

ENVIRONMENTAL MANAGEMENT PLAN

GROOTBERG LODGE



Prepared for Journeys Namibia Management Group (Pty) Ltd in support of application for renewal of Environmental Clearance

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PROPONENT	Journeys Namibia Management Group (Pty) Ltd
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DISCLAIMER

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Abbreviations

EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
JMC	Joint Management Committee
JV	Joint Venture
MAWF	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism

1 INTRODUCTION

1.1 Background

The proponent, Journeys Namibia Management Group (Pty) Ltd, is the marketing, management and reservations company of Grootberg Lodge, located 95 km west of Kamanjab in the Kunene Region. Journeys Namibia contracted Henriette Potgieter to do an environmental audit, update the Environmental Management Plan (EMP), and apply for renewal of Environmental Clearance.

The #Khoadi-//Hoas Conservancy holds 100% of the shares in Grootberg Lodge (Pty) Ltd and has tourism rights to the land according to a leasehold agreement with the Ministry of Agriculture, Water and Land Reform.

1.2 Methodology

The first step was a desktop study of the environmental protocols and operating procedures of the proponent. Then the Environmental Assessment Practitioner (EAP) visited the lodge for two days, 2 - 3 May 2024, during which compliance with the current EMP was audited by reviewing the implementation and efficacy of mitigation measures. The results of the audit (Table 1) form the basis of an Environmental Monitoring Report (Section 3).

Following adaptive management practices, the desktop study, data collected during the site visit, and information from the head office of Journeys Namibia were used to update the EMP to include current procedures and technology used by the lodge that were either unavailable or not applicable in 2018.

1.3 Eco Awards Namibia

The Eco Awards Namibia certification programme is recognised by international tourism certification schemes and most importantly, the Ministry of Environment, Forestry and Tourism (MEFT) is an active member of the Eco Awards alliance.

Independent assessors go to a lodge for two days where they evaluate the sustainability and environmental sensitivity of the operation against an extensive set of criteria based on international best practice. The independence and status of the programme result in audits that provide reliable information on the sustainability practices of a lodge.

Grootberg Lodge scored 92% in their latest assessment, July 2024, winning them 5 flowers.

2 PROJECT DESCRIPTION

No significant changes to either infrastructure or operational procedures were made since 2017.

2.1 Activities

The lodge offers the following activities:

- Elephant tracking
- Rhino tracking
- Guided walks on the Grootberg plateau

- Scenic drives on the Grootberg plateau
- Damara cultural tour
- Massages

2.2 Main area

The main area is a brick and stone-clad building with thatched roof on the rim of the Grootberg plateau with the bungalows located to its left and right. It consists of an office, kitchen, storerooms, laundry room, dining room, lounge area. There is also a swimming pool surrounded by a wooden deck, and a wooden deck for outside dining.

The parking area behind the main area has a gravel substrate and is covered by shade net. It is used by guest cars and game drive vehicles.

2.3 Guest units

Beds: 42

Bungalows: 16 en suite brick and thatch bungalows with a bedroom, en suite bathroom and veranda each.

Pilot rooms: 3 en suite bedrooms for visiting pilots and guides.

Clearly demarcated, swept dirt pathways connect the main area, guest rooms and back of house. Sections of the pathway surface are paved with concrete and rocks where it is steep.

2.4 Staff Village

Two brick and concrete buildings under corrugated iron roofs contain 12 double rooms each, housing 48 staff members who rotate in a cycle of 6 weeks on duty, two weeks leave, cycles. The complex also has a communal kitchen with dining area, a laundry area and two sets of ablution facilities with 4 toilets and 4 showers in each

2.5 Senior staff housing

Two brick and concrete houses for managers, each with two bedrooms and one bathroom. A stone house with two bedrooms and one bathroom for senior managers.

2.6 Lodge support infrastructure

The workshop has an elevated cement floor and corrugated iron roof.

Used oil, diesel and petrol are collected in separate drums. The drums are sealed and then donated to the neighbouring communities who use it mainly for treating their fence poles.

Diesel and petrol are kept in a stone storage room with a corrugated iron roof and cement floor. There is a window for ventilation and the door is kept locked.

Fuel is stored in four 200 litre tanks.

2.7 Entrance gate

The entrance gate is on the C40, from where a very steep 1 km long road leads to the top of the Grootberg plateau and the lodge. Sedan cars cannot make the incline; guests are collected from the gate and their cars stay in the gate parking lot.

Gate parking lot has gravel substrate and is covered with shade net.

At the entrance gate there is accommodation for one person, the gate security guard.

It consists of a bedroom and bathroom made of concrete and stone with a corrugated iron roof. A small solar system generates energy for lights and radio charging.

Sewerage is a French drain system.

2.8 Access road

The access road has a gravel surface, except at a steep incline where the surface is reinforced with concrete for 100 metres. Water erosion is mitigated by diagonal culverts graded across the road. After the rainy season the road is resurfaced and compacted.

