ENVIRONMENTAL MANAGEMENT PLAN

NGEPI CAMP

Prepared for Mark Adcock t/a Ngepi Camp as part of an application for Environmental Clearance for an existing lodge

February 2025

ECC APPLICATION NUMBER: APP-004919

PROJECT	**Application for Environmental Clearance: Ngepi Camp**
PROPONENT	**Mark Adcock t/a Ngepi Camp**
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DISCLAIMER

This document was prepared by Henriette Potgieter with all reasonable skill, care and diligence, utilising resources devoted to the project by agreement with the proponent. Information contained herein is based on the best professional interpretation of data at the time of writing. Data was collected by the author and provided by the proponent, accepted in good faith as being accurate and valid at the time of writing.

This report may not be relied upon by other parties without written consent from Henriette Potgieter.

No warranties or guarantees are expressed or should be inferred by any third parties. Henriette Potgieter disclaims any responsibility to the proponent and others regarding any matters outside the agreed terms of reference and declares that she has no material interest in the outcome of the project nor any financial interest in the project, she does not hold shares in the project and is not employed by the proponent.

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Abbreviations

EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act 7 of 2007
EMP	Environmental Management Plan
MAWF	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism

1 INTRODUCTION

1.1 Background

The proponent, Mark Adcock trading as Ngepi Camp, is the holder of a permit to occupy 28.7 ha of land allocated to tourism development in the Kavango-east Region, and he is also the operator of the lodge. The lodge was built in 1987, and this is an application for an Environmental Clearance Certificate (ECC) in terms of the Environmental Management Act 7 of 2007 (EMA) and the EIA regulations (2012) for an existing lodge.

Garth Albasini, director of Ngepi Camp, handles the registration and application for ECC himself, but he contracted Henriette Potgieter to compile this Environmental Management Plan (EMP) in accordance with a screening notice he received from the Ministry of the Environment, Forestry and Tourism (MEFT) on 8 November 2024.

1.2 Methodology

Information on the infrastructure and management procedures was obtained from the proponent and used to draw up this EMP. Google Earth Pro was used to compile maps. A draft of this document was given to the proponent, he reviewed it and returned it with amendments. The management measures (Section 3) were recommended by the Practitioner and the proponent reviewed them for operational viability.

2 PROJECT DESCRIPTION

2.1 Location

Ngepi Camp is located on an 28.7 ha parcel of land in the Kavango-east Region, 16 km east of Divundu on the western bank of the Kavango River (Figure 1).

