Operational Environmental Management Plan (EMP) for the existing Popa Falls Resort in the Kavango East Region

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EMP

Final

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Author	Victoria Shikwaya	Whitwayn	November 2023
Document Reviewer	Magnus Van Rooyen	M. L 4	November 2023

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1 OVERVIEW

1.1 Project Background

Namibia Wildlife Resorts (NWR) is a state-owned enterprise, mandated to run the tourism facilities within the protected areas of Namibia. NWR has several operations across the country which are owned and managed by NWR. The majority of the facilities were constructed prior to the commencement of the Environmental Management Act (EMA) (7 of 2007). As such, Environmental Impact Assessments (EIA) were never conducted for these facilities. However, the facilities are still required to comply with the provisions of the EMA and its regulations. It is therefore required that Environmental Management Plans (EMPs) be developed and implemented for the existing facilities.

1.2 Popa Falls Resort

Popa Falls Resort is located in the north eastern conner of Namibia. The resort is located on the Kavango River within the Popa Falls Game Park. The locality of Popa Falls Resort is depicted in **Figure 1-1** below.



Figure 1-1: Locality map of Popa Falls Resort

The resort is located on the Kavango River and the falls are accessible by foot. The falls in fact are not falls as one may expect from its name. Instead, they are a series of cascades created naturally over time by the running river, which splits the rock and forms a vast network of river channels. There are outdoor activities offered such as boat cruise and game drives. In terms of accommodation facilities, the resort includes 10 River Carbins, 6 River Chalets, 4 Luxury Units and 10 Campsites.

1.2.1 Engineering Services

1.2.1.1 Waste Disposal

The general waste at Popa Falls Resort is collected in general waste bins onsite as shown in **Figure 1-2** below. The waste is then loaded on a truck and disposed of at the Divundu Village Council landfill site.



Figure 1-2: General waste collection on site

1.2.1.2 Water

Popa Falls Resort make use of the Kavango River water. The water is collected and treated at the treatment facility on site. It is stored in water tanks on site and distributed within the facility.



Figure 1-3: Water Engineering services

1.2.1.3 Electricity

Popa Falls Resort is connected to the Divundu Village Council electricity reticulation system which is supplied by NORED.

1.2.1.4 Sewer

Popa Falls Resort has flush toilets. **Figure 1-4** below depicts the ablution facilities available at the resort.



Figure 1-4: Ablution facilities on site

1.2.1.5 Access

Access to Popa Falls Resort is gained through C48 road from Divundu.

1.3 Purpose of the EMP

An Environmental Management Plan (EMP) is defined as:

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

An EMP is one of the most important outputs of the EIA process as it synthesises all the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. It provides a link between the impacts identified in the Environmental Impact Assessment (EIA) Process and the required environmental management on the ground during

project implementation and operation. It is important to note that an EMP is a legally binding document and a person who contravenes the provisions of this EMP may face imprisonment and/or a fine. This EMP is a living document and should be amended to adapt to project changes and/or environmental conditions and feedback from compliance monitoring.

The purpose of this document is therefore to guide environmental management throughout the following life-cycle stages of the proposed development including operation, and decommissioning.

The following phases are addressed in this EMP:

- Operation the period during which the facilities are operational.
- **Decommissioning** Should the development be closed; this phase will be implemented.

1.4 Environmental Assessment Practitioner (EAP)

GCS Water Environmental Engineering Namibia (Pty) Ltd ("GCS" hereafter) has been appointed by Namibia Wildlife Resorts (NWR) as independent environmental consultants to prepare the required Environmental Management Plan (EMP) for the proposed development. The EMP is to be submitted with the supporting documents as part of the application for an Environmental Clearance Certificate (ECC) to the Environmental Commissioner at the Department of Environmental Affairs (DEA) of the Ministry of Environment, Forestry and Tourism (MEFT). The EMP will also be used by Contractors as well as the Proponent in guiding them during the operations to ensure that impacts on the environment are limited or avoided altogether.

