BRANDBERG DESERT ELEPHANT LODGE

ENVIRONMENTAL MANAGEMENT PLAN (EMP) REPORT

This EMP Report is prepared to Support an Application for Environmental Clearance Certificate (ECC: APP-002126)

For

Development of a Lodge and Tourism Facilities along the Tourism Routes & Tracks in the Brandberg/Geopark Landscape Area, Kunene and Erongo regions, Namibia

Prepared on behalf

of

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1. INTRODUCTION

1.1. Project Background

Brandberg Desert Elephant Lodge (the proponent), plans to construct a lodge and tourist facilities within the new proposed Brandberg Landscape/Geopark near major tourism assets comprising the Brandberg Mountain, its heritage resources and the Himba people. The proposed facility (Coordinates: -21.004578^{0}S, 14.760465^{0}E) is situated about 10 KM away from major tourism assets comprising the Brandberg Mountain, heritage resources and the Himba people. Part of the site is located in Erongo Region, specifically in the Dâures constituency (Erongo Region). One part of the site is located north of the Ugab River and the other part is located north of the river, meaning that the site cuts across two political regions; viz. Kunene and Erongo regions **(Figure 1 and figure 2).** There are already established lodges, roads and air-strip routes and various tourism activities. These will be linked to the new proposed project by applying the route development concept in order to stimulate tourism enterprise, employment creation and income generation.

Tourism and recreation facilities form part of the listed activities that may not be undertaken without an Environmental Clearance Certificate (ECC). Thus, the proposed Brandberg Desert Elephant Lodge is subjected to an ECC, to be issued by the Ministry of Environment, Forestry and Tourism (MEFT).

Figure 1: proposed site location.

Figure 2: surrounding attraction sites and routes.

In terms of the Namibian Environmental Management Act (EMA) No. 07 of 2007, Section 27 (2j), Government Notice No. 29, Section 6 and Government Notice No. 30, the proposed project constitutes a number of listed activities that require an ECC from the Department of Environmental Affairs (DEAF) of MEFT.

This legislative document has been created in compliance with Section 8 of the EMA (No. 7 of 2007), which sets forth the requirements. One of the demands made on Envirodu Consulting & Training Solutions cc by The Proponent is the creation of this EMP.

It is required of the Environmental Consultant to comply with the EMA and provide for the following:

- Create a clear environmental management plan that will be used as a guide to ensure that the recommendations made in the EIA are followed, as well as to help manage and monitor activities during the planned development's construction.

- The duties and responsibilities of the Proponent, the contractors, and any other stakeholders that are specified must be made plain by the Environmental Consultant in the EMP.

1.2. Aim of the Draft Environmental Management (EMP)

A draft Environmental Management Plan (EMP) must be included as part of the Environmental Assessment (EA) according to Regulation 8(j) of the EIA Regulations (2012). A "Management Plan" is an arrangement of: "…a plan that describes how activities that may have significant environments effects on the environment are to be mitigated, controlled and monitored."

One of the most significant outcomes of the EA process is an EMP, which summarizes all suggested management, mitigation, and monitoring actions, sets them to a timeframe, and assigns particular roles. It establishes a connection between the effects determined during the EA process and the necessary mitigation measures to be put in place during the planned development's construction phase. This EMP is a dynamic document that can be modified to accommodate changes in the project, environmental circumstances, and feedback from compliance monitoring.

Thus, the goal of this paper is to provide environmental management guidance for the various development activity phases, including pre-development (site acquisition and preparation), construction, and construction closure.

- List documentations (e.g. permits, methods statement, SOPs, etc) required for constructing and operating of a lodge and tourism Facilities
- Establish baseline environmental conditions before and after construction, and
- Monitor environment during the operation phase to support and ensure that the proposed mitigation measures are achieving the desired results, a monitoring plan must be implemented alongside the mitigation plan.

The Proponent, staff, and/or contractors will use this EMP to provide management measures to be implemented during construction-related activities, to address the environmental impacts identified in the scoping report, and to ensure that the impacts on the environment are avoided or limited if they can't be avoided entirely.

2. ENVIRONMENTAL CERTIFICATIONS AND DOCUMENTATIONS

The EMP's content needs to adhere to Section 8(j) of the EIA Regulations. Throughout the planned development's life cycle, the EMP must consider any potential environmental effects of the construction operations on the environment. A mechanism for evaluating the efficiency of monitoring and management arrangements following project implementation must also be included.