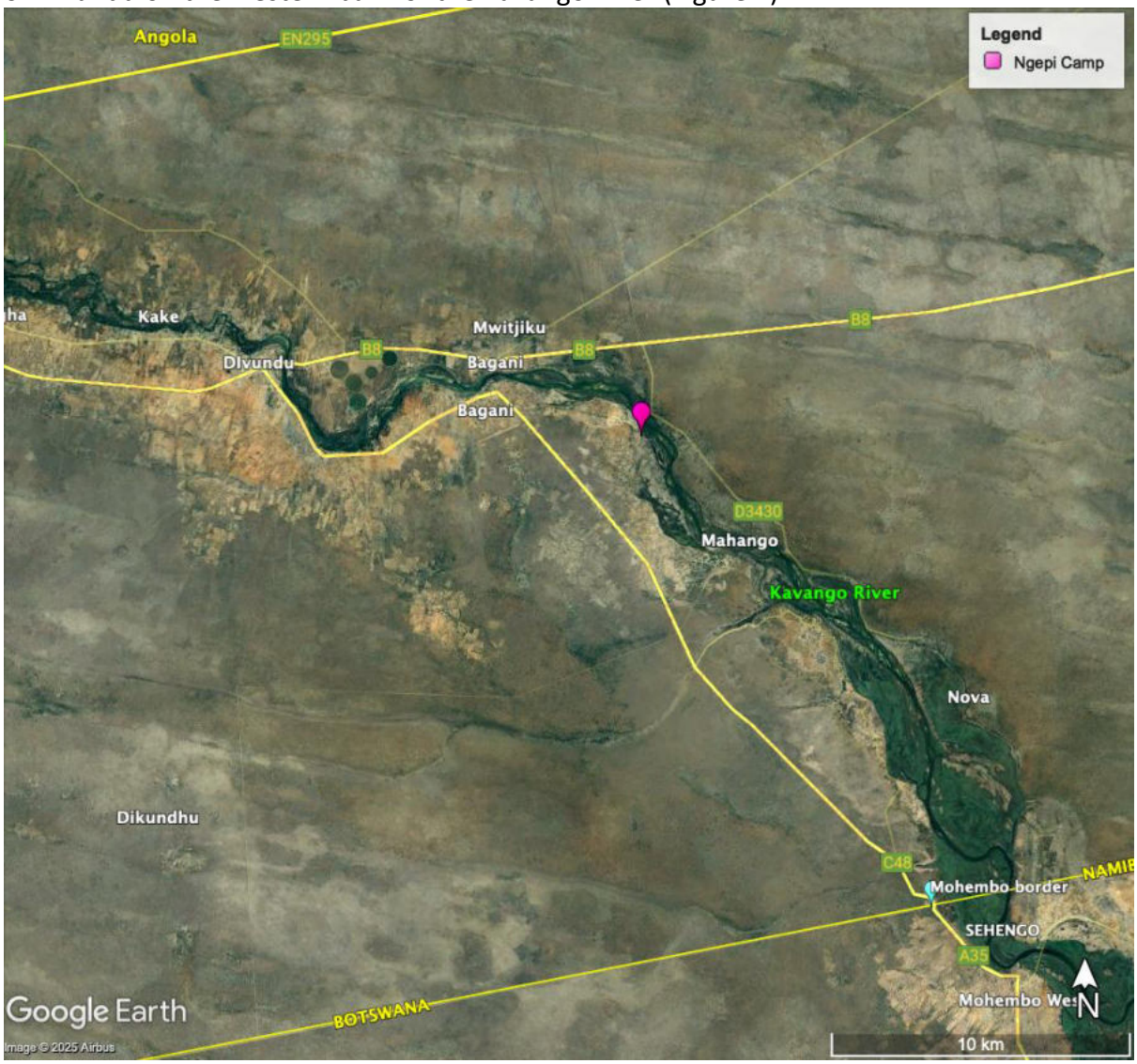

Figure 1. Location of Ngepi Camp on the Kavango River

2.2 Tourist activities

The lodge offers its guests the following activities:

- Mokoro excursions
- Boat cruises
- Fishing excursions
- Walks and guided walks
- Guided game drives on public roads

2.3 Infrastructure

The layout of the infrastructure on the site is shown in Figure 2.

Figure 2. Layout of infrastructure

2.3.1 Main lodge area

The main building is under thatch with partial walls of reed covering a wooden frame. The front has a wooden floor and consists of a dining room, lounge area and bar in an open plan design (Figure 3). The back of house contains offices, kitchen, food storerooms, laundry and a staff canteen on a concrete floor. There is also a swimming pool surrounded by a wooden deck, and a wooden deck for outside dining and lounging.

The parking area for guests and game drive vehicles is in front of the main area and has a gravel substrate.

Figure 3. The main area.

2.3.2 Guest units

A total of 46 guests can be accommodated in en suite rooms, and 126 more in campsites.

Tree Houses: 34 beds (Figure 4)

- 2 x Singles - 2 single beds each, sleeps 2 pax each

- 7 x Standard - 1 double bed each, sleeps 2 pax each
- 2 x Triple - 1 double bed, 1 single bed each, sleeps 3 pax each
- 2 x Family - 1 double bed, 2 single beds each, sleeps 4 pax each,
- 1 x The Swirl (luxury unit) – 2 pax

Bush Huts: 12 beds

- 3 huts with 2 rooms (4 pax) each

Camping sites: 21 sites (Figure 5)

- Maximum of 6 campers per site
- Each site has its own ablution block consisting of 2 showers and 2 toilets, a food preparation area with sink, and braai facilities

Figure 4. A treehouse on the river

Figure 5. One of the campsites

Clearly demarcated, swept dirt pathways connect the main area, guest units and back of house. Staff and guests are informed of the need to stay on the paths.

2.3.3 Staff accommodation

There is no staff village because all staff are employed from the local community, they live at home in their own villages and walk to and from the lodge during the day. Ngepi Camp arranges taxi transfers for evening shifts.

There are 2 single en-suite bedrooms for managers, consisting of brick walls, cement floors and a corrugated iron roof.

2.3.4 Lodge support infrastructure

The workshop has a bunded, elevated cement floor and corrugated iron roof. Diesel and petrol are kept in four 200 litre drums in a storeroom with a corrugated iron roof and cement floor. There is a window for ventilation and the door is kept locked.

Used oil, diesel and petrol are collected in a storage tank. The tank is sealed, and the hydrocarbons are used in the camp for treating poles and reed walls. Any excess is donated to the neighbouring communities who use it for treating their fence poles and reed walls.

The laundry is located behind the main area. Laundry is washed by hand in 4 galvanised iron baths. Wastewater is discharged into an adjacent vegetable garden (Figure 6).

Figure 6. Vegetable garden and gas bottle storage

2.3.5 Entrance gate

Access is 4 km along a dirt track from the C48 road between Divundu and the Mohembo Border Post Road.

At the entrance gate there is a single room for the gate security guard, consisting of bedroom and bathroom and built from concrete and stone with a thatched roof.

The access road has a gravel surface. Water erosion is mitigated by diagonal culverts graded across the road. After the rainy season the road is resurfaced and compacted. Regular road maintenance and erosion prevention are done by hand and dragging tyres when needed.

The services of a professional road maintenance company are engaged once a year after the rainy season.

2.3.6 Game drive routes

Existing public roads are used for game drive activities.

The paths used for village visits and bird-watching walks are pre-existing trails traditionally used by the local communities in their daily activities such as travel between homesteads, access to water points, and interaction with the natural environment. These routes have been used for generations and the community is actively engaged in the hiking activities, guiding visitors, helping to preserve the trails and ensuring respect for cultural sensitivities.

2.4 Services

2.4.1 Energy

No grid electricity is used. Solar panels and three single phase inverter systems, each consisting of a 3 kW master supported by a 3 kW slave inverter, provide a total of 18 kW, which is sufficient energy for the lodge and workshop.

A 47 kW silent Kipor and a 25 kW backup generator are housed in a noise-minimising unit and used as back-up for the PV systems.

Solar lights line the pathways, and hot water is supplied by a solar geyser at each guest unit, ablution facilities, and at the management accommodation. All cooking is done on gas appliances.

