WILDERNESS

WILDERNESS NAMIBIA

Kulala Adventurer Camp

Environmental Management Plan for Kulala Adventurer Camp

Report date: 20 December 2025

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INFORMATION SHEET

OPERATION

Kulala Adventurer Camp

NTB Registration: TNC 0004 (Kulala Wilderness Camp)

REPORT DETAILS

Report Name: Environmental Management Plan Environmental for Kulala Adventurer Camp

Report Status: Final Report
Date: December 2025

PROPONENT

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LIST OF TERMS, ACRONYMS AND ABBREVIATIONS

BID	Background Information Document
DWA	Department of Water Affairs
EA	Environmental Assessment
EC	Environmental Commissioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
HRM	Human Resource Manager
KAC	Kulala Aventurer Camp
KWR	Kulala Wilderness Reserve
IAP	Interested and Affected Party
masl	Metres above sea level
MAWF	Ministry of Agriculture, Water and Forestry
MET	Ministry of Environment and Tourism
PM10	Particulate matter with a diameter smaller than 10 micro meters

1. Introduction

1.1 Background

Kulala Adventurer Camp is located within the arid Namib Desert on the 27 000-hectare (67 000-acre) private Kulala Wilderness Reserve. In the mid 1990's Wilderness acquired the Witwater farm bordering the Namib Naukluft Park that became the Kulala Wilderness reserve in which Kulala Adventurer Camp is located. In 1996 Wilderness set up an operation on land close to the spectacular Sossusvlei. As this locale had previously been used for subsistence goat farming, precious little indigenous wildlife remained. Today, with careful rehabilitation, the land and its wildlife is back to its former glory.

When Wilderness began operating on the reserve, a massive programme to remove internal fences and livestock was undertaken and the recovering health of the ecosystem brought the wildlife back. Then, the fence that divided the Kulala Wilderness Reserve (KWR) and the Namib Rand Nature Reserve was dropped, and while those between KWR and the adjacent Namib-Naukluft National Park remain, they are no impediment to the movement of wildlife.

The vision of Wilderness is to conserve the unique biodiversity of the reserve and all of its components.

The reserve is dedicated to supporting a range of conservation research projects on the unique ecology of the Namib Desert, including studies on bat-eared foxes, mongooses and other small carnivores.

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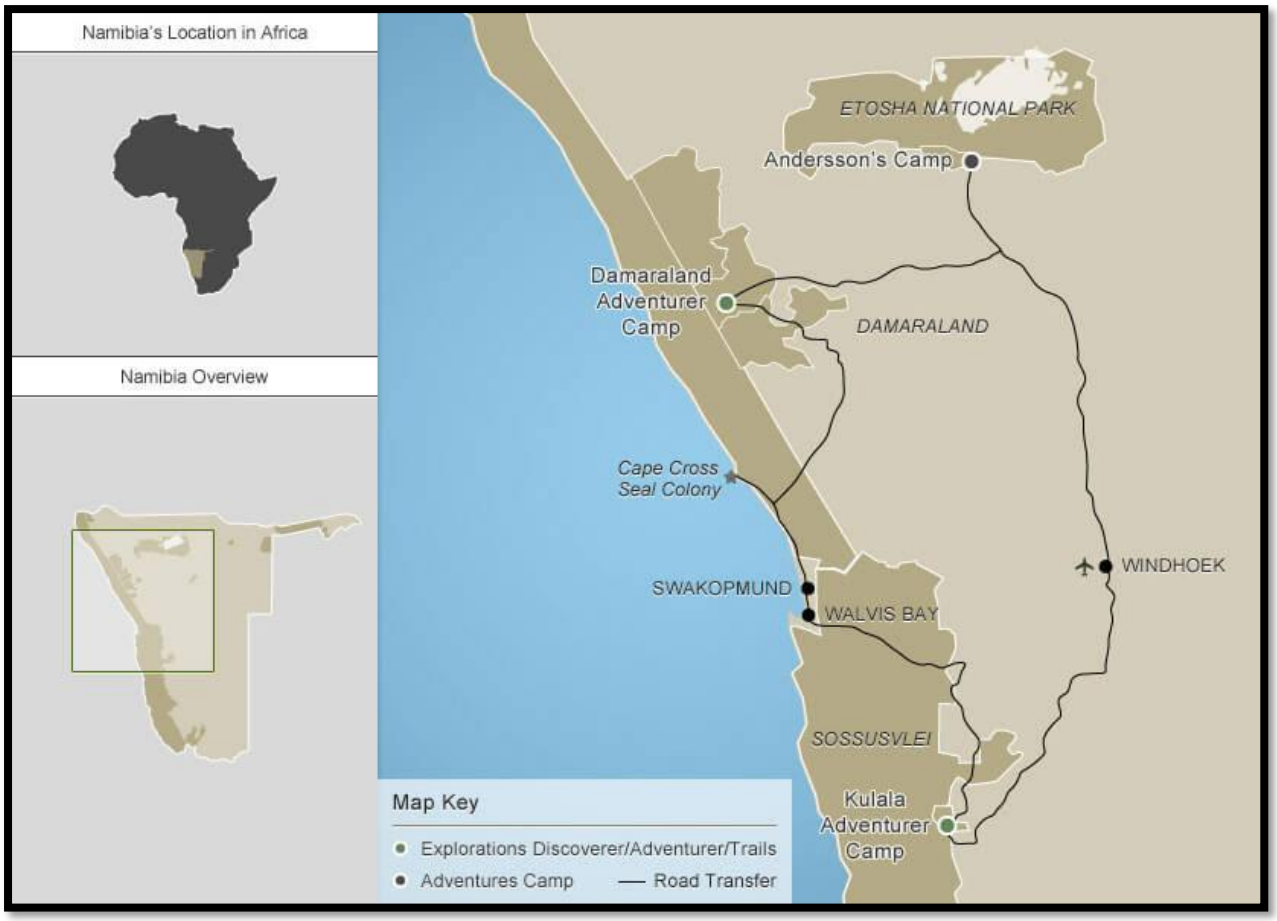