1.5 Legal Requirements

The contents of the EMP must meet the requirements of Section 8 (j) of the EIA Regulations. The EMP must address the potential environmental impacts of the activity on the environment throughout the project life cycle. It must also include a system for assessment of the effectiveness of monitoring and management arrangements after implementation.

NWR therefore has the responsibility to ensure that the proposed activity conforms to the principles of EMA and must ensure that any contractors appointed by them also comply with such principles.

1.5.1 The Environmental Management Act (Act No 7 of 2007)

The Environmental Management Act (EMA) and its Environmental Impact Assessment (EIA) Regulations (GG No. 4878 GN No. 30) applies to this project. Under the EMA the subject activities (envisaged as part of this project) are listed activities that may not be undertaken without an Environmental Clearance Certificate (ECC):

- 2.3 The import, processing, use and recycling, temporary storage, transit or export of waste.
- 6 The construction of resorts, lodges, hotels or other tourism and hospitality facilities.
- 8.1 The abstraction of ground or surface water for industrial or commercial purposes.
- 8.3 Any water abstraction from a river that forms an international boundary.
- 11.2 Construction of cemeteries, camping, leisure and recreation sites.

In light of the above, an ECC is required for the activities undertaken on the existing facility. Furthermore **Table 1-1** below lists the relevant Namibian legislation that is applicable to the activities, and which must be complied with during the project life-cycle.

Table 1-1: Applicable and relevant Namibian legislations and guidelines for the EA process

process			
Legislation	Permit/Approval/Requirement	Contact Details	
Environmental	Amendments (required every 3 years) to	Mr Damian Nchindo	
Management Act 7 of	this EMP will require an amendment of the	Department of Environmental	
2007	ECC for these developments.	Affairs, Ministry of	
	Activities listed in Government Notice	Environment, Forestry and	
Environmental Impact	(GN) No. 29 of GG No. 4878 require an	Tourism	
Assessment (EIA)	ECC.	Tel: 061 284 2701	
Regulations (EIAR)		160. 001 201 2701	
(GG No. 4878)			
(11111111111111111111111111111111111111			
Water Act 54 of 1956	Prohibits the pollution of underground	Mr Witbooi (Department of	
	and surface water bodies (S23 (1)).	Water Affairs):	
	Liability of clean-up costs after	Tel: (061) 208 7226	
	closure/abandonment of an activity (S23		
	(2)).		
Water Resources	The act provides for the management,		
Management Act	protection, development, use and		
No.11 of 2013	conservation of water resources; and		
	provides for the regulation and		
	monitoring of water services and to		
	provide for incidental matters. The		
	objects of this Act are to:		

Legislation	Permit/Approval/Requirement	Contact Details
	Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).	
Forestry Act 12 of 2001	The Act provides for the management and use of forests and related products / resources. It offers protection to any living tree, bush or shrub growing within 100 metres of a river, stream or watercourse on land that is not a surveyed erven of a local authority area. In such instances, a licence would be required to cut and remove any such vegetation. These provisions are only guidelines.	If there are trees within the proposed footprint of the project area that need to be removed, the proponent should notify the local Forestry Department of the number and/or type of trees to be removed to allow exploration activities and apply for permit to remove protected tree species.
National Heritage Act (27 of 2004)	Part V Section 46 of the Act prohibits removal, damage, alteration or excavation of heritage sites or remains. Section 48 ff sets out the procedure for application and granting of permits such as might be required in the event of damage to a protected site occurring as an inevitable result of development. Section 51 (3) sets out the requirements for impact assessment. Part VI Section 55 Paragraphs 3 and 4 require that any person who discovers an archaeological site should notify the National Heritage Council. Heritage sites or remains are defined in Part 1, Definitions 1, as "any remains of human habitation or occupation that are 50 or more years old found on or beneath the surface".	Ms. Erica Ndalikokule National Heritage Council of Namibia erica@nhc-nam.org