2.4.2 Water source and reticulation

Water is abstracted directly from the Okavango River and pumped to 4 tanks of 5,000 litres each on a tank stand near the workshop. From here the water is distributed to the points of use with gravity.

There are 5 water pumps:

1. A solar pump for the main supply, powered by its own solar system. Can pump 90,000 litres/day.
2. A 3-phase generator pump in case of fire emergencies.
3. A single-phase battery pump to top up the tanks during the night when necessary.
4. A solar pump at Tree House 12 with its own sun tracking panel directly connected to the water mains.
5. 1 x water wheel pump that can pump 10,000 litres/day. (Currently out of commission and being repaired.)

2.4.3 Sewerage systems

- 3-Chamber French drain near the ablution blocks and common areas for greywater and wastewater management. Total handling capacity is 3,000 litres/day. Effluent is discharged into the soil through filters.
- Biodigesters are installed near the kitchen and waste collection area for easy access to organic waste. It processes approximately 20 kg organic waste per day and

produces 15 m³ biogas per month. The nutrient-rich effluent (slurry) is applied to nearby gardens as fertilizer.

- A trickle filter system in the centre of the lodge covers 10 m² and processes up to 2,000 litres of wastewater per day. Treated effluent is stored in holding tanks, used for irrigation of gardens, and discharged into a wetland. Requirements of the Department of Water Affairs as stipulated in Ngepi Camp's Effluent Discharge Permit are met.
- A bubble system is integrated in treatment tanks located near the trickle filter system to enhance oxygenation and wastewater processing. It can treat up to 1,500 litres of effluent per day and the resulting wastewater is discharged into soak-aways.

2.4.4 Solid waste

Waste is separated in designated waste recycling cages (Figure 7). Food waste is added to the biodigester system, cardboard packing boxes are burnt on site, and recyclable waste is bagged. Glass and other recyclable waste are loaded on empty transport trucks and taken to Maun, Rundu or Johannesburg. A 20 x 20 m temporary holding cage for solid waste is located in the workshop area and is covered on all sides and the top with wire mesh.

Figure 7. Waste recycling area

3 MANAGEMENT MEASURES

3.1 Aims

The Environmental Management Plan (EMP) has three main aims:

- Identify possible impacts associated with the project
- Propose measures to mitigate or set off negative impacts
- Detail the actions required to effectively implement mitigation measures

Implementation actions aim to minimise negative impacts and enhance positive impacts that originate from both the construction and the operational phases.

This EMP illustrates the commitment of Ngepi Camp to follow sustainable tourism best practices. It is a legally binding document and constitutes an environmental contract between Ngepi Camp and the Ministry of Environment, Forestry and Tourism.

The EMP is a living document that will be updated as new information, policies, authority guidelines and technologies develop.

3.2 Responsibilities

The proponent is ultimately responsible for the implementation of this EMP.

The teams and/or persons who are expected to implement the EMP in situ, and their roles and responsibilities are listed in Table 1.

Table 1. Persons and teams responsible for the EMP

Person/Team	Responsibilities
Director: Dir	Overall responsibility for implementation of EMP. Support to the construction and other contractors. Support and direction to the lodge staff for implementation of the EMP.
Maint: Maintenance team	Maintenance and cleaning of buildings, vehicles, machinery, sewerage and waste systems at Game Lodge.
Mgt: Management team at the lodge	Overall management of the lodge. Supervision of all staff, including maintenance team and guides.
Guides: Employed by the lodge	Transport of guests. Ensuring appropriate human-wildlife interactions.

3.3 Construction phase

No construction is currently planned, but Table 2 is applicable to routine maintenance and potential future development or expansion.

Table 2. Management measures during construction

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
Soil resources and land capability			
Off-road driving damages the structure of the soil surface and causes soil compaction, which results in less water infiltration and availability, limited root penetration and less vegetation cover. Damaged soil crust makes the fine underlayer of soil vulnerable to wind erosion, the resulting dust settles on plants, interferes with photosynthesis, and causes a decline in habitat quality.	Motorised access will be limited to existing tracks and defined development areas. As far as possible, no new roads or tracks should be developed within the lodge or staff village areas.	Dir. Contractor	Visual inspections
	No construction or activities within areas containing highly erodible dispersed, fine-particle, sodic soils	Dir. Contractor	Identify highly erodible soils and areas before construction starts. Avoid these areas.
	Prevent water runoff from concentrating unnaturally in any one area.	Contractor	Road building and maintenance plan
	No off-road driving should be allowed. Where it is unavoidable, the resulting tracks must be obliterated by sweeping them. Regular road maintenance, erosion control and good drainage will prevent the need for off-road driving.	Dir. Contractor	Road building and maintenance plan
	Water pipes shall be installed and trenches dug in such a way as to minimise the chance of erosion.	Contractor	Site inspections
	The boundaries of construction sites that extend beyond already impacted areas must be clearly demarcated. Where construction will take place within or close to sensitive features, these should be demarcated.	Dir. Contractor	Demarcation of construction areas. Demarcation of sites of particular sensitivity with “Do not Disturb” signs.
	No construction activities may take place outside the defined infrastructure footprint areas.	Contractor	Site plans to clearly define construction areas.
	Quarries/borrow pits may not be dug without formal permission.	Dir. Contractor	Approval. Demarcate sources.
	The movement of construction crew must be within the demarcated site boundaries at all times.	Dir. Contractor	Site boundary demarcation.
	An area for mixing and stockpiling construction material must be demarcated. It must be located in an area that is already transformed or disturbed.	Dir. Contractor	Selection of laydown area. Demarcate area.