Environmental certifications will include permits and certificates needed to authorize construction and operation of the lodge and tourism Facilities as well as undertake all activities as required by law. Documentations will be communicable materials that will be required to describe, explain or instruct and communicate information regarding the lodge and tourism facilities operational procedures. Therefore, it is the Proponent's duty to make sure that the proposed development activities and the EA process adhere to the EMA's guiding principles, and it is their job to make sure that other workers do the same. The requirements for an EMP as outlined in Section 8(e) of the EIA Regulations are listed in Table 1 below, with a focus on the specific approvals and permits that may be necessary for the activities necessary for the proposed development.

The following environmental certifications and documentations are necessary before the proposed development can start:

Table 1: Applicable legal requirements and permits to the activities of the proposed construction the lodge and tourism facilities.

Legislation/Policy/ Guideline	**Relevant Provisions**	**Implications for this project**
Environmental Management Act EMA (No 7 of 2007)	Section 27 of the law stipulates that projects having major environmental implications must go through an environmental assessment process. Describe the guiding principles for all EIAs.	This EA procedure ought to be informed by and governed by the EMA and its regulations. If the ECC is granted to the Proponent, it must be renewed every three years beginning on the day it was granted. the Department of Environmental Affairs and Forestry's (DEAF) contact information
Environmental Impact Assessment (EIA) Regulations	Specifies the conditions necessary for public participation in a specific environmental assessment process (GN 30 S21). Explains the specifications for what should be in an Assessment Report (GN 30 S15) and a Scoping Report (GN 30 S8).	Ministry of Environment, Forestry and Tourism (MEFT), Office of the Environmental Commissioner Mr. Timoteus Mufeti Tel: +264 61 284 2701
Forestry Act 12 of 2001, Amended Act 13 of 2005	(Forestry Act S22 (1)) forbids the destruction of any vegetation that is 100 meters or less from a waterway. The Act forbids the transportation and removal of a number of protected plant species.	Should there be protected plant species, which are known to occur within the project site, these are required to be removed and a permit should be obtained from the nearest Forestry office (Ministry of Environment, Forestry and Tourism (MEFT)) prior to removing them.

		Mr. Fillemon Kayofa (Acting Director of Forestry Division) Tel: +264 61 208 7320
National Heritage Act No. 76 of 1969	Encourage the preservation and safeguarding of cultural assets and artifacts.	The National Heritage Council of Namibia must be notified as quickly as possible if any archaeological material, such as bones, outdated weaponry or equipment, etc., is discovered on the site. After that, the Heritage Council will determine whether to remove the land or preserve the building or other resource. Contact Details at National Heritage Council of Namibia: Mr Manfred Gaeb (Regional Heritage Officer) – National Heritage Council of Namibia Tel:(061) 301 903
Baseline environmental monitoring plan.	Ministry of Environment, Forestry and Tourism	Department of Environmental Affairs

3. EMP Limitations

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

- The Environmental Assessment (EA) performed for the proposed development served as the foundation for the creation of this EMP.
- The risks/impacts in the EA Report were identified based on the project description as supplied by the Proponent, site research, and public participation. The mitigation strategies suggested in this EMP document are based on those risks/impacts. If the proposed project's scope changes, it will be necessary to reevaluate the risks and impacts and identify appropriate mitigation strategies.

4. EMP ROLES AND RESPONSIBILITIES

The EMP's execution is ultimately the Proponent's responsibility. However, the Proponent is free to assign this duty to another party whenever they see fit throughout the various project phases. The following list outlines the roles and responsibilities of all delegates and parties engaged in the successful execution of this EMP:

Competent Monitoring Authority: Department of Environmental Affairs and Forestry (DEAF, MEFT))

The DEAF is in charge of making sure that the EMA's rules are followed and that this EMP is fully implemented. Additionally, the competent body looks over biannual reports and extends ECCs for another three years.

The Proponent

The Proponent is in charge of managing this EMP's implementation and upgrading and maintaining it as required.Managing and maintaining on-site personnel and/or equipment in accordance with this EMP.

Site Manager

The individual in this position will be in charge of making sure that the project's proposed development activities are finished on schedule. The tasks and duties of the site manager shall be as follows:

- Ensure that relevant commitments contained in the EMP Action Plans are adhered to.
- Ensure relevant staff is trained in procedures entailed in their duties.
- Maintain records of all relevant environmental documentation for the project.
- Reviewing the EMP annually and amending the document when necessary.
- Issuing fines to individuals who may be in breach of the EMP provision and if necessary, removing such individuals from the site.
- Cooperate with all relevant interested and affected parties/stakeholders.