Legislation	Permit/Approval/Requirement	Contact Details
Namibia Tourism Board Act 21 of 2000	To establish the Namibia Tourism Board and to provide for its functions; to provide for the registration and grading of accommodation establishments; to provide for the declaration of any sector of the tourism industry as a regulated sector and for the registration of businesses falling within a regulated sector; and to provide for matters incidental thereto.	Namibia Tourism Board info@namibiatourism.com.na +264 61 290 6000
National Policy on Tourism 2008	The National Policy on Tourism for Namibia aims to provide a framework for the mobilisation of tourism resources to realise long term national goals defined in Vision 2030 and the more specific targets of the Third National Development Plan, namely, sustained economic growth, employment creation, reduced inequalities in income, gender as well as between the various regions, reduced poverty and the promotion of economic empowerment.	Department of Tourism and Gambling, Ministry of Environment, Forestry and Tourism +264 61 284 2178

1.6 Assumptions and Limitations

This EMP has been drafted with the acknowledgment of the following assumptions and limitations:

- This EMP has been drafted based on the scoping-level assessment of impacts conducted for the proposed development. No detailed specialist studies were included as part of the assessment; and
- The mitigation measures recommended in this EMP document are based on the risks/impacts which were identified based on the provided project description and site investigation. Should the scope of the project change, the risks will have to be reassessed and mitigation measures provided will be revised accordingly.

2 ROLES AND RESPONSIBILITIES

Namibia Wildlife Resorts (the Proponent) is ultimately responsible for the implementation of the EMP. The Proponent may delegate this responsibility at any time, as they deem necessary, from planning and design to operation and maintenance phase and decommissioning phase (if considered). The delegated responsibility for the effective implementation of this EMP will rest on the following key individuals which may be fulfilled by the same person:

- Proponent's Representative; and
- Environmental Control Officer.

2.1 Proponent's Representative

If the Proponent does not personally manage all aspects of the planning and design, operation and decommissioning activities, referred to in this EMP, they should assign this responsibility to a suitably qualified individual referred to in this plan as the Proponent's Representative (PR). The Proponent may decide to assign the role of a PR to one person for both phases. Alternatively, the Proponent may decide to assign a separate PR for each component i.e. operation, and decommissioning phase. The PR's responsibilities are included in **Table 2-1** below.

Table 2-1: Responsibilities assigned to the Proponent's Representative for the operation and decommissioning phases

Responsibility	Project Phase
Managing the implementation of this EMP and updating and	Throughout the lifetime of the
maintaining it when necessary	project
Management and monitoring of individuals and/or equipment	Throughout the lifetime of the
on-site in terms of compliance with this EMP	project
Issuing fines for contravening EMP provisions	Throughout the lifetime of the
	project

2.2 Environmental Control Officer

The Proponent should assign the responsibility of overseeing the implementation of the whole EMP on the ground during the life-cycle of the project to a designated person, referred to in this EMP as the Environmental Control Officer (ECO). The Proponent may decide to assign this role to one person for each project phase or may assign separate individual ECOs to oversee EMP implementation during each phase. The ECOs will have the following responsibilities:

 Management and facilitation of communication between the Proponent, PR and Interested and Affected Parties (I&APs) with regard to this EMP; Conducting site inspections (recommended minimum frequency is bi-annually) of all areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP);

- Advising the PR on the removal of person(s) and/or equipment not complying with the provisions of this EMP;
- Making recommendations to the PR with respect to the issuing of fines for contraventions of the EMP; and
- Undertaking an annual review of the EMP and recommending additions and/or changes to this document.

3 ENVIRONMENTAL MANAGEMENT PLAN ACTIONS

3.1 Key Potential environmental impacts to be managed

The following key potential impacts have been identified per project phase and are summarised in **Table 3-1** below.

Table 3-1: Summary of key potential environmental impacts per project phase

	Project Phase	Potential impacts identified in the EA
1	Operation	Health and safety, soil, surface and groundwater contamination, wildlife disturbance, dust, noise, environmental degradation, habitat destruction, waste generation, erosion, archaeological and social impacts.
2	Decommissioning	Health and safety, soil, surface and groundwater contamination, wildlife disturbance, dust, noise, environmental degradation, erosion, archaeological and social impacts.

The aim of the management actions of the EMP is to avoid potential impacts where possible. Where impacts cannot be avoided, measures are provided to reduce the significance of these impacts.

