off-road driving: -The Proponent should implement strict protocols and provide training to their guides pertaining to off-road driving to minimise the impact on off-road areas. -The tour guides should be instructed to limit the vehicles tracks to existing road as far as possible. -The guide may only take guests to sensitive sites (e.g. ecologically, archaeologically etc.) if arrangements have been made beforehand	-All recommended measures are implemented and continued improvements made as necessary	Camp Manager	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	and if there is agreement on what the guests may see and do when at these sites. -The guide must maintain an appropriate level of control during the drive – specifically: *No littering allowed (always have a refuse bag in the vehicle). *No noise. *No throwing of objects at wildlife. *No throwing of burning objects off the vehicle (e.g. cigarette butts). While the Camp has no control over what people do when they are in their own vehicles, they can encourage good behaviour by providing guidelines. These should be set of 'dos and don'ts' that people can take with them on their drive. The guideline should strongly discourage: -Off-road driving (off-road driving promotes wildlife criminal activities such as creating additional roads for poachers' easy escape). -Littering. -Harassing wildlife. -Speeding. -Excessive noise (e.g. hooting, revving the engine, etc. as this has an impact on rhino behaviour, i.e., stress). Similar to the recommendations made under the construction phase, the following should be carried through the operational phase to mitigate noise: *Movement of vehicle and machinery should be restricted to existing roads and tracks, and should be restricted to daylight hours only, to prevent unnecessary disturbance to plants and animals. *Aircraft traffic should be kept to a minimum and should follow defined routes that are set to cause least disturbance to large animals (e.g. rhinos, elephants, large antelope, and bustards) that are stress sensitive when fleeing in the heat of the day. -Throwing of burning objects off the vehicle (e.g. cigarette butts).			

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	-Going to the toilet in the veld.			
Pest management	Since the Camp will be in a conservation area, it is to be expected that various species of wildlife will be attracted to the Camp, and some (e.g. birds, lizards) may even live in the Camp. It is important that the right balance be maintained in ensuring the comfort and safety of staff and guests, while at the same time accepting that the presence of wildlife is inevitable and, in some cases, desirable. Specific management safeguards are: -Never feed wildlife (except birds, and then place food in hanging bird feeders). -Never leave food uncovered or in a place where it is accessible to wildlife. -Manage waste properly, so that it does not attract scavengers. -Try non-poisonous remedies or direct hitting for insect control, before using insecticides. -Use traps for rodents and not poison. -Capture and remove dangerous snakes, rather than killing them. -Never kill useful animals, such as chameleons, lizards, bats, etc. which will help the Camp to control unwanted insects such as flies and mosquitoes. -Maintain high levels of cleanliness, especially in the kitchen. -Install fly gauze doors and fly screen over selected windows to reduce the numbers of flies and other insects entering buildings. -Switch off lights when they are no longer needed (lights attract insects). -Supply mosquito nets. -Do not have lawns or beds of exotic plants, as these often require intensive pest control. -At least one or two members of staff should receive training on how to handle snakes. This will ensure that snakes can be safely removed from site when necessary as opposed to being killed	-All recommended measures are implemented and improvements are made as needed	Camp Manager	Throughout the phase

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Illegal poaching (hunting) of wildlife	-No wild animals may be trapped or killed for any reason whatsoever. -At least one or two members of staff should receive training on how to handle snakes. This will ensure that snakes can be safely removed from site when necessary as opposed to being killed. -The mere presence of reputable and trusted tourism operators provides a deterrent against illegal wildlife-related activities. Therefore, with their experience in the industry, the Proponent should consider implementing stringent anti-poaching measures. -Any suspected poaching activities should be reported to the nearest Police Station and the Proponent should work together with the nearest Police Station and/or anti-poaching unit in the area to combat this crime. -Anti-poaching awareness should be raised among the site workers as well as the community to inform them of the impacts of poaching on Camp operations, environment and eventually their own lives (e.g. income generated from their jobs).	-No records of poaching owing to the project related personnel or guests -Biodiversity conservation awareness is provided to all workers/employees	-Camp Manager	Throughout the phase
Fire management: Accidental fire outbreaks	-Portable and serviced fire extinguishers should be availed onsite. -No open fires should be created onsite. -Personnel and visitors alike must be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials (e.g., rubbish, plastics, papers, clothing, dry vegetation, and hydrocarbon-soaked soil) near hazardous substances' containment and handling areas. Regular inspections should be done to check for these materials at the site. -Make provision for smoking areas for guests and employees. This is to ensure that the cigarettes' fire is completely put out to and disposed of in allocated bins at the smoking area. -Potential flammable areas and structures such as fuel storage tanks should be marked as such with clearly visible signage. -Raise awareness to workers on the impact of careless handing of fires and flammable substances in the fire.	-No veld fires recorded -Well serviced Fire extinguishers onsite	-Camp Manager	Throughout the phase