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
	Access routes between the stockpiling areas and the building sites should be demarcated and their use enforced. Existing roads must be used.	Dir. Contractor	Clearly demarcated routes.
	Sand and rocks utilised for construction must be from defined and already impacted areas. These sites must be identified and approved by Dir.	Dir. Contractor	Approval. Demarcate sources.
	Once construction work is completed, all building material and rubbish must be removed from the farm and the site must be rehabilitated to a state as close as possible to its pre-construction condition.	Contractor	Site inspections
	The use of graders should be avoided because they gouge roads below the level of the surrounding surface.	Dir. Contractor	Site inspections
Soil is contaminated by cement, paint, thinners, hydrocarbons and other chemicals used in the construction process.	The mixing and use of concrete and cement must takes placed in defined, designated areas only.	Contractor	Designated mixing areas.
	All hydrocarbons and chemicals must be stored, handled and dispensed on and over an impermeable surface.	Contractor	Lined and bunded storage areas.
	Any spillage must be contained and cleaned up with 24hrs of occurrence. The resulting waste must be sealed in an appropriate container and taken off site for disposal.	Contractor	Spill kits. Drums with sealable lids.
Biodiversity			
Death of amphibians, reptiles, birds, mammals. Snakes are particularly vulnerable because they are killed on sight.	Avoid any nests, burrows, dens and roosting sites.	Dir. Contractor	Identify sites with nests, burrows, dens. Demarcation of sensitive sites.
	Educate contractor and staff to avoid sensitive sites.		Induction training
	Venomous snakes should be removed by a specialist, and other snakes should be avoided.		Induction training
	Educate staff in the ecological value of snakes and how to avoid them.		Induction training
Poaching of wildlife. Tortoises and small mammals are particularly vulnerable.	The greater area around building sites should be searched for snares during the construction phase and after construction is complete.	Dir. Contractor	Site inspections
	Restriction of contractor staff movement	Contractor	Site inspections

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
	Inspection of contractor staff housing to check for animal parts and/or products	Contractor	Site inspections.
Damage to and removal of protected species of fauna and flora	Identify and demarcate sensitive sites.	All	Identify protected plant species and demarcate sensitive sites.
	Education of contractor and staff.		
	Continuous monitoring to ensure that no protected species are affected.		
Damage to vegetation, leading to a loss of habitat integrity and disruption of ecosystem functions	Motorised access should be limited to existing tracks and defined development areas. As far as possible, no new roads or tracks should be developed. No off-road driving should be allowed.	All	Site inspections
	Ensure that only permitted access roads and paths are used by construction workers and vehicles at all times.	All	Site inspections
	No firewood may be collected.	All	Site inspections
Invasive vegetation causes a decline in habitat quality	Introduced construction materials must be free from seedlings and seeds of alien invasive vegetation.	Contractor	Site inspections.
Hydrology			
Surface and groundwater contamination	The mixing and use of concrete and cement must be only take place in designated areas so as not to contaminate the sites in any way.	Contractor	Identify and prepare mixing sites.
	Hydrocarbons and chemicals must be stored, handled and dispensed in a manner that prevents spillage and contamination.	Contractor	Designated bunded area. Use of drip trays.
Negative visual impact			
Vehicle tracks	No new roads or tracks will be developed. No off-road driving or driving alongside tracks is allowed.	All	Visual inspections
Construction structures and facilities	Construction office and facilities are dismantled and removed	Dir. Contractor.	Site inspection after completion of construction
Solid waste, sewage and waste water discharge			
Large volumes of waste are generated, causing ecological damage including visual pollution, contamination of soil and	Littering is not permitted and all waste must be placed in appropriate receptacles.	All	Site inspections
	The contractor will provide animal proof receptacles to contain daily refuse.	Contractor	Animal-proof containers and cage.

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
groundwater, decline in health of wildlife, mortality of animals that ingest waste, habitat deterioration, etc.	A waste holding cage that is bird and animal proof will be used to store the solid waste before it is transported to a municipal waste facility.		
	Building rubble is consolidated in one, suitable location, removed from the area, and disposed of at an official waste facility.	Contractor	Dir to identify suitable manner.
	Used oils and other workshop waste must be stored in airtight containers, sealed, and dispatched to an appropriate waste facility.	Contractor	Dir to identify suitable facility.
	Fat/grease traps will be installed at kitchen and all cooking outlets.	Contractor	Site inspections
	Hygienic temporary ablutions of sufficient quantity will be provided for workers.	Contractor	Site inspections
	Ablutions are regularly serviced and the sewage disposed of at a designated location and in an environmentally appropriate manner.	Contractor	Dir to identify suitable manner.
Unpleasant odours	Continuous monitoring and maintenance of sewerage system.	Contractor	Site inspections
	Should unpleasant odours be identified, the source of the odours must be identified and remedied within 48 hours.	Contractor	
Machinery & vehicles			
Noise pollution	Efficient, modern, silenced generator will be used. Power tools and motorised equipment will be used during daylight hours only.	Contractor	Site inspections
Contamination of soil and water by hydrocarbons	The contractor will ensure that all equipment is in good working order and will not contaminate soil or water resources with diesel, petrol, oil or any other foreign substances.	Contractor	Site inspections
	Drip trays to be place under any leak.	Contractor	Drip trays
	Vehicles and machinery with fuel, oil or hydraulic fluid leaks must be removed from service for repair.	Contractor	Site inspections
	No servicing or major repair of vehicles or machinery may take place on-site.	Contractor	
Damage to roads and tracks	The contractor shall ensure that all vehicles remain on designated roads at all times. No off road driving under any circumstances.	All	All contractors are made aware of this requirement.
	All vehicles used in the area must be operated with low tyre-pressure to minimise negative impacts on tracks and roads.	All	All contractors are made aware of this requirement.
Construction staff damage local environment			