Management actions recommended to manage the potential impacts outlined above are presented in the following tables. The management actions were compiled based on the two project phases:

- Operation and maintenance phase management actions (during operation of the facility) (Table 3-2).
- Decommissioning phase (Table 3-3)

The responsible persons at NWR should assess these commitments in detail and should acknowledge their commitment to the specific management actions detailed in the table of the next subchapters.

3.2 Phase 1: Operational Phase Management Actions

The management actions for the operational phase during which the facility is operational will take place are listed in **Table 3-2**.

Table 3-2: Operation phase management actions

Environmental Feature	Impact	Management Actions	
EMP training	Lack of EMP awareness and the implications thereof	 Employees appointed for work (construction, maintenance etc.) must ensure that all personnel are aware of necessary health, safety, and environmental considerations applicable to their respective work. 	
Monitoring	EMP non-compliance	 The ECO or the Proponent/Proponents Representative should monitor the implementation of this EMP. The Proponents Representative should inspect the site at least on a weekly basis during operations. Bi-annual audits should be conducted of site activities by an external ECO. 	
Waste Management	Visual impact and soil contamination	 The site should always be kept tidy. All domestic and general waste produced daily should be disposed of correctly. No waste may be buried or burned. Waste containers (bins) should be emptied regularly and removed from site to the nearest municipal waste disposal site, and records of collection kept in a waste manifest. All recyclable waste needs to be taken to the nearest recycling depot. Adequate separate waste containers (bins) for hazardous and domestic / general waste must be provided on site. Staff should be sensitised to dispose of waste in a responsible manner and not to litter. Waste should be disposed of in accordance with the National Strategy on waste management in protected 	

Environmental Feature	Impact	Management Actions
Hazardous Waste	Soil and groundwater contamination	 Adequate separate waste containers (bins) for hazardous and domestic / general waste must be provided on site. Hazardous waste should be disposed of at a facility that is able to receive such waste and records of disposal should be kept. Maintenance and washing of vehicles and machinery on site should take place only at a designated workshop area that is on a bunded, impermeable surface.
Biodiversity	Loss of Biodiversity	 Trees and plants protected under the Forest Act No 12 of 2001 are not to be removed without a valid permit from the local Department of Forestry. Off-road driving (by vehicle or quad bike) should not be allowed on site. No alien vegetation should be introduced on site.
Noise	Disturbance to fauna	Noise restrictions should be in place on site to minimise disturbance.
Health and Safety	Health and Safety on site	 Ensure first aid training and environmental awareness training is provided to staff. Fire extinguisher training should be provided to a designated member of staff who will act a fire marshal during fire events. Any accidents/incidents occurring on site should be reported to MEFT and other relevant authority within 24 hours.
Employment	Recruitment	 Local employment and use of local businesses/suppliers should be encouraged to promote and improve the local economy as far as reassembly possible. Should the required services and/or goods not be available locally then look to other localities for these services/goods.
Ablution	Health and safety	 Separate ablutions should be available for men and women and should clearly be indicated as such. Sewage waste needs to be removed on a regular basis to the nearest approved sewage disposal site. Workers responsible for cleaning the toilets should be provided with latex gloves and masks.

Environmental Feature	Impact	Management Actions
Water Management	Water saving Groundwater contamination	 Water saving mechanisms should be implemented on site e.g., installation of water saving devices where practical. Should any hazardous material and wastes be produced these shall be managed in a safe and responsible manner so as to prevent contamination of soils, pollution of water and/or harm to people or animals as a result of the use of these materials. Hazardous and non-hazardous waste shall be stored
		and disposed of separately at all times.
Archaeology	Impacts	 Existing heritage or archaeological sites may not be disturbed by the operations at the facility. These should be demarcated to limit access to the sites. Should a heritage site or archaeological site be uncovered or discovered on site, a "chance find" procedure should be applied in the order they appear below: If operating machinery or equipment, stop work; Demarcate the site with danger tape; Determine GPS position if possible; Report findings to the construction foreman; Report findings, site location and actions taken to superintendent; Cease any works in immediate vicinity; Visit site and determine whether work can proceed without damage to findings; Determine and demarcate exclusion boundary; Site location and details to be added to the project's Geographic Information System (GIS) for field confirmation by archaeologist; Inspect site and confirm addition to project GIS; Advise the National Heritage Council of Namibia (NHCN) and request written permission to remove findings from work area; and Recovery, packaging, and labelling of findings for transfer to National Museum.