5.6 Environmental Monitoring Actions

To ensure that the implementation of recommended environmental management measures is working and produces the desired results (minimizing the "medium" and uphold the "low" significance ratings of impacts), certain key impacts will need to be monitored and reported on. The ‘*’Observation, compliance status and ‘’Recommended Action*’’ columns will be completed for every monitoring done on site. Monitoring reports are to be compiled by the project SHE / ECO[1], audited by an Independent Environmental Consultant, and submitted to the DEAF for archiving on a bi-annual basis (every 6 months throughout the project operations) or as required by the Environmental Commissioner (as per the ECC conditions).

The monitoring findings should be incorporated into the 6-monthly environmental reports, which will be required when renewal of the ECC is needed after 3 years.

[1] The ECO is responsible for monitoring the implementation of the mitigation measures detailed above, might be carried out by a dedicated member of staff, or might form part of the Camp Manager’s responsibilities. Either way, the ECO’s monitoring responsibility should be carried out on a regular basis (possibly monthly) during the operation phase.

6 RECOMMENDATIONS AND CONCLUSION

Based on the assessment of potential impacts by the environmental consultants, the project has some negative impacts on the biological, physical and social environment. However, to minimize the significance of these impacts while maximizing the benefits of the project activities, an EMP (this document) was developed for implementation to ensure environmental sustainability.

6.1 Recommendations

To mitigate the adverse impacts that may emanate from the establishment and operational activities, the Proponent should follow recommendations provided below:

6.1.1 Environment Management Plan Recommendations

To ensure a healthy and safe environment in the site area and its environs, a plan for environmental management has to be instituted through monitoring. This involves the collection and analysis of relevant environmental data as well as periodic documentation and reporting.

- External Auditing: The key to a successful EMP is appropriate monitoring and review to ensure effective functioning of the EMP and to identify and implement corrective measures in a timely manner. In the event that discrepancies are identified, the problem must be investigated and attended to. All the results obtained during environmental monitoring must be documented for audit purposes.

  An audit of the environmental management actions undertaken is essential to ensure that it is effective in operation, is meeting specified goals, and performs in accordance with relevant regulations and standards. Audits should be conducted during the operational phase of the facility to ensure adherence to the management measures contained in the EMP.

6.1.2 Conclusion

Considering the potential impacts of the project and its associated activities, the mitigation measures contained in this EMP are considered sufficient to manage and mitigate these impacts. Therefore, Serja Consultants recommends that the Environmental Commissioner approves the establishment and operations of the Ekoto Tented Camp and issue an ECC on condition that the Proponent will ensure complete compliance to the developed EMP.

APPENDIX 1: CHANCE FINDS PROCEDURE (AFTER KINAHAN, 2020)

Areas of project activities are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found during development (operations and decommissioning) works. The procedure set out here covers the reporting and management of such finds.

Scope: The "*chance finds*" procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The "chance finds" procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): "*a person who discovers any archaeological …. object ……must as soon as practicable report the discovery to the Council*". The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

The Project Manager must report the findings to the following competent authorities:

- **National Heritage Council of Namibia: Head Office: +264 61 244 375**

  Technical Office +264 61 301 903
- **National Museum (+264 61 276 800)**
- **National Forensic Laboratory (+264 61 240 461)**

Responsibility:

Operator:	To exercise due caution if archaeological remains are found
Foreman:	To secure site and advise management timeously
Superintendent	To determine safe working boundary and request inspection
Archaeologist	To inspect, identify, advise management, and recover remains

Procedure:

<u>Action by person identifying archaeological or heritage material</u>

a) If operating machinery or equipment stop work

b) Identify the site with flag tape

c) Determine GPS position if possible

d) Report findings to foreman

Action by foreman

a) Report findings, site location and actions taken to superintendent

b) Cease any works in immediate vicinity

Action by superintendent

a) Visit site and determine whether work can proceed without damage to findings

b) Determine and mark exclusion boundary

c) Site location and details to be added to project GIS for field confirmation by an archaeologist

Action by Archaeologist

a) Inspect site and confirm addition to project GIS

b) Advise NHC and request written permission to remove findings from work area

c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains

a) Actions as above

b) Field inspection by archaeologist to confirm that remains are human

c) Advise and liaise with NHC and Police

d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.