- Development and management of schedules for daily activities.

Environmental Control Officer (ECO)

The Proponent may assign the responsibility of ensuring EMP compliance throughout the project life cycle to a designated member of staff or external qualified and experienced person, referred to in this EMP as the Environmental Control Officer (ECO). The ECO will have the following responsibilities:

- Management and facilitation of communication between the Proponent, and Interested and Affected Parties (I&APs) regarding this EMP.
- Conducting site inspections (recommended frequency is monthly or weekly as recommended.
- Advising the proponent on the removal of person(s) and/or equipment not complying with the provisions of this EMP.
- Making recommendations to the proponent with respect to the issuing of fines for contraventions of the EMP.
- Undertaking an annual review of the EMP and recommending additions and/or changes to this document.
- Ensuring that the development activities on site are conducted in accordance with the International System organization (ISO) standard 14001: 2015 (environmental management system).

4.1. Archaeology: Chance Finds Procedure (CFP) Implementation Roles

The following personnel have been assigned responsibilities as per the Chance Finds procedure:

Operator: To exercise due caution if archaeology remains are found.

Foreman: To secure site and advise management timeously.

Superintendent: To determine safe working boundary and request inspection.

Archaeologist: To inspect, identify, advice management, and recover remains

The Proponent must carefully consider these obligations and accept responsibility for the particular management procedures in the tables under the subsequent sections.

5. ENVIRONMENTAL MANAGEMENT & MITIGATION MEASURES

5.1. Management of Key Potential Adverse Environmental Impacts

The following significant possible adverse effects have been discovered from the assessment and are listed and described below:

- Land degradation and Biodiversity Loss.
- Generation of dust
- Water Resources Use
- Soil & Water Resources Pollution
- Waste Generation
- Occupational Health & Safety risks

Vehicular Traffic Use & Safety

- Noise & Vibrations
- Impacts on local Roads
- Social Nuisance: local property intrusion & disturbance
- Social Nuisance: Job seeking & differing Norms, Culture & values

5.2. Aim of the Environmental Management Plan Actions

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

5.3. Pre-development and construction Phase Management Action Plans (Mitigation Plan)

The management action plans recommended for this phase are presented in Table 2 below.

Table 2: Management and mitigation action plans for the pre-development and construction phases

Aspect	Impact	Managment and mitigation measures	Key perfomance indicator	Implementation responsibility	Resources	Timeline
		Pre-development and construction phase				
EMP implementation and training	Lack of EMP awareness and implications thereof	A Comprehensive Health and Safety Plan for the project activities should be compiled. This will include all the necessary health, safety, and environmental considerations applicable to respective works on sites. An EMP non-compliance penalty system should be implemented on site. The Proponent should appoint an ECO to be responsible for managing the EMP implementation and monitoring.	All required Plans and systems are compiled and in place and Environmental Control Officer (ECO) is appointed	Proponent	EMP implementation Plans and Systems	Predevelopment works

Authorization	Lack of Agreements, Permits/ Licenses	-All the required agreements and licenses or permits should be applied for and signed, respectively before commencement of work on the site, or as required. -The permits, agreements referred to herein include: • Land acquisition. • waste management • disposal permits from • the relevant facility • operator/owner • Water supply • agreements. • Onsite fuel storage • permit from MME for any • petroleum stored onsite	-Applicable permits and licenses to obtained from relevant authorities and kept on site for records keeping and future inspections	Proponent	Proponent Respective authorities and services provider(s)	Prior to construction works

Communication between the Proponent and other neighbouring land users and custodians	Lack of communication (proper liaison) between other land users and Proponent with regards to land use	-The Proponent should appoint a Public Relation Officer (PRO) to liaise with the land users. -A clear communication procedure/plan which should include a grievance mechanism.	A PRO is appointed - Ongoing Stakeholder's Consultation throughout the project cycles, when and as required. PRO contact details to be provided to the affected landowners	Proponent	PRO Complaint's logbook	PRO appointment should be done Prior to project activities and their responsibilities should be throughout the project activities
Employment	Creation of employment opportunities	-Non-skilled labour should be sourced from the locally affected area (people from the local communities), in accordance with procedures approved by the relevant authorities.	-Preference of local people for employment for jobs should be implemented, i.e., permanent residents from the surrounding areas should be employed for the unskilled labour preferentially to out-of-area people (outsiders) where possible. Out-of-area employment should be justified, for example by the	Proponent in collaboration with the Site Manager.	Record of employees	Pre-project activities and when necessary, throughout