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
Disruption of ecological processes through physical acts and/or pollution of the local habitat.	The contractor and his employees shall adhere to all regulations prescribed by the relevant authority at all times, as well as to the management measures given in this EMP.	Contractor	Site inspections
	The contractor will ensure the proper supervision of employees at all times and their compliance with rules and regulations.	Contractor	Site inspections
	All employees will be educated as to the need to refrain from the destruction of plants and animals, as well as from indiscriminate defecation, waste disposal and pollution of soil and water resources.	Contractor	Induction training
	Access to the site is restricted to the contractor's employees only.	Contractor	Site inspections
Bush fires			
Bush fires destroy habitats and animals, and present a risk to life and health of humans.	Take precautions to prevent the outbreak and spreading of fires and ensure all employees are aware of the precautions.	Contractor	Induction training. Site inspections.
	Gas canisters to be housed in Bureau of Standards approved structures.	Contractor	Gas enclosures
	Fire extinguishers and other firefighting equipment are strategically located throughout construction area. Staff are trained in their usage.	Contractor	Firefighting equipment
Health and Safety of staff			
Injury to persons	Health and Safety aspects are not addressed in this EMP because they are regulated by another ministry. It is assumed that all contractors, their employees and other persons on the construction site will adhere to the relevant regulations.	Contractor	Protective clothing as prescribed by construction regulations and best practice.
	Equipment and tools handled only by persons qualified in their use.	Contractor	Specialised training.
	First aid kit is readily available on site and staff are trained the usage. Enough people on site are trained in medical protocols to deal with an emergency.	Contractor	First aid kit. Emergency and med-evac protocol. First aid certificates.

3.4 Operational phase

Table 3. Management measures during operations.

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
BIODIVERSITY			
Game drives and operational vehicles disturb animals in their daily movements, hunting and/or foraging, potentially leading to stress and mortality. Damage to and destruction of vegetation and animal habitats, leading to a loss of habitat integrity and disruption of ecosystem functions. Decline in habitat quality, leading to mortality and a decline in local animal population integrity.	Guests and employees are made aware that they are in a sensitive environment, and are shown the appropriate way to interact with wildlife.	Mgt. Guides.	Training staff. Guest induction and information literature.
	Trained guides escort guests at all times, no self-drive or walking other than in designated areas.	Guides	
	No plants or animals may be disturbed, violated, destroyed or removed.	All	Training staff. Guest induction and information literature.
	Employees are educated to refrain from the destruction of plants and animals, indiscriminate defecation, waste disposal and pollution of soil and water.	Mgt	Staff training.
	Avoid areas containing nests, burrows, dens or roosting sites.	Mgt. Guides.	Training staff. Guest induction and information literature.
	No protected, rare or endangered plants may be disturbed, damaged or removed.	Mgt. Guides.	Training staff. Guest induction and information literature.
	Only permitted access roads and paths are used by employees, guest and vehicles at all times.	All	Training staff. Guest induction and information literature. Signposts.
	No off-road driving is allowed.	All	Training staff. Guest induction and information literature.
Mortality of amphibians, reptiles, birds, mammals. Snakes are particularly vulnerable because they are killed on sight.	Venomous snakes should be removed by a specialist, and other snakes should be avoided.	Dir. Mgt. Guides.	Staff training.
	Educate staff in the ecological value of snakes and how to avoid them rather than kill them.		
Poaching of wildlife. Tortoises and small mammals are particularly vulnerable.	The lodge, back of house and surrounding areas should be searched for snares regularly.	All	Visual inspections
	Inspection of staff housing to check for animal parts and/or products		Visual inspections