2.9 Game drive routes

Existing two-track dirt roads are used for activities. Damage caused by usage ruts and water erosion is repaired by hand with rocks and sand.

2.10 Energy

A 48 kW solar plant with batteries and inverter system provides energy for the lodge and workshop area. The staff village is supplied by a smaller solar plant.

A 100kVA generator, housed in a noise-minimising unit, is used as back-up for the PV system.

Solar lights line the pathways, and hot water is supplied by a solar geyser at each bungalow, at each staff ablution unit and the senior staff housing. Cooking is done on gas.

2.11 Water

The water source is a 190 m deep borehole at the foot of the mountain on land leased by the #Khoadi-//Hoas Conservancy.

Water is pumped to a 5,000 litre tank at the gatehouse, using an electrical pump. A solar pump pushes water from the gatehouse to the workshop area, a vertical distance of 900 m. The storage capacity here is 50,000 litres and water is distributed from the workshop tanks to the guest units, main lodge, staff village and director's house.

2.12 Sewerage

The main area, two managers' houses and the guides' rooms are serviced by a two-chamber French drain system and the guest bungalows have French drains. All the sewerage and wastewater overflow is currently discharged down the mountain.

Journeys Namibia is replacing the French drains at the main area and the guest bungalows with a new, above-ground three-chambered septic tank system. It is anticipated that the installation of the new systems will be completed by July 2025.

The staff village and the stone house each has a French Drain system. Overflow from the systems is discharged onto the ground.

2.13 Solid waste

Waste is separated at source. Food waste is given to the neighbouring community, cardboard boxes are burnt on site, and recyclable waste is bagged and held in a holding cage in the workshop area. Once a week a contractor from the Hobatere community collects recyclable waste from Hobatere, then Hoada Campsite and finally Grootberg lodge. The waste is delivered to the Palmwag junction where the food supply truck for these lodges, now empty, takes it to Windhoek.

3 AUDIT REPORT

Compliance with the provisions of the 2018 EMP was audited, and the results are given in **Error! Reference source not found.** The column “Management measures” indicates actions to prevent or mitigate potential negative impacts, and “Audit 2024” gives the results of the environmental audit done by the EAP in June 2024.

Table 1. Environmental Monitoring Report of 2 – 3 June 2024.

MANAGEMENT MEASURES	AUDIT 2024
Erosion and damage to roads and tracks.	
Motorised access must be limited to existing roads. No new roads or tracks should be developed.	Comply
No off road driving under any circumstances.	Comply
Areas with sensitive, compactable soils should be avoided (vehicles compact the soil, preventing water and root penetration and tracks remain visible for years).	Comply
All vehicle parking to take place in designated parking areas	Comply
Implement measures to disperse concentrated water flow and repair any erosion that has resulted.	Trackers and guides, and sometimes also casuals from the conservancy repair tracks and roads. No earthmoving equipment is used.
Low tyre pressure on all lodge vehicles (180-200kPa)	Comply
Operational vehicles are 4-wheel drive and of standard width.	Comply
Make and maintain culverts	Comply
Contamination of soil	
Construct bunded surfaces: workshop, generator room, fuel store room, vehicle fuelling area. No fuel storing or dispensing should be allowed outside this bunded area.	No bunded surfaces
Oil pans to be used in vehicle parking areas under vehicles that leak.	No oil pans
Vehicle servicing is done on impervious, bunded surfaces or over oil pans.	
Used oil to be stored in appropriate receptacle and despatched to appropriate waste facility.	Comply
Paint, thinners, varnish, turpentine, detergents, chlorine 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.	Storage measures are complied with, but decanting is not done on an impermeable surface.
Fauna	
Guests and employees are made aware that they are in a sensitive environment, and are taught the appropriate way to interact with wildlife.	Comply
Trained guides to escort guests at all times, no self-drive or walking other than in accepted designated areas	Comply
Large animal viewing must be conducted according to recognised or approved conservation protocols	Guide code of conduct is in place and signed by all guides when they are employed
No game or other natural resource and/or occurrences may be disturbed, violated, mutilated, destroyed, killed or removed.	Comply
Avoid sites with nests, burrows, dens etc. of protected species.	Comply
No game or other natural resource and/or occurrences may be disturbed, violated, mutilated, destroyed, killed or removed.	Comply