Figure 1 The location of Kulala adventure camp

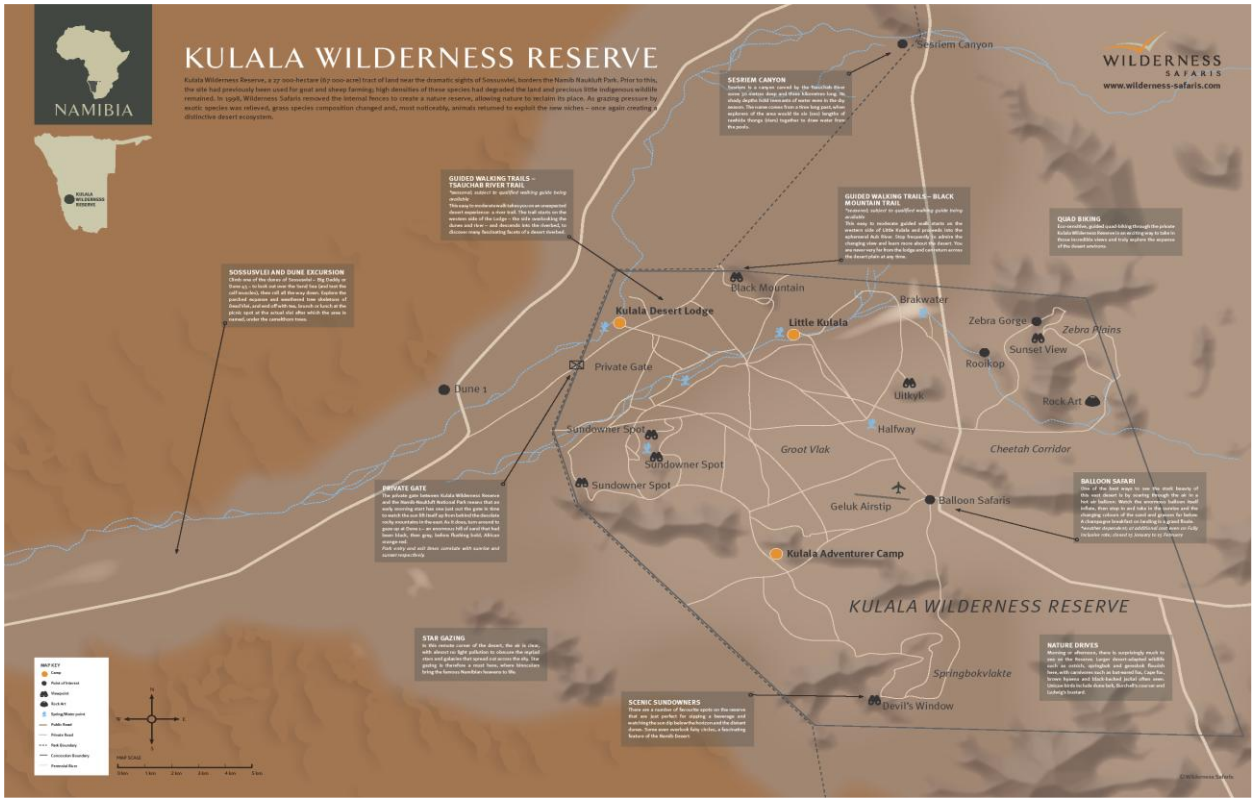

Figure 2: Map of the Kulala Wilderness reserve and location of the camp

1.2 The Camp

The camp comprises of 6 canvas chalets "kulalas" with en-suite bathrooms and verandas. Each unit is built on a wooden platform to catch the cooling breezes. The camp can accommodate a total of 12 people.

The main area includes a small dining area, and a veranda overlooking the sand dunes, a perfect location to view and photograph the desert vista and to contemplate the day's exciting activities. This is the closest point of access to the iconic dunes of Sossusvlei as the reserve has a private access gate to the Namib Naukluft Park sand sea area.

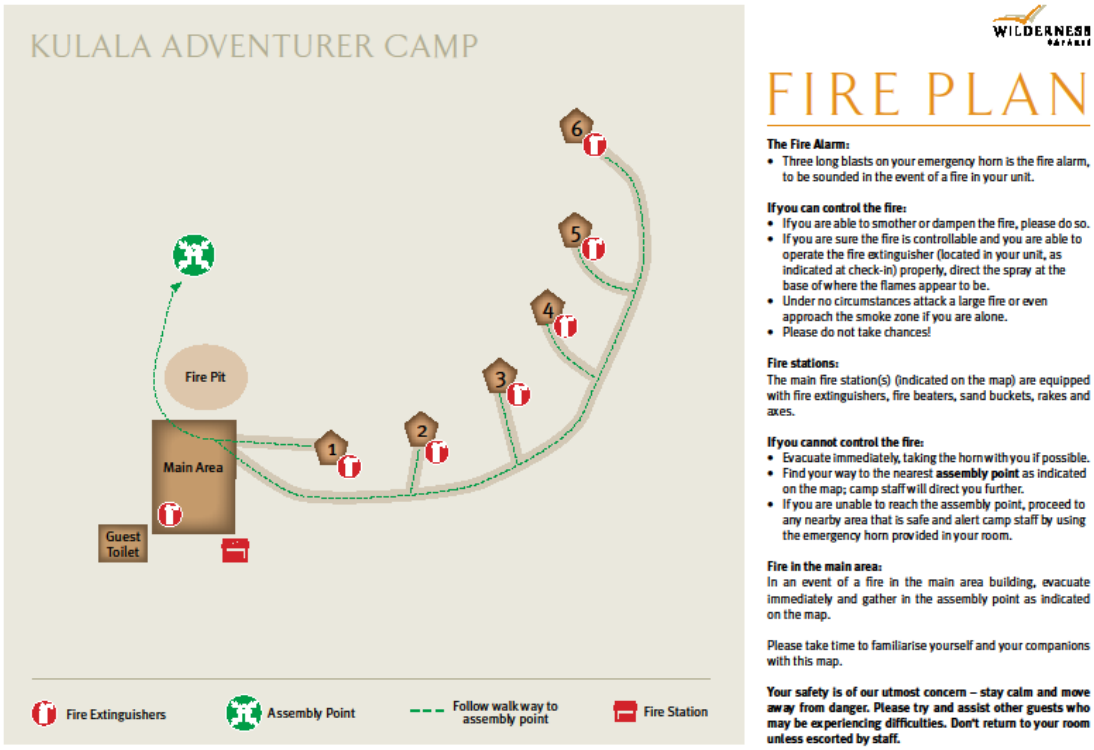

Figure 2: Layout and fire plan of the Kulala Adventurer Camp.

1.3 Airstrip

Kulala Airstrip (Geluk Airstrip) is located east, about 5 km from the camp. The specifications of the airstrip are, Length: 2000m; Elevation: 2400m; Co-ordinates: S24:40:24 E15:47:36. The infrastructure at the airstrip include 2 flash toilets, water tank and a fuel storage area, a fire shed, a waiting area and a fence around the airstrip to prevent wildlife on the runway.

NO turn arounds on the run way and no low flying is permitted. Aircrafts are only allowed to turn around at each end of the runway. The apron/parking is in the middle of the runway on the north-western side of the airstrip. The aircrafts are only permitted to park in this apron on the blocks for overnights as well as for drop-offs/pick-ups.

Figure 3: Aerial view of Geluk airstrip

1.4 Staff village

There is only one staff that looks after the camp. The staff room is located behind the main area

Other Camp supporting infrastructure include, a kitchen and storage room, solar geysers, small solar panels at each room, a 5000-litre water tank, and a parking area for safari vehicles.

Figure 4: Camps tented chalet

2 Environmental management plan

2.1 Aims

The aim of the environmental management plan (EMP) is to detail the actions required to effectively implement the mitigation measures identified. These actions are required to minimise negative impacts and enhance positive impacts associated with the management of the lodge and other supporting infrastructure.