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
Damage to/removal of protected species of fauna and flora	Identify protected species and demarcate sensitive sites.	Mgt. Guides.	Demarcation
	Educate staff to avoid sensitive sites.		Staff training.
	Continuous monitoring to ensure that no protected species are impacted.		Visual inspections
Dead trees and plant material provide micro-habitats and their removal causes a decline in habitat quality	No harvesting of plants or collection of firewood is permitted.	Mgt	Staff training.
Invasive vegetation causes a decline in habitat quality	Regular monitoring and removal of invasive plants.	Mgt	Visual inspections
SOLID WASTE			
Large volumes of waste are generated, causing ecological damage including visual pollution, contamination of soil and groundwater, decline in health of wildlife, animals ingest waste causing mortality, habitat deterioration, etc.	Minimise waste by buying supplies in bulk and using re-usable packaging and transport options.	Dir	Packaging and transport protocols
	Minimise plastic bottle waste by promoting local tap water and providing re-usable water bottles to guests.	Mgt. Guides.	Re-usable water bottles
	All solid waste is either recycled or appropriately disposed.	Mgt. Maint.	Waste management protocols
	Appropriate waste bins are provided at the point of source. All waste bins are covered and secured to be animal proof.	Mgt. Maint.	Waste bins
	A bird, animal and wind proof waste holding cage is used to store solid waste until it is transported to a municipal dump site. This area is secured and has a concrete floor for maintenance and to prevent ground seepage.	Maint	Holding cage
	Recyclable waste (glass, cans, plastics, paper) is stored on site until there is sufficient volume to be transported for recycling.	Maint	Storage facility
	All waste that cannot be recycled, re-used or donated is stored on site in suitable containers, then disposed of at a registered waste facility.	Maint	Containers
	Limited amounts of packaging may be burned in an incinerator.	Maint	Incinerator
	Organic waste is donated to the community for animal feed or buried in suitably designed deep, animal proof pits.	Maint	Animal proof pits
Hydrocarbons contaminate the soil and groundwater, leading to deterioration of	Used hydrocarbons are collected at point of use and stored in airtight, sealed containers.	Maint	Sealed drums

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
ecosystem processes and a decline in habitat quality.	Used hydrocarbons are despatched to an appropriate waste facility.	Mgt	
ENERGY			
Excessive use of fossil fuels, carbon emissions.	Energy use (diesel, petrol, paraffin, gas) is metered and monitored.	Mgt. Maint.	Meters
	Generator is used as back-up only.	Mgt	
	Geysers are solar powered.	Dir	
	All cooking is done with gas. The staff village is provided with functioning, safe gas stoves.	Dir. Mgt	
	All electrical appliances are energy-efficient models. Fridge and freezer doors seal tightly and are kept closed.	Dir. Mgt	
Generator noise disrupts the sense of place and causes noise pollution.	Generator is housed in noise-limiting container; use generator only during daylight or for limited hours.	Dir. Mgt	
WATER RETICULATION AND CONSUMPTION			
Loss of water through leaks in reticulation system	Maintenance programme for pipes and tanks is in place. Leaks and faults are repaired immediately upon detection.	Maint	Visual inspections
Water conservation measures	Water conservation is actively promoted among guests and staff. Guests are informed of water scarcity and encouraged to participate in water conservation.	Mgt	Training staff. Guest induction and information literature.
	Water usage is measured and recorded, then compared with targets to ensure optimum efficiency.	Mgt	Water meters.
SEWERAGE AND WASTE WATER			
Contamination of soil, as well as surface and groundwater, due to sewage and waste water discharge	Sewerage system is maintained.	Maint	Visual inspections
	Bio-degradable toilet cleaners are used to preserve bacteria in the septic system	Mgt	
Ecological impacts	Fat/grease traps are installed at kitchen outlets and maintained.	Maint	Fat traps
	Septic tanks and soak-aways are maintained.	Maint	Visual inspections
Unpleasant odours	Qualitative monitoring of odours.	Maint	Inspections
	The source of unpleasant odours are identified and remedied within 48 hours of identification.	Maint	
VEHICLE USE			

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
Erosion of roads and tracks	Regular maintenance of roads and tracks.	Maint	Visual inspections
	Implement measures to disperse concentrated water flow and repair erosion at such locations.	Maint	Road maintenance equipment
Damage to roads and tracks	Low tyre pressure on all operational vehicles.	Mgt. Guides.	
	Operational vehicles are 4-wheel drive and of standard width.	Mgt	
Off-road driving damages the structure of the soil surface and causes soil compaction, which results in less water infiltration and availability, limited root penetration and less vegetation cover. Damaged soil crust makes the fine underlayer of soil vulnerable to wind erosion, the resulting dust settles on plants, interferes with photosynthesis, and causes a decline in habitat quality.	No off-road driving is allowed. Only permitted access roads and paths are used by employees, guests and vehicles at all times.	All	Game drive protocols
	Making tracks next to a road is not allowed. Taking shortcuts is not allowed.	All	
	New roads and tracks have to be authorised and are developed according to a road plan.	Dir	
	Vehicles are parked only in designated parking areas.	All	
Exhaust emissions cause air pollution	Vehicles are serviced regularly and monitored for excessive exhaust emissions.	Maint	Inspections
Driving in rivers/washes disrupts surface water hydrology	Rivers are entered and exited only at existing and designated points. No off-road driving is permitted once a river is exited.	Guides	Visual inspections
Driving over flooded or moist areas disrupts surface water hydrology	No driving in seasonally inundated areas when flooded or moist.	Guides	Visual inspections
OPERATIONAL ACTIVITIES			
Toiletries and cleaning chemicals cause contamination of the soil, as well as surface and ground water.	Kitchen and housekeeping soaps and detergents are biodegradable and eco-friendly.	Mgt	Suitable housekeeping chemicals
Chemicals disrupts the optimal functioning of the septic system.	Biodegradable and eco-friendly guest amenities are provided.	Mgt	Suitable guest amenities
Vehicle parking, servicing and other workshop activities cause soil and groundwater contamination	Vehicle servicing is done on impervious, bunded surface or over oil pans.	Maint	Bunded surfaces. Oil pans
Fuel storage and refuelling procedures cause soil and groundwater contamination	Fuel is stored in appropriate receptacles and kept on an impermeable, bunded surface.	Maint	Fuel drums