			unavailability of local skills only. -Equal opportunity should be provided for both men and women, when and where possible. -Number of locals employed for predevelopment and construction activities			
Specialised procurement of services	Contractors and services	All services related to development activities such as construction the Proponent may need; preference should be given to local providers of such services. If not available locally, the services search should be extended to a regional level (Kunene and Erongo Region), nationally and lastly, internationally.	Number of hired contractors.	Proponent Site Manager	Record of hired or contracted companies or services providers	Pre-project activities and when necessary, throughout

EMP implementation and training	Lack of EMP awareness and implications thereof	-EMP trainings should be provided to all new workers on site. -All site personnel should be aware of necessary health, safety and environmental considerations applicable to their respective work. -The implementation of this EMP should be monitored. The site should be inspected, and a compliance audit done throughout the project activities, monthly. An EMP non-compliance penalty system should be implemented on site.	Compliance monitoring conducted bi-annually and should be recorded.	ECO	Bi-annual reports Records of EMP training conducted.	Throughout the Development phase and as required
Communication between the Proponent and other neighbouring land users and custodians	Lack of communication (proper liaison) between locals and Proponent with regards to land use.	The Proponent should compile a clear communication procedure / plan which should include a grievance and response mechanism.	PRO is part of the project personnel. - Community grievances addressed to their satisfaction	PRO	Complaint's logbook PRO contact details to be provided to the affected locals. Records of stakeholder' consultation Land acquisition agreement conditions	Throughout the development activities

Water Resources Use	Over-extraction of water (water demand and availability)	-Drinking water extraction from boreholes or supplied by carting should be used efficiently, and recycling and re-using of water on certain site activities should be encouraged, where necessary and possible. -A Borehole Drilling and Groundwater extraction permits should be applied for the Department of Water Affairs at MAWLR, should the Proponent consider drilling new water supply boreholes. -The Proponent should consider carting water for drilling from elsewhere outside the site area such to relieve pressure of the available resources. Agreements of water supply should be made between the willing water supplier and the Proponent. -Water reuse/recycling methods should be implemented as far as practicable such that the water used	-Proof/ recording/ quantification of water saving efforts. Water supplier. -Water permits -inspection of water storage tanks on site	Proponent and site manager		

		for the cleaning of project equipment, if possible. -Water storage tanks should be inspected daily to ensure that there is no leakage, resulting in wasted water on site. -Water conservation awareness and saving measures training should be provided to all the project workers in both phases so that they understand the importance of conserving water and become accountable.				

Soils	Physical soil/land disturbance and loss of topsoil	-Overburden soils and rocks should be handled more efficiently during operations to avoid erosion when subjected erosional processes.	No proliferation of informal vehicle tracks. No new erosion gullies.	Proponent All person ECO	Complaint's logbook	Throughout the project phase

		-Soils that are not within the intended and targeted footprints of the site should be left undisturbed and soil conservation implemented as far as possible. -Project vehicles and machinery should stick to access roads provide and or meant for the project operations but not to unnecessarily create further tracks on site by driving everywhere resulting in soil compaction. -The project footprint area should not be cleared entirely, and the vehicles and equipment must be placed in such a way that soil disturbance is minimised, and the site should be rehabilitated after each onsite work.				
Soils and water resources	Soils and water resources pollution	-Oil and wastewater spill control preventive measures should be in place on site to management soil contamination, thus preventing and minimizing the contamination from reaching water resources bodies. Some of the soil control preventive	No complaints of pollutants on the soils and eventually in the water due to development activities	ECO	Complaint's logbook Non-permeable material to cover the ground surface at areas where	Throughout project phase

		measures that can be implemented include: -Spill control preventive measures should be in place on site to management soil contamination, thus preventing and or minimizing the contamination from reaching water resources bodies. -All project employees should be sensitized about the impacts of soil pollution and advised to follow appropriate fuel delivery and handling procedures. -The Proponent should develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. This includes keeping spill response procedures and a well-stocked cache of supplies easily accessible. -Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan	-No visible oil spills on the ground or pollution spots. -Waste containers provided at work sites and campsites		hydrocarbons and potential pollutants are utilized.	