MANAGEMENT MEASURES	AUDIT 2024
The greater area around the site should be regularly searched for snares.	Comply
Flora	
No protected plants may be disturbed by the operational activities or be damaged or removed.	Comply
Ensure that only permitted access roads and paths are used by employees, guest and vehicles at all times.	Comply
No off-road driving is allowed.	Comply
Journeys Namibia shall preserve the Concession Area and its game and botanical species and ensure that all its guests, visitors and employees who enter the Concession Area shall do likewise.	Comply
No plant life or other natural resource and/or occurrences may be disturbed, violated, mutilated, destroyed, killed or removed.	Comply
Firewood collection may only take place in areas approved by the Conservancy Warden.	Comply
The area will be kept free of any alien vegetation that has or may inadvertently be introduced.	Comply
No picking of plants, collection of firewood, digging or any other damage-inducing activity is permitted.	Comply
Employees are educated on 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.	Comply
Journeys Namibia shall preserve and protect the concession area, surrounding landscape, its game and botanical species, and shall ensure that all guests, contractors and employees who enter the concession area do likewise.	Comply
Disruptions to surface water	
Rivers should be entered and exited only at existing access points. No driving is permitted in seasonally inundated areas when flooded or moist.	Comply
Contamination and depletion of groundwater resources	
The impermeable bunded surfaces recommended to prevent soil contamination will also prevent groundwater contamination.	Comply
Water conservation must be actively promoted. Guests to be informed of water scarcity and encouraged to participate in water conservation.	Comply
Measure and record water use, calculate the usage per bednight and compare it with usage targets.	Weekly to HO. Meters are installed at water tanks and at pipes to guest rooms and staff village
Repair any leak in the water reticulation system within 24hrs of detection	The maintenance team patrol the water lines weekly.
The use of biodegradable and eco-friendly soaps and detergents should be encouraged.	Hazchem cleaning materials are used.
The diesel storage tank volumes should be carefully monitored in order to ensure no leakage.	Comply
Use water saving devices such as dual-flush toilets, a brick in the cistern, low-flow showerheads, bucket in shower, etc.	Comply
Burning of waste and cooking fires cause air pollution	

MANAGEMENT MEASURES	AUDIT 2024
Burning is allowed for limited amounts of cardboard packaging, and only if the material is not suitable for recycling.	Comply
Generator is monitored for excessive exhaust emissions	Comply
Vehicles are serviced regularly and monitored for excessive exhaust emissions.	Comply
Noise	
Natural quiet should be preserved. Use the generator, tractor, diggers, power tools and other noisy equipment only during daylight.	Comply
Visual environment	
Motorised accessibility should be limited to existing roads and tracks.	Comply
Lighting must be subdued and lights must be angled towards the ground. Outdoor lights must be turned off at the end of the evening when guests are in their rooms.	Comply
Volumes of waste are generated	
All physical waste should be managed and either recycled or appropriately disposed.	Comply
No waste of any kind may be buried in riverbeds.	Comply
Appropriate waste bins must be provided at the point of source. All waste bins will be covered and secured to be animal proof.	Comply
A waste holding cage that is bird and animal proof will be used to store the solid waste before it is transported to a suitable dump site. This area should be fenced and secured and it should have a concrete floor to ensure that it can be suitably maintained and no ground seepage will occur.	Comply
If possible and appropriate, glass will be stored on site in suitable containers until there is sufficient to be transported for recycling.	Comply
If possible and appropriate, tins, cans and foil will be stored on site in suitable containers until there is sufficient to be transported for recycling.	Comply
If possible and appropriate, plastics will be stored on site in suitable containers until there is sufficient to be transported for recycling.	Comply
If possible and appropriate, paper and cardboard will be stored on site in suitable containers until there is sufficient to be transported for recycling.	Comply
All waste that cannot be recycled or sold will be stored on site in suitable containers. This must be disposed of at a permitted waste site.	Comply
Limited amounts of packaging may be burned in a designated pit.	Comply
Organic waste may be buried in suitably designed animal – proof deep pits.	Comply
Used oil to be dispatched to an appropriate waste facility.	Comply
Used hydrocarbons should be stored in appropriate drums (e.g. 200 litre oil drums with tight lids) until it is dispatched to an appropriate industrial waste facility.	Comply
Sewage and waste water management	
Fat/grease traps at kitchen outlets should be maintained.	Lodge kitchen has one, but there is no fat trap at the staff village. The ground in and around

MANAGEMENT MEASURES	AUDIT 2024
	the staff village shows evidence of fat and cooking liquids being discarded directly onto the soil.
Septic tanks and soak-aways should be maintained.	Comply. Hazchem treatment for septic systems. Maintenance team inspect the sewerage system daily.
Qualitative monitoring of odours will take place.	Comply
Should unpleasant odours be identified, the source of the odours must be identified and remedied.	Comply
Energy	
Energy saving measures to be continually implemented (lights, use of hybrid solar and diesel generator etc.)	Comply
Diesel generator should be used as a backup to the solar system and not a primary energy source. Diesel usage should be monitored and measured against targets.	A fuel usage report is sent to Windhoek weekly.
All cooking should be done on gas stoves.	Comply
Exhaust emissions cause air pollution, and oil leaks contaminate the soil	
Ensure that all equipment is in good working order and does not contaminate soil or water resources with diesel, petrol, oil or any other foreign substances.	Comply
All vehicles used must be operated with low tyre-pressure to minimise negative impacts on tracks and roads.	Comply
To limit track damage all vehicles used will be four-wheel-drive and will be of standard width.	Comply
Employees and guests on site	
The staff and guests shall adhere to any rules and regulations that MEFT may prescribe at all times as well as the management measures in this document.	Comply
Access to the site must be restricted to employees and guests only.	Comply
The likelihood of rising river water levels is high during the rainy season. Storms in upper catchment areas may not be observed from the mid-lower reaches of rivers, so activities adjacent to rivers should be avoided during rainy periods.	Comply
Comply with all national, regional and local legislation and regulations governing workplace equity and diversity.	Comply
Comply with all national, regional and local legislation and regulations governing health and safety measures.	Comply
Protective clothing is provided to employees.	Comply
Adequate first aid kits are available and regularly maintained. A suitable number of employees is trained in first aid.	Comply
On-site staff housing is large enough, secure, clean, and provided with water, sanitation and energy.	Comply
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; assembly points.	Comply
Employees responsible for guest transport have valid licences and public driving permits.	Comply
All precautions are taken to prevent the outbreak and spread of fires. Employees are aware of the necessary precautions.	Comply
Firefighting equipment is available, regularly maintained, and employees are trained in fire safety.	Comply