The EMP gives the commitments, which form the environmental contract between Wilderness and the Government of the Republic of Namibia, represented by the Ministry of Environment and Tourism department of Environmental Affairs

It is important to note that an EMP is a living document in that it will be updated and amended as new information (e.g. environmental data), policies, authority guidelines and technologies develop.

2.2 Objectives

Specific objectives are given for each of the actions described in the EMP. These objectives relate directly to addressing the impacts identified.

2.3 Management Actions

The various actions that need to be implemented in order to ensure that environmental objectives are met are described in the EMP. Each action is given a reference number. The actions are measurable and therefore are easy to monitor. Compliance with the EMP can thus also be audited.

2.3 Roles and Responsibilities

It is the responsibility of Wilderness to implement the EMP and to make sure that all the actions are carried out. The successful implementation of the EMP is however dependent on clearly defined roles and responsibilities for each of the management actions given.

2.4 Roles have been ascribed to the following parties:

Table 1: Roles ascribed to parties

Management:	The persons overall responsible for the management of the Kulala Adventurer Camp. Takes overall responsibility for implementation of the EMP.
Environmental Control Officer:	An environmental scientist appointed to provide support to the construction team and Wilderness staff in terms of implementation of environmental management measures, as appropriate.
Human Resources Manager:	Persons responsible for employment of persons at Wilderness.
Maintenance:	Person responsible for the maintenance of vehicles and machinery, as well as the sewage and waste water systems.
Guides:	Persons responsible for the transport of guests in and around the site. The guides are also responsible for ensuring that human wildlife interactions take place in an appropriate manner.
Contractor:	Person responsible for all construction activities.

2.5 Schedule

The schedule serves to give the time frame for the environmental action to commence. It is not always possible to the implement an action immediately as some actions require planning and the availability of financial and/or human resources before they can be implemented. The successful commencement of the committed action within the specified time-frame is to be monitored.

2.6 Requirements for Implementation

This component of the EMP details what is required for the action to be implemented successfully. This includes equipment, supplementary documentation, protocols and additional actions that may need to be put into place.

2.7 Planning

Due to the sensitive nature of the site, the activities are carried out in a manner that ensures limited environmental disturbance. It was therefore important to incorporate the general environmental and development guidelines for the Concession, as well as best practise, into the project design and planning. The following guidelines were taken into account during the planning process:

Table 2: Planning environmental guidelines

Ref.	Objective
1	**Soils, land capability and land use**
Objective: To prevent the unnecessary compaction of, and damage to, soils.	
1.1	Planning to align access with existing roads. No new roads or tracks are to be developed within the concession area.
	Planning of the development to align the layout with the currently disturbed footprint. Limit expansion of the footprint to minimise disturbance.
	Location of the airstrip at a site that requires the least physical alteration and minimises the disturbance of natural vegetation.
Objective: To prevent soil erosion.	
1.2	No disturbances will take place within areas containing highly erodible dispersed, fine-particle, sodic etc. soils
1.3	Water pipes have been routed so as to minimise the chance of erosion.
Objective: To protect soil resources and land capability.	
1.4	Wherever possible, any new structures or developments have been sited on already impacted areas.
2	**Topography**
Objective: To prevent significant topographical alterations.	
2.1	Facilities designed to require the least site levelling and landscaping.
3	**Fauna**
Objective: To ensure that no protected species are affected by the construction activities.	

3.1	Sites with nests, burrows, dens etc. of protected species were avoided.
3.2	Overhead lines will be located unobtrusively and possible damage by animals was considered.
4	**Flora**
Objective: To ensure that no protected species are affected by the construction activities.	
4.1	No construction disturbed protected plant species.
Objective: To prevent unnecessary damage to vegetation.	
4.2	Water pipes were routed so as to minimise the chance of erosion.
4.3	Infrastructure must be sited so as to require the removal of the least amount of vegetation.
5	**Surface water resources**
Objective: To prevent the disruption of local hydrology	
5.1	No development activities took place within 1:100 year flood line.
5.2	No soil disturbance was allowed in the vicinity of any natural springs/seepages.
5.3	No permanent accommodation structures are to be developed in the River or within its riparian zone.
6	**Groundwater resources**
Objective: Water conservation	
5.1	Water conservation is highly promoted, including installation of low-flow showerheads and dual flash toilets with small cisterns etc. Other innovations such as waterless toilets will be investigated and implemented.
5.2	Meters will be installed to measure water use (targets for water use to be set and used as benchmark).
6	**Visual environment**
Objective: To limit the negative visual impact of the project.	
6.1	Large catchments with low visual absorption capacities require sensitive location and construction of facilities, or avoidance.
6.2	The shape, nature, colour and texture of materials used for construction will meld with the local landscape.
6.3	No constructions broke the skyline.
6.4	Subdued and directional lighting was used.
6.5	Masts and towers are to be as unobtrusive as possible.
7	**Sewage and waste water management**
Objective: To prevent ecological impacts caused by sewage and waste water discharge.	
7.1	No sewage facilities are located within 50 m of any water body or source.
7.2	Fat/grease traps will be installed at kitchen outlets.
8	**Energy**

Objective: To maximise energy efficiency	
8.1	Maximum use of solar energy and gas is implemented.
8.2	Energy saving measures will be investigated and implemented (lights, etc.)
8.3	Only efficient, modern and silenced generators will be permitted and only as a backup.
9	**Machinery / vehicles on site**
Objective: Minimise the impacts associated with machinery and vehicle use	
9.1	Only efficient, modern and silenced generators will be permitted and only as a backup.
9.2	Vehicles and machinery are only to use existing access roads and defined development areas. Lichen fields and plains with sensitive, compactable soils will not be impacted.
10	**Cultural resources**
Objective: Protect the historic sites	
10.1	No disturbances will take place within 100 m of the historic sites.
11	**General environmental**
Objective: General environmental performance	
11.1	Permanent structures of appropriate design and using appropriate construction materials (including local materials sourced from permitted sites-ECO to specify). Touch the Earth Lightly principles will be implemented.

2.8 Construction

The construction was carried out in such a manner to ensure limited environmental disturbance. All contractors involved in the construction must be informed of the areas sensitivity and their activities monitored. The following guidelines will be enforced during the construction process:

Table 3: Construction environmental guidelines

Ref.	Objective	Responsibility	Schedule	Requirements for Implementation
1	**Soils, land capability and land use**			

Ref.	Objective	Responsibility	Schedule	Requirements for Implementation
Objective: To prevent the unnecessary compaction of, and damage to, soils.				
1.1	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 the camp area.	Management & ECO	Immediate and ongoing	Environmental awareness plan and staff induction.
1.2	Prevent the compaction of soil or destruction of protective vegetation through the restriction of heavy vehicle movements.	Management & ECO	Immediate and ongoing	Environmental awareness plan and staff induction.
Objective: To prevent soil erosion.				
1.3	No construction or activities within areas containing highly erodible dispersed, fine-particle, sodic etc. soils	ECO	Prior to construction	Identify highly erodible sites.
1.4	Prevent water runoff from concentrating unnaturally in any one area.	ECO	Ongoing	Site inspections
1.6	Any water pipes shall be installed in such a way as to minimise the chance of erosion.	Contractor	Immediate	
Objective: To prevent soil contamination.				