		training and mentor new workers as they get hired. -Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated on site. -Polluted soil should be removed immediately and put in a designate waste type container for later disposal. -Drip trays must be readily available on this trailer and monitored to ensure that accidental fuel spills along the tank trailer path/route around the sites are cleaned on time (soon after the spill has happened). -Polluted soil must be collected and transported away from the site to an approved and appropriately classified hazardous waste treatment facility. -Washing of equipment contaminated hydrocarbons, as well				

		as the washing and servicing of vehicles should take place at a dedicated area, where contaminants are prevented from contaminating soil or water resources. -Toilet water should be treated using the long drop toilet system and periodically emptied out before reaching capacity and transported to a wastewater treatment facility.				
Biodiversity	Loss of Fauna and Flora	**<u>Fauna</u>** -Access roads (even existing ones) should be utilized appropriately in a manner that disturbs minimal land areas as possible, thus minimizing faunal habitat destruction. -Breeding sites for faunal species that are found within the site and nearby should not be disturbed. -Environmental awareness on the importance of faunal preservation	No disturbance to unmarked areas. No complaints from locals regarding unauthorised vegetation removal or cutting down of trees. No intentional disturbance and destruction of site vegetation and faunal species Visible preservation of onsite vegetation	ECO	Barricading tape (to indicate working areas) Complaint logbook	Throughout the project phase

		should be provided to the workers and contractors. **<u>Flora</u>**: -The Proponent should avoid unnecessary removal of vegetation, thus promoting a balance between biodiversity and their construction works. -Vegetation found on the site, but not on site should not be removed but left to preserve biodiversity on the site. -Movement of vehicle and machinery should be restricted to existing roads and tracks to prevent unnecessary damage to the vegetation. -Even if a certain vegetation is found along the sites, this does not mean that it should be removed. Therefore, care should be taken without destroying the site vegetation.				

		-Design access roads appropriately in a manner that disturbs minimal land areas as possible. -Make use of the existing road network as much as possible and avoid off-road driving, thus minimizing onsite floral destruction. -Vegetation clearing to be kept to a minimum. The vegetation of the site is largely low and open and therefore whole-sale vegetation clearing should only be applied where necessary and within the site footprint. -Environmental awareness on the importance of floral biodiversity preservation should be provided to the workers and contractors.				
Land use	Conflict between land uses and construction activities	-Construction activities should not in any way hinder the existing land uses but rather promote coexistence	Compliance with conditions set within operational permits by relevant and affected authorities. Little to no	Proponent ECO		Throughout project cycle

		throughout the project operations while respecting other land users. -The Proponent should ensure that their activities comply with the conditions set by the competent, regulatory, and affected authorities such that the proposed construction activities do not severely impact the different existing activities around the site	complaints of significant interference from the neighbouring land users	Relevant authorities (MEFT, MME, etc.)		
Road use and safety	Increase in vehicular traffic flow	-Vehicles should be driven only on existing access roads and necessary temporary access roads only leading to site; no new roads should be constructed where possible. -The transportation of project materials, equipment and machinery should be limited to once or twice a week only, but not every day. -The heavy truck loads should comply with the maximum allowed limit while transporting materials and	-No complaints from members of the public regarding vehicular traffic issues related to the project activities. -All personnel operating the project vehicles and machinery are appropriately licensed and possession of valid driving licenses. Demarcated areas for parking, offloading,	Proponent ECO	Number of project vehicles on site Names of drivers Frequency of water carting	Throughout project phase

		equipment/machinery on the public and access roads. -The carted water into the area from outside the project area should be done once or twice a week in container that can supply and store water for most of the week, thus reducing the number of trucks on the road. -Drivers of all project phases' vehicles should be in possession of valid and appropriate driving licenses. Vehicle drivers should adhere to the road safety rules. -Drivers should drive slowly (40km/hour or less), and on the lookout for animals and people. -Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents because of mechanical faults of vehicles.	and loading zones are on site. If required, site access road permits obtained, and requirements fulfilled. No creation of unnecessary tracks on site.			