MANAGEMENT MEASURES	AUDIT 2024
Gas canisters will be stored in Bureau of Standards approved structures.	Comply
Fire extinguishers are strategically located throughout the developed area.	Comply

3.1 Recommendations

3.1.1 Soil and groundwater contamination

Bunded, impermeable surfaces should be built where fuel, oil and other chemicals are stored and dispensed, as well as for the vehicle service area. Management and staff should be trained in the handling of these materials and made aware of the consequences of non-compliance.

A spillage plan should be in place with measures to contain and neutralise accidental spills, e.g. plastic linings, sand, sealed containers and removal of spilled material to an appropriate waste facility.

3.1.2 Water testing

It is recommended that water be tested at least twice a year from a supply point (e.g. the kitchen tap) and from the source (borehole) for fitness for human consumption against the quality standards in the Water Resources Management Act 11 of 2013 and its regulations (2023).

Effluent discharge is unlikely to cause significant contamination of groundwater due to the distance between the surface at the top of the mountain and the water table, with the caveat that the current discharge procedure ceases immediately and is replaced with a lined evaporation pond. Effluent should also be tested at least annually according to the provisions in the effluent discharge permit from the Ministry of Water, Agriculture and Land Reform.

3.1.3 Solid waste handling

There is a good waste holding cage, but green rubbish bags were observed outside it. There is a lot of litter inside and around the staff village fence. The footprint of construction/maintenance waste in the workshop area is large. It is recommended that environmental training be given to all lodge staff, with specific emphasis on littering and the reasons why it is unacceptable.

3.1.4 Fat traps

Training and motivation to engender an understanding of the necessity for fat traps, and more supervision over the cleaning and maintenance of fat traps are needed. It is recommended that a fat trap be installed in the staff village and that the disposal of wastewater and oil in the staff village be done in the appropriate manner.

3.1.5 Staff cooking fires

There seems to be a fireplace in front of each bedroom where cooking is done every day. It is recommended that this practice ceases and that gas stoves are provided to the staff for their cooking needs.

3.1.6 Biannual report to MEFT

An environmental report should be compiled and sent to MEFT twice a year.

4 MANAGEMENT MEASURES

4.1 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 Grootberg Lodge to follow sustainable tourism best practices. It is a legally binding document and constitutes an environmental contract between Grootberg Lodge (Pty) Ltd and the Government of the Republic of Namibia, represented by 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.

4.2 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 as defined by Journeys Namibia are listed in Table 2.

Table 2. Persons and teams responsible for the EMP

Person/Team	Responsibilities
OPS: Operations Manager/Director	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.
Contractor: Construction and other maintenance	Ensuring their staff and sub-contractors are informed of the measures in the EMP. Ensuring that their staff and sub-contractors adhere to all the EMP measures.

4.3 Construction phase

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY
Soil		
Compaction of and damage to soils	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 camp area.	Ops & Contractor
Soil erosion	No construction or activities within areas containing highly erodible dispersed, fine-particle, sodic etc. soils	Ops & Contractor
	Prevent water runoff from concentrating unnaturally in any one area.	Contractor
	Any water pipes shall be installed in such a way as to minimise the chance of erosion.	Contractor
Soil contamination	The mixing and use of concrete and cement must takes placed in designated areas so as not to contaminate the sites in any way.	Contractor
	All hydrocarbons and chemicals must be stored, handled and dispensed so as not to contaminate sites in any way.	Contractor
	Any spillage must be contained and cleaned up with 24hrs of occurrence. The resulting waste must be properly disposed of.	Contractor
Soil resources and land capability	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.	Ops & Contractor
	No construction activities are to take place outside the defined infrastructure footprint areas.	Contractor
	Quarries/borrow pits may not be dug without formal registration/permission.	Ops & Contractor
	The movement of construction crew must be within the demarcated site boundaries at all times.	Contractor
	A suitably positioned construction material stockpiling and mixing area must be chosen and demarcated. This must be located in an area that is already transformed or disturbed.	Ops & Contractor
	Access routes from the stockpiling areas to the building sites should be demarcated and use enforced. Existing roads should be used for these purposes.	Ops & Contractor
	Sand and rocks utilised for construction must be from defined and already impacted areas. These sites must be identified and approved by the Director of Operations.	Contractor
	Once construction work is completed, all excess material must be removed and the site suitably rehabilitated.	Contractor
	The use of graders should be avoided because they gouge roads below the level of the surrounding surface.	Contractor
Topography		
Significant alterations to the shape of the landscape	Site levelling and landscaping only where required by the designs. No earthmoving equipment may be used without the express permission of MEFT.	Ops & Contractor
	Construction site office and facilities to be dismantled and removed once construction is completed	Ops & Contractor
Biodiversity		