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
	Fuel is dispensed over impervious, bunded surface or drip trays.	Maint	Bunded surfaces. Oil pans
Machinery use disturbs the natural quiet	Graders, tractors and power tools are used during daylight only.	Mgt	Inspections
Contamination of soil by paint, thinners, varnish, turpentine, detergents, etc.	These substances are stored in sealed, clearly marked containers and only in designated store rooms. Care is taken to avoid spills and unnecessary contact with soil, water, vegetation and animals. Decanting is done over a drip tray to prevent spillage and further than 40 m of any natural water source.	Mgt. Maint.	Sealed containers. Drip trays.
DESIGN AND LANDSCAPING			
Buildings intrude upon the landscape	Infrastructure is designed to blend with the surrounding landscape.	Dir	
Upward directed lights disturb the sense of place and has significant impacts on animals.	Outdoor lights are directed to shine down.	Dir. Mgt.	Inspections
Invertebrates that are attracted to the light provide an unnatural food source for taxa such as bats and geckos. These insectivores are attracted to the food and then face conditions where they are more likely to die from causes such as collisions and predation.	No spotlights or upward facing lights are used.		Inspections
Nightly invertebrate fatalities may result from exhaustion or predation, potentially disrupting their population numbers and causing disturbances in ecological processes.	Amber or yellow lightbulbs with the lowest possible brightness are used.		Inspections
Night-flying birds may be disoriented by lights, increasing the risk of predation.	All lights are turned off after guests have gone to their rooms.		Inspections
Adult bird mortality leads to mortality of dependent chicks.	Low intensity, downward facing pathway lights that contribute to health and safety may be kept on at night.		
Towers, raised tanks, telecomms and other support infrastructure have negative visual impacts	Building and maintenance structures and equipment are out of sight of the public & below the skyline of ridges/koppies	Dir. Mgt	Visual inspections

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY	TOOLS/MONITORING
HEALTH AND SAFETY			
Labour matters and health and safety are regulated by other ministries and are not dealt with in this document.			
Labour policies	The company is in compliance with all national legislation and regulations governing workplace equity and diversity.	Dir	
Staff and guest health and safety	The company is in compliance with all national legislation and regulations governing health and safety.	Dir	
	Protective clothing, as appropriate to operations, is provided to employees.	Dir	
	Adequate first aid kits are available and regularly maintained. A suitable number of employees is trained in first aid.	Dir	
	On-site staff housing is secure, clean, and provided with sufficient running water, sanitation and energy for the number of personnel accommodated. Staff housing is maintained.	Dir	
	Employees and guests are made aware of procedures to follow in the event of an emergency, e.g. which person to contact, how to contact him/her during the night; evacuation routes.	Mgt	
	Employees responsible for guest transport have valid licences and public driving permits.	Mgt	
Fires destroy animals and habitats, and pose a risk to life and health of humans.	All precautions are taken to prevent the outbreak and spread of fires. Employees are aware of the necessary precautions.	Mgt	Staff training.
	Firefighting equipment is available, regularly maintained, and employees are trained in fire safety.	Mgt	Firefighting equipment
	Gas canisters are stored in Bureau of Standards approved structures.	Mgt	Gas storage
	Fire extinguishers are strategically located throughout the developed area.	Mgt	Firefighting equipment
IMPLEMENTATION OF EMP			
The operating company, Mark Adcock t/a Ngepi Camp, is responsible for the implementation of the management actions outlined in this table.			
Eco Awards Namibia is an internationally recognised certification programme with independent, objective assessors who evaluate sustainability practices.	Keep certification up to date according to the programme regulations.	Dir	Eco awards assessment

3.5 Closure

Tourism has an indefinite projected lifespan and there is currently no intention to cease operations or decommission Ngepi Camp.

However, should closure and decommissioning be required, an extensive decommissioning plan will be drawn up and meticulously followed according to the highest standards of environmental management best practices. The priority for closure will be to return the land as closely as possible to the pre-construction condition. Measures will be taken to prevent soil erosion and provide protection for vegetation re-colonisation. A site assessment will be carried out after closure to ensure that no structures remain, and that site rehabilitation has been achieved. An outline for closure at concept level is given in Table 4.

Table 4. Concept level management measures for closure and decommissioning

NATURE OF IMPACT	MANAGEMENT MEASURES	RESPONSIBILITY
Soil		
Compaction of and damage to soils, contamination	Construction guidelines will apply to prevent and mitigate impacts.	Dir & Contractor
Animals: habitat disturbance; death of animals		
Death of animals, poaching, habitat or behaviour disturbance	Construction guidelines will apply to prevent and mitigate impacts.	Dir & Contractor
Vegetation: destruction of & damage to plants; disturbance of soil		
Soil erosion	The site will be suitably re-vegetated. If this is not appropriate, then it will be covered with scrub to prevent soil erosion and to provide protection for colonising vegetation.	Dir & Contractor
Alien plant invasion	Follow-ups will be done to ensure that alien or invasive plants and weeds have not flourished.	Dir & Contractor
Damage to vegetation	Construction guidelines will apply to prevent impacts.	Dir & Contractor
Infrastructure		
Buildings and support infrastructure	All structures will be completely removed to the satisfaction of MEFT.	Dir & Contractor
Roads and tracks	As required by MEFT, roads and tracks will be rehabilitated to a state as close as possible to the original condition of the area.	Dir & Contractor
Pathways	All pathways will be rehabilitated to a state as close as possible to the pre-construction condition.	Dir & Contractor
Hydrology		
Contamination of ground and surface water, erosion of river banks	Construction guidelines will apply to ensure limited impact.	Dir & Contractor
Negative visual impact		
Sewerage system	Septic tanks will be drained and removed. The area (including soak-away) will be filled with rubble or with fill from an environmentally acceptable source.	Dir & Contractor
Water pipes	All pipe lines will be removed from the concession.	Dir & Contractor