Local services and infrastructure	Overuse and maintenance	The heavy trucks transporting materials and services to site should be scheduled to travel at least twice or thrice a week to avoid daily travelling to site, unless on cases of emergencies. The heavy trucks transporting materials and services to site should be scheduled to travel at least twice or thrice a week to avoid daily travelling to site, unless on cases of emergencies.	-Visible efforts of maintaining access and community roads by the Proponent	Proponent Site Manager	Road clearing machinery (bull dozers)	Throughout the project phase, when necessary
Occupational Health and safety	General health and safety associated with project activities in both phases.	-The Proponent should commit to and make provision for bi-annual full medical check-up for all the workers at site to monitor the impact of project related activities on them (workers). -As part of their induction, the project workers should be provided with an awareness training of the risks of mishandling equipment and materials on site as well as health and safety risk associated with their respective jobs.	Comprehensive health and safety plan for all construction activities compiled.	Proponent , ECO, Site manager	Occupational Health and Safety Personnel Health and Safety Trainings First aid kits Trained worker to administer first aid.	Throughout the project phase and trainings offered as and when required.

		-Employees should be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc. -Heavy vehicle, equipment and fuel storage site should be properly secured, and appropriate warning signage placed where visible. -Drilled boreholes that will no longer be in use or to be used later after being drilled should be properly marked for visibility and capped/closed off. -An emergency preparedness plan should be compiled, and all personnel appropriately trained. -Workers should not be allowed to drink alcohol prior to and during working hours nor allowed on site when under the influence of alcohol as this may lead to mishandling of				

		equipment which results into injuries and other health and safety risks. -The site areas that are considered temporary risks should be equipped with "danger" or "cautionary" signs. -The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections. -Provision of condoms and sex education through distribution of pamphlets and health trainings. These pamphlets can be obtained from local health facilities.				

	Potential increase of prevalence of HIV and AIDS, as well as other sexually transmitted diseases (STDs) prevalence		No new infections recorded linked to workers		Occupational health and safety personnel Sex and Health Education/Awareness Provision of condoms at the campsite	

Occupational health and safety	Accidental fire outbreak	-Portable fire extinguishers should be provided on site. -No open fires to be created by project personnel on farms. -Potential flammable areas and structures such as fuel storage tanks should be marked as such with clearly visible signage.	No wildfires recorded (due to presence of workers)	Proponent ECO	Fire extinguishers (1 per vehicle) and 1 per working site	Throughout project phase
Archaeology and heritage	Accidental disturbance and destruction of archaeological or heritage objects and sites	-On-site personnel (s) and contractor crews must be sensitized to exercise and recognize “chance finds heritage” in the course of their work. -During the construction works, it is important to take note and recognize any significant material being unearthed and making the correct judgment on which actions should be taken -A landscape approach of the site management must consider culture and heritage features in the overall	No-Go Areas avoided	ECO Operator Foreman Superintended Archaeologist	Flag tapes GPS (site marking)	up, and during construction.

		planning of construction infrastructures within and beyond the license boundaries. -The Proponent and Contractors should adhere to the provisions of Section 55 of the National Heritage Act in event significant heritage and culture features are discovered while conducting works. -Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project Archaeological Management Plan (AMP)/EMP should be complied. -An archaeologist or Heritage specialist should be onsite to monitor all significant earth moving activities that may be implemented as part of the proposed project activities. -Show overall commitment and compliance by adapting “minimalistic or zero damage approach”.				

Littering and waste management (general waste and sanitation)	Environmental Pollution	Workers should be sensitized to dispose of waste in a responsible manner and not to litter. -After each daily works, the Proponent should ensure that there are no wastes left on the sites. -All domestic and general project waste produced daily should be contained until such that time it will be transported to designated waste sites in nearby town. -No waste may be buried or burned on site or anywhere else. -Sewage waste should be stored as per the available sewage system supplied on site and regularly disposed of at the nearest treatment facility. -Oil spills should be taken care of by removing and treating soils affected by the spill.	No visible litter around the project area Provision of sufficient waste storage containers Waste management awareness	ECO	Waste storage containers Waste disposal permits to municipalities Environmental, Health and Safety Statements and Policy	Throughout project phase

	Wastewater generated by site workers living on-site.	-A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented. -Careful storage and handling of hydrocarbons on site is essential, therefore should be enforced. -Potential contaminants such as hydrocarbons and wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate surrounding soils and eventually groundwater. -Provision of toilet facilities for workers (mobile/portable chemical toilet if possible). -Emptying of chemical toilets according to the man ufacturer's specifications.	Adequate toilet and basic ablution facilities on site.	Proponent ECO	Chemical toilets	