1.7	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	Immediate & ongoing	Designated mixing areas.
1.8	All hydrocarbons and chemicals must be stored, handled and dispensed so as not to contaminate sites in any way.	Contractor	Immediate & ongoing	Lined and bunded storage areas.
1.9	Any spillage must be contained and cleaned up with 24hrs of occurrence. The resulting waste must be properly disposed of.	ECO & Contractor	As required	
Objective: To protect soil resources and land capability.				
1.10	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.	ECO	Immediate	Demarcation of construction areas. Demarcation of sites of particular sensitivity with "Do not Disturb" signage.
1.11	No construction activities are to take place outside of the defined infrastructure footprint areas.	Contractor	Immediate	Site plans to clearly define construction areas.
1.12	Quarries/borrow pits may not be dug without formal registration/permission.	ECO & Contractor	Immediate & ongoing	Approval Demarcate sources.
1.13	The movement of construction crew must be within the demarcated site boundaries at all times.	ECO & Contractor	Immediate & ongoing	Site boundary demarcation.
1.14	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.	ECO & Contractor	Immediate & ongoing	Selection of laydown area. Demarcate area.
1.15	Access routes from the stockpiling areas to the building sites should be demarcated and use enforced. Existing roads should be used for these purposes.	ECO & Contractor	Immediate & ongoing	Clearly demarcated routes. Environmental awareness plan and staff induction.

1.16	Sand and rocks utilised for construction must be from defined and already impacted areas. These sites must be identified and approved by the ECO.			
1.17	Once all construction work has been completed, all excess material must be removed the site suitably rehabilitated.	Contractor	Completion of construction	Rehabilitation plan
1.18	The use of graders is to be avoided because they "gouge" roads below the level of the surrounding surface.	Contractor	Ongoing	
2	**Topography**			
Objective: To prevent significant topographical alterations.				
2.1	Site levelling and landscaping only where required by the designs.	Contractor	Construction	
3	**Fauna**			
Objective: To ensure that no protected species are affected by the construction activities.				
3.1	Avoid any sites with nests, burrows, dens etc. of protected species.	ECO	Immediate & ongoing	Identify sites with nests, burrows, dens etc. of protected species. Demarcation of sensitive sites.
Objective: To prevent ecological impacts caused by sewage and wastewater discharge.				
3.2	**Refer to section 8**			
Objective: To prevent ecological impacts caused by fire.				
3.3	**Refer to section 12**			
Objective: To prevent staff from poaching.				
3.4	**Refer to section 11**			
3.5	The greater area around building sites should be searched for snares during the construction phase and after the construction phase is complete.	ECO	Ongoing and upon completion of construction	
4	**Flora**			
Objective: To ensure that no protected species are affected by the construction activities.				

No Welwitchias may be harmed. No Lichen fields may be harmed No protected plants may be damaged or removed.	ECO	Ongoing	Environmental awareness plan and staff induction. Demarcation of sensitive sites. Continuous monitoring to ensure that no protected species are impacted.
Objective: To prevent unnecessary 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	Ongoing	Environmental awareness plan and staff induction.
The clearance of or damage to trees and shrubs beyond the development footprint must be prevented.	All	Ongoing	Environmental awareness plan and staff induction. Demarcation of sensitive sites.
As many trees and shrubs as possible should be retained within the development area.	All	Ongoing	Demarcate individual specimens that must not be damaged
Ensure that only permitted access roads and paths are used by construction workers and vehicles at all times.	All	Ongoing	Environmental awareness plan and staff induction.
No firewood may be collected	All	Ongoing	Environmental awareness plan and staff induction.
Objective: To prevent the spread of alien invasive vegetation.			
No alien invasive or plants that do not occur locally will be planted.	ECO	Ongoing	
Introduced construction materials must be free from seedlings and seeds of alien invasive vegetation.	Management	Ongoing	
Objective: To prevent ecological impacts caused by sewage and wastewater discharge.			
Refer to section 8			
Objective: To prevent ecological impacts caused by fire.			
4.9 **Refer to section 12**			
Objective: To prevent staff from damaging the local environment.			

4.10	**Refer to section 11**			
5	**Surface water resources**			
Objective: To prevent the disruption of local hydrology				
5.1	No construction activities may take place within 1:100 year flood line of any watercourse or within 50 of a spring.			
5.2	Rivers to be entered and exited using only existing approaches and entrance/exit points.	All	Ongoing	Environmental awareness plan and staff induction. Mark entrance and exit points.
Objective: To prevent hydrological impacts caused by sewage and wastewater discharge.				
5.3	**Refer to section 8**			
Objective: To prevent surface water contamination.				
5.4	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.	ECO & Contractor	Ongoing	Identify and prepare mixing sites.
5.5	All hydrocarbons and chemicals must be stored, handled and dispensed so as not to contaminate sites in any way.	ECO, Maintenance	Ongoing	Designated bunded area. Use of drip trays
6	**Visual environment**			

Objective: To limit the negative visual impact of the project.				
6.1	As far as possible, no new roads or tracks should be developed.	All	Ongoing	Environmental awareness plan and staff induction.
7	**Waste management**			
Objective: Prevent pollution caused by improper waste management.				
7.1	Littering is not permitted and all waste must be placed in appropriate receptacles.	All	Ongoing	Environmental awareness plan and staff induction
7.2	The contractor will provide a suitable, animal proof receptacle to contain all, daily refuse. Refuse will be disposed of regularly	Contractor & ECO	Ongoing	Suitable receptacles

	at a location adjacent to the current waste pit in an environmentally appropriate manner.			
7.2	All building rubble is to be consolidated in a suitable location, removed from the area and disposed of in a suitable and legal location in an environmentally acceptable manner.	Contractor & ECO	Ongoing	ECO to identify suitable manner.
7.3	Used oils and other workshop waste to be stored in suitable receptacles and dispatched to appropriate waste facility.	Contractor & ECO	Ongoing	ECO to identify suitable facility.
8	**Sewage and waste water management**			
Objective: To prevent ecological impacts caused by sewage and wastewater discharge.				
8.2	Fat/grease traps installed at kitchen outlets will be installed.	Maintenance	Ongoing	
8.3	Adequate temporary ablutions to be provided for workers.	Contractor	Ongoing	
8.4	The ablutions must be regularly services and the sewage disposed of at a suitable designated location and in an environmentally appropriate manner.	Contractor	Ongoing	
Objective: To prevent unpleasant odours from being generated by sewage and wastewater discharge.				
8.5	Should unpleasant odours be identified, the source of the odours must be identified and the remedied within 1 week of identification.	Maintenance	Within 1 week of identification	
9	**Machinery / vehicles on site**			
Objective: Minimise the impacts associated with machinery and vehicle use				
9.1	Efficient, modern, silenced generator only.	Management	Immediate	