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY
Death of amphibians, reptiles, birds	Avoid any sites with nests, burrows, dens etc. of protected species.	Ops & Contractor
Habitat destruction	See under SOIL	Ops & Contractor
Poaching, especially tortoises and small mammals	The greater area around building sites should be searched for snares during the construction phase and after construction is complete.	Ops
	Restriction of contractor staff movement	Ops
	Inspection of contractor staff housing	Ops
Damage to/removal of protected species	Continuous monitoring to ensure that no protected species are impacted.	Ops & Contractor
Damage to vegetation	Motorised access should be limited to existing tracks and defined development areas. As far as possible, no new roads or tracks should be developed within this area.	All
	The clearance of or damage to trees and shrubs beyond the development footprint must be prevented.	All
	As many trees and shrubs as possible should be retained within the development area.	All
	All mature trees and shrubs remain.	All
	Ensure that only permitted access roads and paths are used by construction workers and vehicles at all times.	All
	No firewood may be collected.	All
Spread of invasive vegetation	No alien invasive or plants that do not occur locally will be planted.	All
	Introduced construction materials must be free from seedlings and seeds of alien invasive vegetation.	Ops & Contractor
Landscape disturbance from construction activities	Upon closure of construction, site must be rehabilitated using only indigenous vegetation.	Ops & Contractor
Hydrology		
Groundwater contamination	No construction activities may take place within 1:100 year flood line of any watercourse or within 50m of a spring.	All
Erosion of river banks	Rivers to be entered and exited using only existing approaches and entrance/exit points.	All
Surface water 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.	Ops & Contractor
	All hydrocarbons and chemicals must be stored, handled and dispensed so as not to contaminate sites in any way.	Ops & Contractor
Visual impact		
Vehicle tracks	As far as possible, no new roads or tracks should be developed. Building materials should be transported on either existing tracks or tracks that will be used during operations. Contractors and their staff are made aware of driving protocols and heavy fines are levied for any form of off-road driving.	All
Construction structures and temporary facilities	Construction site office and other temporary facilities are put on sites that will definitely be used during the operational phase. Everything is dismantled and removed after construction.	Ops & Contractor
Support infrastructure is ugly	Towers, raised tanks, communication infrastructure, solar panels and other prominent maintenance structures and	Ops.

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY
	equipment should be sited out of sight of the public. High structures should be sited below the skyline of ridges/koppies/dunes.	
	Road signs should be made from materials and in colours that contribute to the sense of place.	Ops.
	Pipes and cables are buried or otherwise hidden from view.	Ops & Contractor
Buildings intrude on a pristine landscape and detract from a sense of place	The lodge, back of house and support buildings should be designed to blend into the natural environment. Shapes should not contrast with the surrounding area (e.g. no high rise buildings) and colours should be chosen to be in harmony with the environment.	
Solid waste, sewage and waste water discharge		
Ecological damage from solid waste	Littering is not permitted and all waste must be placed in appropriate receptacles.	All
	The contractor will provide a suitable, animal proof receptacle to contain all daily refuse. 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 dump site.	Contractor
	All building rubble is consolidated in a suitable location, removed from the area and disposed of in a suitable and legal location in an environmentally acceptable manner.	Contractor
	Used oils and other workshop waste to be stored in suitable receptacles and dispatched to appropriate waste facility.	Contractor
Ecological damage from sewage and waste water discharge	Fat/grease traps will be installed at kitchen outlets.	Ops & Contractor
	Adequate temporary ablutions to be provided for workers.	Contractor
	Ablutions are regularly serviced and the sewage disposed of at a suitable designated location and in an environmentally appropriate manner.	Contractor
Unpleasant odours	Regular maintenance of sewerage system as per company policies & procedures	Contractor
	Should unpleasant odours be identified, the source of the odours must be identified and remedied within one day.	Contractor
Machinery & vehicles		
Noise pollution	Efficient, modern, silenced generator only.	Contractor
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
	Drip trays to be placed under any leak that is identified.	Contractor
	Vehicles and machinery with fuel, oil or hydraulic fluid leaks must be removed from service for repair.	Contractor
	No servicing or major repair of vehicles and 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 vehicles used in the area must be operated with low tyre-pressure to minimise negative impacts on tracks and roads.	All
Construction staff damage local environment		
Disruption of ecological processes	The contractor and his employees shall adhere to all rules and regulations prescribed by the relevant authority at all times, as	Contractor