Environmental Feature	Impact	Management Actions	
Traffic	Traffic Impacts	Introduce speed limits and signage within the facility.	
		Roads to be clearly demarcated.	
		No off-road driving to be permitted on site.	

3.3 Phase 2: Rehabilitation and Decommissioning Management Actions

The table below (Table 3-3) presents the management action for decommissioning phase, should this take place.

Table 3-3: Decommissioning phase management actions

	Decommissioning phase management actions			
Environmental Feature	Impact	Management Actions		
Employment	Loss of employment	 The Proponent should inform the employees, of its intentions to close the facility, and the expected date of such. The Proponent should raise awareness of the possibilities for work within the tourism sector. 		
Rehabilitation	Soil and Groundwater contamination	 An inspection of the soil and groundwater contamination must be undertaken to determine the presence, nature, and extent of contamination on site. This will guide the level and kind of remediation to be undertaken on site. Prior to the infrastructure being destroyed, all residue products must be carefully removed for recycling or safe disposal. Solid materials must be used for filling. Only clean soil should be used for filling purposes. 		
Waste Management	Pollution	 Contaminated soil must be removed from site and disposed at a facility that is able to receive such waste. No waste may remain on site after the closure of the facility. Waste must be disposed of at an approved waste facility. Proof of disposal certificates must be available on request. 		

3.4 RECOMMENDATIONS FOR MONITORING

In order to prevent and minimize the above-mentioned environmental impacts, the following site monitoring measures need to be done:

- Monitor whether provisions as set out in the EMP has been complied with.
- Non-compliance is to be recorded and discussed at weekly site meetings and timeous remedial actions taken.
- Monitoring feedback is to be recorded using the attached checklist (Appendix B).

4 CONCLUSION

Based on the recommendation given in this EMP, GCS is confident that the activities, as described in **Chapter 1** of the EMP may be granted an Environmental Clearance Certificate, provided that the EMP is implemented and that all the legal requirements pertaining to this development are complied with.

APPENDIX A: CV OF EAP

APPENDIX B: GUIDELINE ECO ENVIRONMENTAL MONITORITING REPORT

Reported by:	Date:
-	

Environmental Feature	Impact	Management Actions	Observation	Remedial Action	Compliance (Yes/No)
EMP training	Lack of EMP awareness and the implications thereof	Employees appointed for work (construction, maintenance etc.) must ensure that all personnel are aware of necessary health, safety, and environmental considerations applicable to their respective work.			
Monitoring	EMP non- compliance	The ECO or the Proponent/Proponents Representative should monitor the implementation of this EMP.			
		The Proponents Representative should inspect the site at least on a weekly basis during operations.			
		Bi-annual audits should be conducted of site activities by an external ECO.			
		The site should always be kept tidy.			

Environmental Feature	Impact	Management Actions	Observation	Remedial Action	Compliance (Yes/No)
Waste	Visual impac	All domestic and general waste			
Management	and so	produced daily should be disposed			
	contamination	of correctly.			
		No waste may be buried or burned.			
		Waste containers (bins) should be			
		emptied regularly and removed			
		from site to the nearest municipal			
		waste disposal site, and records of			
		collection kept in a waste manifest.			
		All recyclable waste needs to be			
		taken to the nearest recycling			
		depot.			
		• Adequate separate waste			
		containers (bins) for hazardous and			
		domestic / general waste must be			
		provided on site.			
		Staff should be sensitised to dispose			
		of waste in a responsible manner			
		and not to litter.			