					Sewage removal operator waste treatment agents/chemicals	
Air quality	Dust generation	-Vehicles should not drive at a speed more than 40 km/h to avoid dust generation around the area. -Dust masks, eye protective glasses and other respiratory personal protective equipment (PPE) such as face masks should be provided to the workers on site, where they are exposed to dust. -Excavating equipment should be regularly maintained to ensure excavation efficiency and so to reduce dust generation and harmful gaseous emissions.	No complaints from the public about vehicle emissions and dust generation. Visible efforts to curb dust	ECO	Complaint's logbook Dust suppressant (Water)	Throughout the project cycle

Noise	Nuisence	Noise from project vehicles and equipment on the working sites should be at acceptable levels. -The construction times should be set such that, no such activities are carried out during the night or very early in the mornings (to be limited between 8am and 5pm on weekdays). -Construction hours should be restricted to between 08h00 and 17h00 to avoid noise and vibrations generated by equipment and the movement of vehicles before or after hours. -When operating machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to noise.	No Complaints from neighbouring land users about excessive noise.	ECO	Complaint's logbook Noise protective equipment for workers	Throughout the project cycle

Social nuisence	Local properties disturbance and values	-Any workers or site employees that will be found guilty of intruding peoples 'privately owned properties should be called in for disciplinary hearing and/or dealt with as per their employer' (Proponent)'s code of employment conduct -The project workers should be advised to respect the community and local's private properties, values, and norms. -No worker should be allowed to wander in people's private yards or fences without permission. -Out-of-area workers that may be employed (due to their unique work skills) on site should be sensitized on the importance of respecting the local values and norms.	No complaints from stakeholders about property theft, disturbance, or intrusion	ECO	Grievance logbook Land access agreement conditions	Throughout the project cycle

Construction closure phase	Disturbance and damaging of land	-All drilled boreholes should be capped and backfilled. -All waste generated and stored on site during construction activities should be disposed of at the respective nearest solid waste management sites. -Any temporary setup on site should be dismantled as far as practicable. -Provision of both financial and technical resources for progressive construction closure.	-Capped boreholes and backfilled pits No sign of waste or littering seen on site and around site areas. -Carrying away of waste, and removal of vehicles and equipment from site -Campsite dismantled and materials taken away from site.	Proponent	Excavators and other backfilling/demolishing machinery Record of boreholes drilled Waste containers on sites Records of finances set aside for project construction closure activities	Progressive construction done and throughout the project phase.

5.4. Monitoring Plan

A monitoring plan must be put into action to support and guarantee that the suggested mitigating measures are yielding the desired effects. Table 3 below lists the monitoring action plans that are suggested for the scheduled construction projects.

Table 3: Management action plans for Monitoring

Environmental Feature	Impact	Monitoring Actions	Implementation responsibility	Frequency	Threshold	Action if threshold is exceeded
Archaeology and Heritage	Presence or unearthing of archaeological or cultural heritage resources	To prevent destruction of artefacts and sites. Preservation of all artefacts and sites that are discovered within the site boundary or around the project site area. Inspection of records of findings.	ECO Archaeologist	Daily	Unearthing of archaeological or cultural heritage resources	Cease all activities on site and wait for NHC to inspect site and give further instructions / actions
Soils	Loss of topsoil	All measures should be considered to present the loss of topsoil	ECO and site Manager	Weekly	Proliferation of new vehicle tracks	Rehabilitation of affected areas
Monitoring	EMP non-compliance	The ECO or the Proponent/Contractor should monitor the implementation of this EMP to ensure compliance.		Daily	Increase in health, safety and environmental damage incidence	Daily safety talks, Remedy the consequences

		The ECO(s) should inspect the site throughout the construction period and after completion.				
Biodiversity	Loss of biodiversity	Comply with marked no-go areas and avoid areas sensitive to any type of disturbance. Clear only footprint areas to maintain as much of the remaining natural vegetation on site and to prevent loss of habitat (if so, advised by MEFT).	ECO Workers involved in this phase	Weekly	Vegetation clearance outside of marked areas.	Rehabilitation of affected areas to the satisfaction of the ECO
Health and safety	Health and safety of the workers	-Workers should be trained on how to handle materials and equipment on site (if they do not already know how to) to avoid injuries. -Construction equipment and materials transported to site should be securely fastened to the vehicles (trucks and cars). This is to ensure that the materials and equipment do not fall off the vehicles and cause injuries to anyone while transporting them. - All personnel should be provided with appropriate personal protective equipment (PPE), such as gloves,	ECO and Workers Involved in this phase	Daily	Health and safety incident	Remedy the consequences