9.2	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.	Management	Immediate	
9.3	Drip trays to be place under any leak that is identified. Vehicles and machinery with fuel, oil or hydraulic fluid leaks must be removed from service for repair. No servicing or major repair of vehicles and machinery may take place on-site.	ECO & Contractor	As required	Drip trays
9.4	The contractor shall ensure that all vehicles remain on designated roads at all times. No off-road driving under any circumstances.	All	Ongoing	Environmental awareness plan and staff induction.
9.5	All vehicles used in the area (i.e., those of the Wilderness and contractors) must be operated with low tyre-pressure to minimise negative impacts on tracks and roads.	All	Ongoing	Environmental awareness plan and staff induction. Wilderness must inform all contractors of this requirement.
10	**Construction staff on site**			
Objective: To prevent the staff of site from damaging the local environment.				
10.1	The contractor and his employees shall adhere to any rules and regulations that the MET may prescribe at all times as well as the management measures presented in this document.	All	Ongoing	Environmental awareness plan and staff induction.
10.2	The contractor must ensure the proper supervision of employees at all times and their abidance to any rules and regulations.	Contractor	Ongoing	Environmental awareness plan and staff induction.
10.3	Access to the site must be restricted to contractor's employees only.	Contractor	Ongoing	Environmental awareness plan and staff induction.

10.4	All employees must be educated to the need to refrain from the destruction of plants and animals, as well as from indiscriminate defecation, waste disposal and or pollution of soil and water resources.	Contractor & ECO	Ongoing	Environmental awareness plan and staff induction.
Objective: To minimise the risk of fire.				
10.5	**Refer to section 12**			
11	**Fire**			
Objective: To minimise the risk of fire.				

11.1	The proponent must take all precautions to prevent the outbreak and spreading of fires and is to ensure all employees are aware of the necessary precautions.	ECO & all	Ongoing	
11.2	Gas canisters to be housed in Bureau of Standards approved structures.	Management	Ongoing	
11.3	Fire extinguishers to be strategically located throughout developed area.	Management & ECO	Ongoing	
13	**Cultural resources**			
Objective: Protect the historic sites				
13.1	No construction activities may take place within 100 m of the historic sites.	Management & ECO	Ongoing	Demarcate historic sites.
13.2	In the event of chance finding of any archaeological artefacts during construction, construction activities at that site must be suspended, the area to be fenced and a competent archaeologist contacted immediately	Management & ECO	Ongoing	Demarcate historic sites.
14	**EMP implementation**			
Objective: To ensure effective implementation of the EMP				
14.1	Develop an environmental awareness plan and undertake staff induction.	Environmental Manager	Immediate & ongoing	All contractors to be informed of EMP requirements.

				Environmental induction of all personnel accessing site
14.2	Monthly internal audits of EMP compliance	ECO & Environmental Manager	Immediate	Performance assessment requirements are addressed in section 4

14.3	An Environmental Control Officer (ECO) should be appointed to oversee developments and ensure compliance with the EMP.	Management	Immediate	ECO appointment (to oversee all Wilderness sites)
14.4	Penalties should be determined for violations of the EMP, including off-site impacts and trees or features that may be defaced or destroyed. Irreplaceable and/or critical features must be clearly marked.	Management	Immediate & ongoing	Induction & awareness training. Develop and implement penalty system.

2.9 Operation

The camp is currently in its operational phase, the environmental guidelines as set tout below from part of the day to day operations.

Table 4: Operational environmental guidelines table

Ref.	Objective	Responsibility	Schedule	Requirements for Implementation
1	**Soils, land capability and land use**			
Objective: To prevent the unnecessary compaction of, and damage to, soils.				
1.1	Motorized access must be limited to existing roads. No new roads or tracks should be developed.	Management & ECO	Ongoing	Environmental awareness plan and induction.
1.2	No off-road driving under any circumstances.	Management & ECO	Ongoing	Environmental awareness plan and induction.
1.3	All vehicle parking to take place in designated parking areas	Management	Ongoing	
Objective: To prevent soil erosion.				
1.4	Implement measures to disperse concentrated water flow and repair any erosion that has resulted.	Management & ECO	Ongoing	

Objective: To prevent soil contamination.

1.5	Oil pans to be used in vehicle parking areas (under vehicles that leak) Fuel dispensing to take place over impervious, bunded surface or drip trays. Vehicle servicing to take place impervious, bunded surfaces or over oil pans	Management & ECO	Immediate & ongoing	Oil pans.
1.6	Used oil to be stored in appropriate receptacle and despatched to appropriate waste facility.	Management & ECO	Immediate & ongoing	Identify appropriate waste facility.
1.7	Fuel storage in appropriate receptacle and in bunded areas. Fuel dispensing to take place over bunded areas Generator placed in bunded areas.	Management & ECO	Immediate & ongoing	Bunded areas
Objective: To prevent ecological impacts caused by sewage and wastewater discharge.				
1.8	**Refer to section 10**			
2	**Fauna**			
Objective: To minimise the impacts associated with employee and guest interaction with wildlife.				
2.1	Guests and employees should still be sensitised to the need to be aware of wildlife and of the appropriate way to interact with wildlife (in accordance with the Wilderness Protocol).	Management & guides	Ongoing	Conservation protocols
2.2	Trained guides to escort guests at all times, no self-drive or walking other than in accepted designated areas	Guides	Ongoing	

2.3	Adherence to rhino viewing protocols (developed by the Wilderness and Save the Rhino Trust) is essential.	Guides & ECO	Ongoing	Rhino viewing protocols
2.4	Elephant viewing must be conducted according to recognised or approved conservation protocols (Wilderness Protocol).	Guides & ECO	Ongoing	Conservation protocols
2.5	The Concessionaire 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.	Management	Ongoing	Environmental awareness plan and induction.
2.6	No game or other natural resource and/or occurrences may be disturbed, violated, mutilated, destroyed, killed or removed.	All	Ongoing	
Objective: To ensure that no protected species are affected by the operational activities.				
2.7	Avoid any sites with nests, burrows, dens etc. of protected species.	ECO	Immediate	Identity sites with nests, burrows, dens etc. of protected species.
Objective: To prevent ecological impacts caused by sewage and wastewater discharge.				
2.8	**Refer to section 10**			
Objective: To prevent ecological impacts caused by fire.				
2.9	**Refer to section 14**			
Objective: To prevent staff from poaching.				
2.10	**Refer to section 13**			
2.11	The greater area around the site should be regularly searched for snares.	ECO	Ongoing	

3	**Flora**			
Objective: To ensure that no protected species are affected by the operational activities.				
3.1	No Welwitschias may be disturbed by the operational activities. No Lichen fields may be disturbed by the operational activities	ECO	Immediate	Monitor for protected, rare or endangered plant species. Conservation/recovery plan.