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY
through physical acts and/or pollution	well as to the management measures presented in this document.	
	The contractor will ensure the proper supervision of employees at all times and their compliance with rules and regulations.	Contractor
	All employees will be educated 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.	Ops & Contractor
	Access to the site is restricted to contractor's employees only.	Ops & Contractor
Bush fires: destruction of habitat and death of animals		
Outbreak of fire	Take all precautions to prevent the outbreak and spreading of fires and ensure all employees are aware of the necessary precautions.	Ops & Contractor
	Gas canisters to be housed in Bureau of Standards approved structures.	Ops & Contractor
Fire in construction area spreads to bush	Fire extinguishers strategically located throughout construction area.	Ops & Contractor
	Bush firefighting equipment placed with easy access	Ops & Contractor
Health and Safety of staff		
Injury to persons	Compliance with Health & Safety regulations: all persons on the construction site should adhere to industry Health & Safety regulations at all times	Contractor
	Equipment and tools handled only by persons qualified in their use.	Contractor
Burn injuries	Fire extinguishers strategically located on construction site and staff trained in usage.	Contractor

4.4 Operational phase

NATURE OF IMPACT	MANAGEMENT MEASURES	RESPONSIBILITY
Biodiversity		
Impacts associated with human-wildlife interaction	Guests and employees are made aware that they are in a sensitive environment, and are taught the appropriate way to interact with wildlife.	Mgt. Guides.
	Trained guides to escort guests at all times, no self-drive or walking other than in accepted designated areas	Mgt. Guides.
	Large animal viewing must be conducted according to recognised or approved conservation protocols	Guides
	No animal, plant or other natural resource may be disturbed, violated, mutilated, destroyed, killed or removed.	All
Protected animal species are affected by operational activities.	Avoid sites with nests, burrows, dens etc. of protected species.	All
	The greater area around the site should be regularly searched for snares.	Mgt
Lights affect animals, disrupting behaviour and potentially causing mortality	Lighting must be subdued and lights must be angled towards the ground. Outdoor lights must be turned off at the end of the evening when guests are in their rooms.	Ops. Mgt.

NATURE OF IMPACT	MANAGEMENT MEASURES	RESPONSIBILITY
Protected plant species are affected by operational activities.	No protected plants may be disturbed by the operational activities or be damaged or removed.	All
Damage to plants and animal habitats	Ensure that only permitted access roads and paths are used by employees, guests and vehicles at all times.	Mgt
	No off-road driving is allowed.	Mgt. Guides.
	A limited amount of firewood may be used for ambience fires. No firewood may be collected in the concession and all firewood must be bought from reputable, bush-clearing sources.	Mgt
	No picking of plants or plant parts, digging or any other damage-inducing activity is permitted.	All
	Employees are educated on 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.	Mgt
	Journeys Namibia shall preserve and protect the concession area, surrounding landscape, its game and botanical species, and shall ensure that all guests, contractors and employees who enter the concession area do likewise.	Ops. Mgt.
Spread of invasive vegetation	The area will be kept free of any alien vegetation that has or may inadvertently be introduced.	Mgt
Vehicle use		
Erosion of and damage to roads and tracks	Regular maintenance of roads and tracks.	Maint
	Implement measures to disperse concentrated water flow and repair erosion at such locations.	Maint
	Make and maintain culverts	Maint
	Low tyre pressure on all operational vehicles. 180 - 200 kPa.	Mgt. Guides.
	Operational vehicles are 4-wheel drive and of standard width.	Mgt
Off-road driving causes compaction of and damage to soil	No off-road driving is allowed. Only permitted access roads and paths are used by employees, guests and vehicles at all times.	All
	Making tracks next to a road is not allowed. Taking shortcuts is not allowed.	All
	Areas with sensitive, compactable soils should be avoided (vehicles compact the soil, preventing water and root penetration and tracks remain visible for years).	Mgt. Guides.
	New roads and tracks have to be authorised and are developed according to the road plan.	Ops
	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
Driving in rivers 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
Driving over flooded or moist areas disrupts surface water hydrology	No driving in seasonally inundated areas when flooded or moist.	Guides
Operational activities		
Contamination of soil and groundwater by	Kitchen and housekeeping soaps and detergents are biodegradable and eco-friendly.	Mgt