Environmental Feature	Impact	Management Actions	Observation	Remedial Action	Compliance (Yes/No)
		Waste should be disposed of in			
		accordance with the National			
		Strategy on waste management in			
		protected areas as developed by			
		MEFT.			
Hazardous	Soil and	• Adequate separate waste			
Waste	groundwater	containers (bins) for hazardous and			
	contamination	domestic / general waste must be			
		provided on site.			
		Hazardous waste should be disposed			
		of at a facility that is able to receive			
		such waste and records of disposal			
		should be kept. The nearest			
		Hazardous Waste Facility is located			
		in Walvis Bay.			
		Maintenance and washing of			
		vehicles and machinery on site			
		should take place only at a			
		designated workshop area that is on			
		a bunded, impermeable surface.			

Environmental Feature	Impact	Management Actions	Observation	Remedial Action	Compliance (Yes/No)
Biodiversity	Loss of Biodiversity	 Trees and plants protected under the Forest Act No 12 of 2001 are not to be removed without a valid permit from the local Department of Forestry. Off-road driving (by vehicle or quad bike) should not be allowed on site. No alien vegetation should be introduced on site. 			
Noise	Disturbance to fauna	Noise restrictions should be in place on site to minimise disturbance.			
Health and Safety	Health and Safety on site	 Ensure first aid training and environmental awareness training is provided to staff. Fire extinguisher training should be provided to a designated member of staff who will act a fire marshal during fire events. 			
		 Any accidents/incidents occurring on site should be reported to MEFT and other relevant authority within 24 hours. 			

Environmental Feature	Impact	Management Actions	Observation	Remedial Action	Compliance (Yes/No)
Employment	Recruitment	 Local employment and use of local businesses/suppliers should be encouraged to promote and improve the local economy as far as reassembly possible. Should the required services and/or goods not be available locally then look to other localities for these services/goods. 			
Ablution	Health and safety	 Portable toilets (i.e. easily transportable) should be available on site. Separate ablutions should be available for men and women and should clearly be indicated as such. Sewage waste needs to be removed on a regular basis to the nearest approved sewage disposal site. Workers responsible for cleaning the toilets should be provided with 			

Environmental Feature	Impact	Management Actions	Observation	Remedial Action	Compliance (Yes/No)
Water Management	Water saving Groundwater contamination	 Water saving mechanisms should be implemented on site e.g., installation of water saving devices where practical. Should any hazardous material and wastes be produced these shall be managed in a safe and responsible manner so as to prevent contamination of soils, pollution of water and/or harm to people or animals as a result of the use of these materials. 			
Archaeology	Archaeological	 Hazardous and non-hazardous waste shall be stored and disposed of separately at all times. Existing heritage or archaeological 			
	Impacts	sites may not be disturbed by the operations at the facility. • These should be demarcated to limit access to the sites.			

Environmental Feature	Impact	Management Actions	Observation	Remedial Action	Compliance (Yes/No)
		• Should a heritage site or			
		archaeological site be uncovered or			
		discovered on site, a "chance find"			
		procedure should be applied in the			
		order they appear below:			
		o If operating machinery or			
		equipment, stop work;			
		o Demarcate the site with			
		danger tape;			
		o Determine GPS position if			
		possible;			
		o Report findings to the			
		construction foreman;			
		o Report findings, site location			
		and actions taken to			
		superintendent;			
		o Cease any works in			
		immediate vicinity;			
		o Visit site and determine			
		whether work can proceed			
		without damage to findings;			
		o Determine and demarcate			
		exclusion boundary;			

Environmental Feature	Impact	Management Actions	Observation	Remedial Action	Compliance (Yes/No)
		o Site location and details to			
		be added to the project's			
		Geographic Information			
		System (GIS) for field			
		confirmation by			
		archaeologist;			
		o Inspect site and confirm			
		addition to project GIS;			
		o Advise the National Heritage			
		Council of Namibia (NHCN)			
		and request written			
		permission to remove			
		findings from work area; and			
		o Recovery, packaging, and			
		labelling of findings for			
		transfer to National Museum.			
Traffic	Traffic Impacts	Introduce speed limits and signage			
		within the facility.			
		Roads to be clearly demarcated.			
		No off-road driving to be permitted			
		on site.			