	No protected plants may be damaged or removed.			
Objective: To prevent unnecessary damage to vegetation.				
3.2	Ensure that only permitted access roads and paths are used by employees, guest and vehicles at all times.	All	Ongoing	Environmental awareness plan and induction.
3.3	No off-road driving under any circumstances.	All	Ongoing	Environmental awareness plan and induction.
3.4	The Concessionaire 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.	Management	Ongoing	
3.5	No plant life or other natural resource and/or occurrences may be disturbed, violated, mutilated, destroyed, killed or removed.	All	Ongoing	
3.6	No firewood collection; firewood to be bought in from reputable source.	All	Ongoing	Environmental awareness plan and induction.
Objective: To prevent the spread of alien invasive vegetation.				
3.7	The area will be kept free of any alien vegetation that has or may inadvertently be introduced.	ECO	Ongoing	Monitor for alien vegetation. Remove alien vegetation and monitor for regrowth
Objective: To prevent ecological impacts caused by sewage and wastewater discharge.				
3.8	**Refer to section 10**			
Objective: To prevent ecological impacts caused by fire.				
3.9	**Refer to section 14**			
Objective: To prevent employees and guests from damaging the local environment.				
3.10	**Refer to section 13**			
4	**Surface water resources**			
Objective: To prevent the disruption of local hydrology				

4.1	Rivers are to be entered and exited only at existing points. No off-road driving is permitted once the river is exited and, no driving in any seasonally inundated areas when flooded or moist.	ECO & guides	Immediate and ongoing	Identify and mark entry and exit points.
Objective: To prevent hydrological impacts caused by sewage and wastewater discharge.				
4.2	**Refer to section 10**			
Objective: To prevent surface water contamination.				
4.3	The use of biodegradable and eco-friendly soaps and detergents should be enforced in kitchens.	Management	Ongoing	
4.4	Oil pans to be used in vehicle parking areas (under vehicles that leak) Fuel dispensing to take place over impervious, bunded surface or drip trays. Vehicle servicing to take place impervious, bunded surfaces or over oil pans	ECO & management	Ongoing	

4.5	Used oil to be stored in appropriate receptacle and despatched to appropriate waste facility.	ECO	Ongoing	Identify appropriate waste facility.
5	**Groundwater resources**			
Objective: Water conservation				
5.1	Water conservation must be actively promoted. Guests to be informed of water scarcity and encouraged to participate in water conservation.	Management & ECO	Ongoing	
5.2	Measure and record water use (compare with targets for water use).	Management & ECO	Ongoing	Set water use benchmarks.
	Repair any leak in the water reticulation system within 24hrs of detection	Maintenance	As required	
Objective: Prevent water contamination				

5.3	The use of biodegradable and eco-friendly soaps and detergents should be encouraged.	ECO	Ongoing	
5.4	Oil pans to be used in vehicle parking areas (under vehicles that leak) Fuel dispensing to take place over impervious, bunded surface or drip trays. Vehicle servicing to take place impervious, bunded surfaces or over oil pans	ECO & management	Ongoing	
5.5	Used oil to be stored in despatched to appropriate waste facility.	ECO	Ongoing	Identify appropriate waste facility.
6	**Air quality**			
Objective: Prevent air pollution				
6.1	Burning will only be allowed for limited amounts of packaging.	Management	Immediate	

7	**Noise**			
Objective: To limit noise generation.				
7.1	Natural quiet should be achieved wherever possible (especially away from main routes), thus avoiding use of generators at lodges (generators will only be used as a backup).	Management	Ongoing	
8	**Visual environment**			
Objective: To limit the negative visual impact of the project.				
8.1	Motorised accessibility should be limited to existing roads and tracks.	All	Ongoing	Environmental awareness plan and induction.
8.2	Only subdued or directional lighting may be used.	Management	Ongoing	
9	**Waste management**			
Objective: Prevent pollution caused by improper waste management.				
9.1	All physical waste should be managed and either recycled or appropriately disposed.	Management & ECO	Ongoing	Waste management site.

9.2	No waste of any sort is to be buried in riverbeds.	Management & ECO	Ongoing	Environmental awareness plan and induction.
9.3	Appropriate, waste bins must be provided at the point of source. All waste bins will be covered and secured to be animal proof.	Management & ECO	Ongoing	Animal-proof containers.
9.4	A central waste collection depot is required. 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.	Management & ECO	Ongoing	Designated waste collection point.

9.5	If possible and appropriate, glass will be stored on site in suitable containers until there is sufficient to be transported for recycling.	Management	Ongoing	Suitable separation facility.
9.6	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.	Management	Ongoing	Suitable separation facility.
9.7	If possible and appropriate, plastics will be stored on site in suitable containers until there is sufficient to be transported for recycling.	Management	Ongoing	Suitable separation facility.
9.8	If possible and appropriate, paper and cardboard will be stored on site in suitable containers until there is sufficient to be transported for recycling.	Management	Ongoing	Suitable separation facility.
9.9	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.	Management & ECO	Ongoing	Identify permitted waste site.
9.10	Limited amounts of packaging may be burned in designated pit.	Management & ECO	Ongoing	
9.11	Organic waste may be buried in suitably designed “animal –proof” deep pits.	ECO	Ongoing	Ensure that the pit is “animal proof”.
9.12	Used oil to be despatched to appropriate waste facility.	ECO	Ongoing	Identify appropriate waste facility.

10	**Sewage and waste water management**			
Objective: To prevent ecological impacts caused by sewage and wastewater discharge.				
10.1	Fat/grease traps at kitchen outlets to be maintained.	Maintenance	Immediate	
10.2	Septic tanks and soak-aways to be maintained.	Maintenance	Ongoing	
Objective: To prevent unpleasant odours from being generated by sewage and wastewater discharge.				
10.3	Qualitative monitoring of odours will take place.	All staff on site	Ongoing	
10.4	Should unpleasant odours be identified, the source of the odours must be identified and the remedied within 1 week of identification.	Maintenance	Ongoing	
11	**Energy**			
Objective: To maximise energy efficiency				
11.1	Energy use to be metered and monitored in order to ensure that efficiency is striven for.	Management & ECO	Ongoing	
11.2	Energy saving measures to be continually implemented (lights, etc.)	Management & ECO	Ongoing	
11.4	Generator to only be used as a backup.	Management	Ongoing	
12	**Machinery / vehicles on site**			
Objective: To limit the impacts of machinery and vehicle use.				
12.1	No off-road driving under any circumstances.	All	Ongoing	Environmental awareness plan and induction.
12.2	An efficient, modern and silenced generator may only be utilised.	Management	Immediate & ongoing	
12.3	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.	Management	Ongoing	
12.4	All vehicles used must be operated with low tyre-pressure to minimise negative impacts on tracks and roads.	Management	Immediate & ongoing	Environmental awareness plan and induction.

				Wilderness must inform all visitors of this requirement.