NATURE OF IMPACT	MANAGEMENT MEASURES	RESPONSIBILITY
Electricity lines	All electricity infrastructure will be removed from the concession.	Dir & Contractor
Foundations, concrete slabs, holes in ground	All structures in or on the ground will be removed. All holes, pits and depressions will be filled.	Dir & Contractor
Ground surface retains signs of development	Ground surface will be raked, swept and levelled as appropriate. Rocks, stones and vegetable matter will be scattered as appropriate to return the ground to a state as close as possible to its original condition.	Dir & Contractor
Construction structures and facilities	Construction site office, facilities and structures to be dismantled and removed once decommissioning is completed	Dir & Contractor
Solid waste, sewage and waste water discharge		
Large volumes of rubble, materials and equipment	Everything will be removed from the concession and taken to a registered landfill.	Dir & Contractor
	Nothing will be burnt or buried on the concession.	Dir & Contractor
Ecological damage	Construction guidelines will apply to ensure limited impact.	Dir & Contractor
Machinery & vehicles: noise, contamination of soil and water by liquids, erosion of roads		
Noise, contamination of soil and water, erosion	Construction guidelines will apply to ensure limited impact.	Dir & Contractor
Construction staff damage local environment		
Disruption of ecological processes through physical acts and/or pollution	Construction guidelines will apply to ensure limited impact.	Dir & Contractor
Bush fires: destruction of habitat and death of animals		
Outbreak of fire	Construction guidelines will apply to ensure limited impact.	Dir & Contractor
Health and Safety of staff		
Injury to persons	Construction guidelines will apply to ensure limited impact.	Dir & Contractor

4 MONITORING

4.1 Water Monitoring

The aim of the water monitoring programme is to assess the consumption and impact of water use on groundwater and surface water quality and availability. The Lodge Manager and maintenance team will be trained to do monitoring according to a protocol that conforms to the requirements of the Water Resources Management Act, 2013, and its Regulations, 2023.

Ngepi Camp will keep the licences and permits required by the Department of Water Affairs (DWA) of the Ministry of Agriculture, Water and Land Reform (MAWLR) up to date and will adhere to the stipulations therein, including but not limited to water abstraction, water use and effluent discharge licences.

- Water usage should be metered and recorded monthly in order to manage water consumption.
- Water quality should be monitored at point of use (e.g. kitchen taps) and tested twice a year for mineral and bacterial content to ensure it is fit for human consumption.
- Water testing should comply with the provisions made in the water abstraction and use licence from the DWA of the MAWLR.
- Effluent discharge should be tested according to the provisions made in the Effluent Discharge licence from the MAWLR.

4.2 Energy monitoring

Diesel, petrol and gas usage is measured and recorded.

5 ENVIRONMENTAL AWARENESS

5.1 Job Specific Environmental Awareness Training

The purpose of job specific environmental awareness training is to ensure that employees are equipped to implement the actions committed to in the EMP. The staff involved in the operation and maintenance of Ngepi Camp receive ongoing training regarding the requirements of this EMP.

5.2 Environmental incident reports

All incidents are reported to the Operations Manager. It is highly unlikely that the development or operations of this lodge could result in an environmental incident causing impacts of significance.

5.3 Spillage procedures

5.3.1 Sewage or Wastewater Spills

Should leaks in the sewerage system or wastewater system be detected, the following actions must be taken:

- The spillage should be contained (bund earth walls) by all means and the source turned off if possible.
- Depending on the amount of spillage it could be remediated in situ or removed, as appropriate.
- The leakage must be stopped and reason for spill rectified.

5.3.2 Hydrocarbon or Chemical Spills

The objective is to contain and remediate spillages of hydrocarbons (petrol, diesel, oil, lubricants) or other chemicals according to a protocol.

- Contact the lodge manager
- Turn off the source of the spillage if possible
- Contain the spillage by bund earth walls or sandbags or any means appropriate
- Lodge manager organises a team to help clean
- Mark the area where spillage occurred
- Take clean-up materials to the area

- Scoop up the spill and any contaminated soil with a shovel, and then put it into plastic bags
- Seal the bags and mark them as hazardous waste
- Repair the original cause of the spill

6 CONCLUSION

This Environmental Management Plan highlights the management measures that are implemented at Ngepi Camp for mitigating any potential environmental impacts caused by the lodge activities. It is a legally binding document, and the proponent is committed to continue implementing the management measures, monitoring programmes and other plans as presented herein.

There is a very low potential for significant impacts arising from the development, and the EMP provides sufficient management measures to prevent and mitigate any impacts such as accidental spillage contaminating the soil or water, noise and visual pollution, impacts on biodiversity and general ecological impacts, with the caveat that the recommendations made in this document are followed.

7 RECOMMENDATION

It is recommended that an Environmental Clearance Certificate for Ngepi Camp be issued for a three-year period.