NATURE OF IMPACT	MANAGEMENT MEASURES	RESPONSIBILITY
toiletries, housekeeping and general cleaning chemicals	Biodegradable and eco-friendly guest amenities are provided.	Mgt
Contamination of soil and groundwater 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.
Fuel storage and refuelling procedures cause soil and groundwater contamination	Construct bunded surfaces: workshop, generator room, fuel store room, vehicle fuelling area. No fuel storing or dispensing should be allowed outside this bunded area.	Ops. Mgt.
	Fuel is stored in appropriate receptacles and on an impermeable, bunded surface.	Maint
	Fuel is dispensed over impervious, bunded surface or drip trays.	Maint
	Oil pans to be used in vehicle parking areas under vehicles that leak.	Maint
	Vehicle servicing is done on impervious, bunded surfaces or over oil pans.	Maint
	Used oil to be stored in appropriate receptacle and despatched to appropriate waste facility.	All
	Paint, thinners, varnish, turpentine, detergents, chlorine 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.
	The diesel storage tank volumes will be carefully monitored in order to ensure no leakage.	Mgt. Maint.
Machinery use disturbs the natural quiet	Graders, tractors, diggers, power tools, swimming pool pump, freezer compressors and other noisy equipment are used during daylight only.	Mgt
Exhaust emissions cause air pollution, and oil leaks contaminate the soil	Vehicles are serviced regularly and monitored for excessive exhaust emissions.	Mgt. Guides. Maint
	Generator and other equipment are monitored for excessive exhaust emissions.	Mgt. Maint.
Burning of waste causes air pollution	Limited amounts of packaging may be burned in a designated pit. Only packaging that is dirty and cannot be recycled may be burnt.	Mgt. Maint.
Cooking fires causes air pollution	No cooking over open fires should be allowed, except on designated braai nights for guests.	Mgt
Water use		
Aquifers are depleted by over-use.	Water conservation must be actively promoted. Guests to be informed of water scarcity and encouraged to participate in water conservation.	Mgt
	Measure and record water use, calculate the usage per bednight and compare it with usage targets.	Mgt
	Repair any leak in the water reticulation system within 24hrs of detection	Mgt
	Use water saving devices such as dual-flush toilets, a brick in the cistern, low-flow showerheads, bucket in shower, etc.	Ops
Solid waste		

NATURE OF IMPACT	MANAGEMENT MEASURES	RESPONSIBILITY
Large volumes of waste are generated and cause ecological damage	All physical waste should be managed and either recycled or appropriately disposed.	Ops. Mgt.
	No waste of any kind may be buried in riverbeds.	Mgt
	Appropriate waste bins must be provided at the point of source. All waste bins will be covered and secured to be animal proof.	Ops. Mgt.
	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 dump site. This area should be fenced and secured and it should have a concrete floor to ensure that it can be suitably maintained and no ground seepage will occur.	Ops
	Recyclable waste will be sorted at source and stored on site in suitable containers until it is removed and transported to a suitable recycling facility.	Mgt
	Glass, tins, cans, foil, plastics, paper and cardboard are examples of recyclable waste.	
	Waste that cannot be recycled or sold will be stored on site in suitable containers. This must be disposed of at a permitted waste site.	Mgt
	Limited amounts of packaging may be burned in a designated pit. Only packaging that is dirty and cannot be recycled may be burnt.	Mgt
	Organic waste should be donated to a nearby community, otherwise it may be buried in suitably designed “animal –proof” deep pits.	Mgt
Sewage and waste water management		
Discharge of effluent contaminates soil and groundwater, and causes ecological damage.	Septic tanks and soak-aways should be monitored daily and maintained. Fat/grease traps at kitchen outlets should be maintained.	Mgt. Maint.
Unpleasant odours	Qualitative monitoring of odours.	Maint
	Should unpleasant odours be identified, the source of the odours must be identified and remedied within 1 week of identification.	Maint
Energy		
Fossil fuels contribute to global warming and cause pollution	Energy saving measures should be implemented (lights, use of hybrid solar and diesel generator etc.)	Ops
	Diesel generator should be used as a backup to the solar system and not a primary energy source. Diesel usage should be monitored and measured against targets.	Mgt
	Maintenance of the PV system as instructed by the manufacturer.	Mgt. Maint.
Employees and guests on site		
Health and safety of guests and staff	The staff and guests shall adhere to any rules and regulations that MEFT may prescribe at all times as well as the management measures in this document.	Mgt
	Access to the site must be restricted to employees and guests only.	All
	Comply with all national, regional and local legislation and regulations governing workplace equity and diversity.	Ops. Mgt.
	Comply with all national, regional and local legislation and regulations governing health and safety measures.	Ops. Mgt.
	Protective clothing is provided to employees.	Ops. Mgt.