12.5	To limit track damage all vehicles used will be four-wheel-drive and will be of standard width.	All	Ongoing	Environmental awareness plan and induction.
12.6	Lichen fields and plains with sensitive, compactable soils should be avoided (once compacted by a vehicle, tracks remain for years due to the nature of the soils).	All	Ongoing	Environmental awareness plan and induction.
12.7	Oil pans to be used in vehicle parking areas (under vehicles that leak) Fuel dispensing to take place over impervious, bunded surface or drip trays. Vehicle servicing to take place impervious, bunded surfaces or over oil pans	Management & ECO	Immediate and ongoing	
13	**Employees and guests on site**			
Objective: To minimise the impacts associated with employee and guest interaction with wildlife.				
13.1	Guests and employees should still be sensitised to the need to be aware of wildlife and of the appropriate way to interact with wildlife.	Management	Ongoing	Environmental awareness plan and induction.
13.2	Trained guides to escort guests at all times, no self-drive or walking other than in accepted designated areas.	Guides	Ongoing	
13.3	Adherence to any special requirements including adherence to accepted rhino-viewing protocols (Wilderness Protocols).	Guides	Ongoing	
Objective: To prevent the staff and guests from damaging the local environment.				
13.4	No picking of plants, collection of firewood or any other damage permitted.	All	Ongoing	

13.5	The staff and guests shall adhere to any rules and regulations that the MET may prescribe at all times as well as the management measures included in this document.	All	Ongoing	Environmental awareness plan and induction. Signage.
13.6	The site management must ensure the proper supervision of employees and guests at all times and their abidance to any rules and regulations.	Management	Ongoing	Environmental awareness plan and induction.
13.7	Access to the site must be restricted to employees and guests only.	Management	Ongoing	Environmental awareness plan and induction.
13.8	All employees must be educated to the need to refrain from the destruction of plants and animals, as well as from indiscriminate defecation, waste disposal and or pollution of soil and water resources.	Management	Ongoing	Environmental awareness plan and induction.
Objective: To minimise the risk of fire.				
13.9	**Refer to section 14**			
Objective: To ensure staff and guest safety.				
13.10	The likelihood of flash floods is very high during the rainy season. Storms in upper catchment areas may not be observed from the mid-lower reaches of rivers, so use of rivers should be avoided during rainy periods.	ECO & Management	Ongoing	
14	**Fire**			
Objective: To minimise the risk of fire.				
14.1	The proponent must take all precautions to prevent the outbreak and spreading of fires and is to ensure all employees are aware of the necessary precautions.	Management	Ongoing	Emergency plan

14.2	Gas canisters to be housed in Bureau of Standards approved structures.	Management	Ongoing	
14.3	Fire extinguishers to be strategically located throughout developed area.	Management	Ongoing	
15	**Cultural resources**			
Objective: Protect the historic sites				
15.1	Guests must be prevented from damaging these historical sites. Warning signs must be erected.	ECO & Management	Ongoing	Demarcate site.
16.	**EMP implementation**			
Objective: To ensure effective implementation of the EMP				
16.1	B-annual internal audits of EMP compliance	ECO	Immediate	Performance assessment requirements are addressed in section 4
16.2	Independent expert to conduct annual compliance audit.	Independent Consultant	Annual	Performance assessment requirements are addressed in section 4
16.3	Submission of external annual report to environmental authorities	ECO	Annual	Performance assessment requirements are addressed in section 4
16.5	Penalties should be determined for violations of the EMP, including off-site impacts and trees or features that may be defaced or destroyed. Irreplaceable and/or critical features must be clearly marked.	Management	Immediate & ongoing	Induction & awareness training. Develop and implement penalty system.

2.10 Closure

The environmental guidelines set out below will form part of the planning if the camp is closed at some future date.

Table 5: Closure environmental guidelines

Ref.	Objective	Responsibility	Schedule	Requirements for Implementation
1	**Soils, land capability and land use**			
Objective: To ensure the restoration of land capability after closure.				
1.1	Motorised access should be limited to existing roads or tracks and disturbance areas.	All	Closure	Induction & awareness training.
1.2	All structures will be completely removed to the satisfaction of MET.	ECO & Management	Closure	
1.3	All introduced materials are to be removed from the site and appropriately disposed.			
2	**Flora**			
Objective: Restore site to pre-construction state				
2.1	The site will be suitably re-vegetated or if this is not appropriate then it will be covered with scrub to ensure that soil erosion does not result and to provide protection for reseeding vegetation.	ECO & Management	Closure	
2.2	Follow ups will be done to ensure that alien or invasive plants and weeds have not flourished.	ECO	2 years following closure	
3	**Visual environment**			
Objective: Restore visual quality to original state				
3.1	All structures will be completely removed to the satisfaction of MET.	ECO & Management	Closure	
3.2	Disturbed sites should be shaped to fit with the surrounding topography	ECO & Management	Closure	

3.3	The site will be suitably re-vegetated or if this is not appropriate then it will be covered with scrub to ensure that soil erosion does not result and to provide protection for reseeding vegetation.	ECO & Management	Closure	
4	**Waste management**			
Objective: To ensure that no waste remains on site after closure.				
4.1	All waste will be removed from site and disposed of at a permitted waste site.	ECO	Closure	
4.2	All waste pits will be suitably covered.	ECO	Closure	
4.3	A site assessment will be carried out after closure to ensure that no waste remains.	ECO	Post-closure	
5	**Sewage and waste water management**			
Objective: To ensure that no sewage or wastewater contaminants remain after closure.				
5.1	In the case of sewage systems, septic tanks will need to be drained and removed and the area (including the soak away) will need to be filled, preferably with rubble or with fill from an environmentally acceptable source.	Management	Closure	

2.11 Rehabilitation and Closure Objectives

The four primary closure objectives are:

1. protect public health and safety, as well as faunal health and safety;
2. alleviate or eliminate environmental damage;
3. return the site to its original condition; and,
4. To the extent achievable, provide for sustainability of social and economic benefits resulting from development and operations.

The defined closure priority is therefore to return the land as closely as possible to the pre-construction condition as possible. All structures will be completely removed to the satisfaction of MET.

The site will be suitably re-vegetated or if this is not appropriate then it will be covered with scrub to ensure that soil erosion does not result and to provide protection for reseeding vegetation.

A site assessment will be carried out after closure to ensure that no structures remain and that the site rehabilitation has been fully achieved.

2.12 Guideline tables

Table 6: Disposal of Waste

Items to be considered		Intentions
General	**Specific**	
Procedures	General	An integrated waste management plan is required. This will cover the storage, handling and transportation of waste.
	Waste minimization and recycling	Opportunities to minimize waste production will be identified and taken where possible. Where possible, waste will be recycled.
Waste disposal facilities	Collection points	A central waste collection point will be established on site. Waste will be separated in order to allow for recycling.
	On site waste disposal facilities	No waste disposal facility will be developed
	Off-site waste disposal facilities	Waste will be disposed of at appropriate permitted waste disposal facilities.
Waste transport	Wilderness Safaris	Waste transport will be carried out according to local authority standards, will undertake the waste transport.
Disposal of different types of waste	Hazardous wastes	Hazardous waste will be collected by a contractor with the relevant permits and will be removed to a permitted hazardous waste disposal facility. Hazardous waste may only be stored on site, in a fenced off area with access control, for up to 90 days.
	Non-hazardous waste	Waste will be collected and disposed of at an approved and licensed waste disposal site.
	Any soil polluted by a spill of chemicals	If remediation of the soil in situ is not possible, the soils will be classified as hazardous waste s and will be disposed of at an appropriate permitted waste facility.