		masks, safety boots, safety glasses and hard hats always during construction hours on site to prevent serious injuries or loss of life. -No employee should be allowed to drink alcohol prior to and during working hours as this may lead to mishandling of equipment which results into injuries and other health and safety risks.				
Neighbouring land users to the site	Disturbance	Construction works schedule should be limited to normal working hours, between 08h00 and 17h00. This is to ensure generated noise does not become nuisance to the neighbours.	ECO and Site Manager	Weekly	Complaints about excessive noise	Revise site activities
Waste	Environmental pollution	-The site should be always kept tidy. -All domestic and general construction waste produced daily should be cleaned and contained daily to prevent environmental pollution. -Separate waste containers (bins) for hazardous and domestic / general	ECO and all workers involved in the pahse	Daily	Visible litter around project site A logged complaint	Clean-up of the affected areas and ensuring construction workers utilise waste containers provided.

		waste must be provided on site to avoid mixing of waste				
Transport	Transportation of workers to and from site.	Project workers will be transported, in an SUV, bus (or similar suitable passenger vehicle) to and from site to ensure workers safety. -No off-road driving	ECO	Daily	complaint about bad form of transport affecting occupational safety and health of workers	Daily safety talk and remedy the consequences

Vehicular traffic safety	Increase in local traffic flow	-All drivers of the project vehicles should be in possession of valid and appropriate driving licenses to operate such vehicles. -Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents because of mechanical faults of vehicles. -Vehicle drivers should not be allowed to operate vehicles while under the influence of alcohol. -No heavy trucks or project related vehicles should be parked on biologically sensitive areas	ECO	Weekly	complaint about traffic increase or damage to roads	Find alternative access roads for the team. Rehabilitation of affected roads

5.5. Construction Closure Phase

The proponent will be expected to take down and remove the campsites and site offices that were built during the building phase of the proposed project after that phase is over. The removal of any leftover building materials from the proposed development's construction phase as well as the dismantling of all construction-related machinery (such as steel scaffolding) are also part of this phase.

5.5.1. Site specific construction closure plan

The Proponent wants to guarantee that they do their best to restore the affected areas by:

- Levelling of topsoil that was stockpiled for construction purposes.
- Removal of project vehicles/ trucks and equipment from the site and taken to designated parking facility off site.
- All project support structures such as ablution facility (toilet and washroom system), and storage containers/tanks shall be demolished.
- All accumulated waste (hazardous, solid, and general) will be removed site and transported to designate off site waste management facilities.

5.6. Environmental monitoring and reporting

Monitoring reports must be compiled and submitted to the DEAF for archiving on a biannual basis (every six months throughout the project operations) or as necessary by the Environmental Commissioner (per the ECC conditions) in order to reduce the "medium" and uphold "low" significance ratings of impacts identified and assessed in the ESA report. As the ECC nears its expiration, this approach will make any considerations for renewal simple. As a result, the Proponent must submit the reports to the DEAF and meritoriously monitor them. The submission is made in accordance with environmental legislation as well as for record-keeping purposes.

6. DISCUSSIONS, CONCLUSIONS AND RECOMMEDATIONS

As often argued in literature, an EIA as a tool for sustainable development is not sufficient in evaluating development projects because it has its weaknesses. These weaknesses include the fact that the scope of an EIA is limited when measured on a temporary scale as it merely provides a snapshot overview of baseline conditions of a development project and fail to consider indirect environmental impacts or cumulative impacts that may result as result of a development.
Therefore, to make up for this the EMA (no. 7 of 2007) and its regulations (of 2012) require preparations of the EMP and environmental monitoring & evaluation plan.

An EMP is similar to policy and it is where a company or proponent commits to undertake all measures necessary to prevent, control and mitigate negative environmental impacts.

In order to design an effective EMP and implement environmental monitoring & evaluation plan, there was a need to probe all negative impacts and assess them and determine how they should be managed. This was done during impacts evaluation and it was found that those impacts that were significant were either regional, localised and mitigatable.
It is recommended that the ECC should be approved, provided that the Proponent:

- Strictly adhere to the EMP and undertake baseline environmental monitoring;
- Data from baseline environmental monitoring should be kept,
  and availed to authorities whenever requested.