NATURE OF IMPACT	MANAGEMENT MEASURES	RESPONSIBILITY
	Adequate first aid kits are available and regularly maintained. A suitable number of employees is trained in first aid.	Ops
	On-site staff housing is large enough, secure, clean, and provided with water, sanitation and energy.	Ops
	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; assembly points.	Mgt
	Employees responsible for guest transport have valid licences and public driving permits.	Ops. Mgt.
	All precautions are taken to prevent the outbreak and spread of fires. Employees are aware of the necessary precautions.	Ops. Mgt.
	Fire fighting equipment is available, regularly maintained, and employees are trained in fire safety.	Ops. Mgt.
	Gas canisters will be stored in Bureau of Standards approved structures.	Ops
	Fire extinguishers are strategically located throughout the developed area.	Ops. Mgt.
EMP implementation		
Ensure effective implementation of the EMP	Biannual internal audit should be done to monitor compliance with this EMP.	Ops
	Bi-annual environmental reports should be submitted to MEFT.	Ops
Eco Awards is an independent assessor	Keep assessments up to date according to Eco Awards regulations. Submit self-assessments before expiry date.	Ops

4.5 Closure

Tourism has an indefinite projected lifespan, and since the #Khoadi-//Hoas Conservancy is dependent on the lodge for work and income, there is currently no intention to cease operations or decommission Grootberg Lodge.

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.

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY
Soil		
Compaction of and damage to soils, contamination	Construction guidelines will apply to prevent and mitigate impacts.	Ops & Contractor
Animals: habitat disturbance; death of animals		
Death of animals, poaching, habitat or behaviour disturbance	Construction guidelines will apply to prevent and mitigate impacts.	Ops & 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.	Ops & Contractor
Alien plant invasion	Follow-ups will be done to ensure that alien or invasive plants and weeds have not flourished.	Ops & Contractor
Damage to vegetation	Construction guidelines will apply to prevent impacts.	Ops & Contractor
Infrastructure		
Buildings and support infrastructure	All structures will be completely removed to the satisfaction of MEFT.	Ops & 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.	Ops & Contractor
Pathways	All pathways will be rehabilitated to a state as close as possible to the pre-construction condition.	Ops & Contractor
Hydrology		
Contamination of ground and surface water, erosion of river banks	Construction guidelines will apply to ensure limited impact.	Ops & 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.	Ops & Contractor
Water pipes	All pipe lines will be removed from the concession.	Ops & Contractor
Electricity lines	All electricity infrastructure will be removed from the concession.	Ops & 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.	Ops & 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.	Ops & Contractor
Construction structures and facilities	Construction site office, facilities and structures to be dismantled and removed once decommissioning is completed	Ops & Contractor
Solid waste, sewage and waste water discharge		

NATURE OF IMPACT	MITIGATION	RESPONSIBILITY
Large volumes of rubble, materials and equipment	Everything will be removed from the concession and taken to a registered landfill.	Ops & Contractor
	Nothing will be burnt or buried on the concession.	Ops & Contractor
Ecological damage	Construction guidelines will apply to ensure limited impact.	Ops & 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.	Ops & Contractor
Construction staff damage local environment		
Disruption of ecological processes through physical acts and/or pollution	Construction guidelines will apply to ensure limited impact.	Ops & Contractor
Bush fires: destruction of habitat and death of animals		
Outbreak of fire	Construction guidelines will apply to ensure limited impact.	Ops & Contractor
Health and Safety of staff		
Injury to persons	Construction guidelines will apply to ensure limited impact.	Ops & Contractor

5 MONITORING

Protocols used for monitoring include:

1. Monthly Reports for usage of
 - Diesel
 - Gas
 - Cleaning materials
2. Monitoring of predators, rhinos, elephants and general game go in daily reports, consolidated in a monthly summary
3. Water Installation & Power GB

5.1 Water Monitoring

The aim of the water monitoring programme is to assess the consumption and impact of water use on groundwater quality and availability. The Lodge Manager and maintenance team will be trained to do monitoring based on the following protocol.

Surface water

Apart from short-lived ephemeral pans directly after a rainfall event, there is no surface water on the Grootberg plateau.

Groundwater

- Groundwater 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.
- Effluent discharge should be tested according to the provisions made in the Effluent Discharge Permit from the MAWLR.

5.2 Energy monitoring

Diesel, petrol and gas usage is monitored and recorded in monthly reports to Head Office in Windhoek.

5.3 Environmental Performance

Environmental auditing is aimed at ensuring continual improvement in environmental performance. Grootberg Lodge keeps records of environmental monitoring data which are used by Journeys Namibia to assess the level of compliance with environmental legislative requirements and the commitments made in the EMP. The conservancy committee also monitors performance of the lodge.

Eco Awards assessments are a good indication of environmental compliance, and the 3-yearly certificate will be kept up to date.

6 ENVIRONMENTAL AWARENESS

6.1 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 Grootberg lodge, staff village and entrance gate received training regarding the requirements of this EMP.

6.2 Environmental incident reports

All environmental incidents are reported to the Journeys Namibia Operations Manager.

7 ENVIRONMENTAL EMERGENCY PROCEDURES

7.1 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.

7.2 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 sand bags 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

8 CONCLUSION

This Environmental Management Plan highlights the management measures that will be implemented in order to mitigate the environmental impacts of the proposed activities. The EMP is a legally binding document, and the applicant is committed to the implementation of the management measures, monitoring programmes and other plans as presented herein.

It is recommended that Environmental Clearance Certificate for Grootberg Lodge be renewed.