Items to be considered		Intentions
General	**Specific**	
	Scrap metal	Care will be taken to ensure that scrap metal does not become polluted or mixed with any other waste. The scrap metal will be collected in a designated area for scrap metal (scrap yard). It will be sold to scrap dealers.
	Oil	Oil will be collected in suitable containers at designated collection points. The collection points will be bunded and underlain by impervious materials to ensure that any spills are contained. Notices will be erected at each waste oil point giving instructions on the procedure for waste oil discharge and collection. An approved subcontractor will remove oil from site.
	Waste separation	Waste will be separated into wood, paper and cardboard, tins and metal, glass, plastic, organic and other. All waste that cannot be recycled or sold will be disposed of at a permitted waste site.
	Bins	Storage in animal-proof containers prior to removal. All waste bins will be covered and secured. If a central waste collection depot is needed, 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.
	Burning	Limited amounts of packaging may be burned in designated pits.
	Organic waste	Organic waste may be buried in suitably designed “animal –proof” deep pits.
	River bed	No waste of any sort is to be buried in riverbeds.

Table 7: Storage of hazardous chemical substances

Product	Storage

Oils	Mild steel or stainless-steel drums. The containers will be stored in bunded facilities that will have the capacity contain all potential spills. Bunded areas must be capable of containing 110% of the capacity of maximum capacity of the storage containers within the storage areas.
Diesoline	Diesoline will be stored in tanks within bunded areas with smooth, impermeable surfaces. Bunded areas must be capable of containing 110% of the capacity of maximum capacity of the storage containers within the storage areas. Diesoline may be stored in externally clean drums. These drums may only be stored on smooth, impervious surfaces in facilities that will contain spills.
Herbicides & pesticides	These substances will be stored under lock and key and away from food and water sources. Only pyrethroid or similar organic-based pesticides to be used if absolutely essential.
Other: **Paint, thinners, varnish, turpentine, detergents etc.**	These substances must be stored in clearly marked containers. These containers must be sealable and must not leak. These may only be stored within the workshops and storerooms.

Table 8: Handling of hazardous chemical substances

Product	Handling
Oils	All oils will be handled according to their specific Material Safety Data Sheets.
Diesoline	Diesel will be handled according to its Material Safety Data Sheet. Where possible, diesel transferrals must take place in the designated refuelling areas on smooth, impervious surfaces. Drip trays will be positioned at each machine whilst being refilled. Drip trays will be drained into suitable containers. Smaller plant and tyre wheeled equipment will also re-fuel at the main storage areas.
Herbicides & pesticides	Herbicides, pesticides and other potentially poisonous substances will be used according to the manufacturer's specifications. Care will be taken to avoid spills and unnecessary contact with any part of the environment for which they were not intended e.g., soil, water bodies and vegetation or animals. Mixed herbicide/ pesticide or other poison shall be kept in clearly marked, closed containers and decanting will occur over a drip tray to prevent spillage, this will not take place within forty meters of any watercourse.

Other: **Paint, thinners, varnish, turpentine, detergents etc.**	These substances must be used in accordance with their respective MSDS's.

Table 9: Disposal of hazardous chemical substances

Product	Disposal
Hydrocarbons	Old/used hydrocarbons will be stored in drums and weatherproof waste collection containers. Receipts /proof of their final disposal must be received and kept on file.
Other: **Paint, thinners, varnish, turpentine, detergents etc.**	These substances must be used in accordance with their respective MSDS's.

3 Environmental Monitoring

3.1 Water Monitoring Programme

The aim of the water monitoring programme is to assess the consumption and impact of water use on groundwater quality and availability. Wilderness personnel will be trained to carry out the monitoring programme.

Water monitoring at the lodge and Staff Village is managed by Wilderness and is based on the following protocol:

- Surface water:
    - Point source discharge must be monitored monthly should there be surface water accumulation. This is unlikely as all sewage water and waste water will collect in dual-chambered septic tanks with herring-bone soak-away systems as well as sub-surface multi-chambered fat traps at guest and staff village kitchens. All point source water discharges will therefore be underground. The depth of the groundwater below the surface limits the possibility of groundwater contamination through percolation.
- Groundwater:
    - Groundwater usage must be metered and recorded monthly in order to monitor and manage water consumption. The water use must be reported in the monthly Environmental Reports.

- Groundwater levels at the various boreholes utilised must also be monitored on a monthly basis and recorded in the monthly Environmental Reports.
- Groundwater quality must be monitored at the boreholes utilised for abstraction as well as any boreholes located within 1km downstream of the camp.

- Parameters:
  - All point source water discharges must comply with the recommended maximum limits for livestock watering in accordance with the South African Guidelines for Livestock Watering. These limits are recognised as a minimum requirement by the Namibian Ministry of Agriculture, Water and Forestry.
  - Groundwater quality must be analysed for and compared to the parameters and limits set in the South African Guidelines for Livestock Watering.

4 Environmental Performance Assessment

The water quality monitoring data must be included in the performance assessment reports. The programme is to be implemented to assess the level of compliance with environmental legislative requirements and the commitments made in the EMP. Environmental auditing is aimed at ensuring continual improvement in environmental performance.

Table 10: Environmental Performance Assessment Programme for Kulala Adventurer Camp, Staff Village and Airstrip

Frequency of Monitoring	Performance Assessment	Responsibility	Reporting Requirements
CONSTRUCTION			
Monthly	Monthly internal audits of EMP compliance	Environmental Control Officer	Internal report submitted to managers for discussion.
OPERATION			
Monthly	Bi-annual internal audits of EMP compliance	Environmental Manager	Internal report submitted to managers for discussion.

5 Environmental awareness

5.1 Job Specific Environmental Awareness Training

The purpose of the 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 the camp, Staff Village and Airstrip received training regarding the requirements of this EMP.

6 Complaints Register

A complaints register is to be kept at an agreed point. Feedback is to be given to the complainant as to how the complaint is being addressed within 21 days of the complaint being lodged.

7 Environmental Emergency Procedures

7.1 Sewage or Waste Water Spills

Should leaks in the sewerage system or waste water system be detected, then 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 in the case of large amount of spillage that is contained, could be removed, etc.
- The leakage must be stopped and reason for spill must be rectified.

7.2 Hydrocarbon or Chemical Spills

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

The following actions must be taken:

- A spill kit will be placed on site.
- Procedure dealing with various types of spills will be drawn up.

- Contact the management in the event of a spill.
- The spillage should be contained (bund earth walls) by all means and the source turned off if possible.
- The management should organise a team to assist with the clean-up.
- Demarcate the spilled area where practicable.
- Move the spill kits to the area.
- Scoop up the spilled substance along with contaminated soil or any absorbent material using the spill kit shovel. Place the scooped up substance into plastic bags.
- The waste bags must be marked as hazardous waste and disposed of as hazardous waste.
- The leakage must be stopped and reason for spill must be rectified.

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 legal document, which commits the applicant to comply with all management measure, monitoring programmes and other plans as presented herein.

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