

APP-00259

**SOSSUSVLEI LODGE, SOSSUS OASIS CAMPSITE AND FUEL
RETAIL FACILITY, DESERT CAMP AND DESERT QUIVER
CAMP ON FARM SESRIEM, HARDAP REGION**

ENVIRONMENTAL MANAGEMENT PLAN



Assessed by:



Assessed for:



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Project:	SOSSUSVLEI LODGE, SOSSUS OASIS CAMPSITE AND FUEL RETAIL FACILITY, DESERT CAMP AND DESERT QUIVER CAMP ON FARM SESRIEM, HARDAP REGION: ENVIRONMENTAL MANAGEMENT PLAN	
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1 OBJECTIVES OF THE EMP

The Environmental Management Plan (EMP) provides management options to ensure impacts of the construction and operations are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The EMP acts as a stand-alone document, which can be used during the various phases (planning, construction, operational and decommissioning) of any proposed activity or development.

All contractors and sub-contractors taking part in construction and operational activities related to the tourism establishments on Farm Sesriem, should be made aware of the relevant sections of the EMP, so as to plan the relevant activities accordingly in an environmentally sound manner.

The objectives of the EMP are:

- ◆ to include all components of the various activities;
- ◆ to prescribe the best practicable control methods to lessen the environmental impacts associated with the both construction and operational activities;
- ◆ to monitor and audit the performance of the construction and operational personnel in applying such controls; and
- ◆ to ensure that appropriate environmental training is provided to responsible personnel and contractors.

2 IMPLEMENTATION OF THE EMP

The sections below outline the management of the environmental elements that may be affected by the activities associated with the various phases of the facility. These phases are as follows:

- ◆ Planning Phase
- ◆ Care and Maintenance Phase
- ◆ Decommissioning Phase

The EMP is a living document that must be prepared in detail, and regularly updated, by the Proponent as the project progress and evolve. Impacts addressed and mitigation measures proposed are seen as minimum requirements which have to be elaborated on where appropriate. Delegation of mitigation measures and reporting activities should be determined by the Proponent and included in the EMP.

All monitoring results must be reported on as indicated. Reporting is important for any future renewals of the ECC and must be submitted to the Ministry of Environment, Forestry and Tourism. Renewal of ECC will require bi-annual reports based on the monitoring prescribed in this EMP.

Various potential and definite impacts will emanate from the operations, care and maintenance, and decommissioning phases. The majority of these impacts can be mitigated or prevented. The impacts as well as prevention and mitigation measures are listed below. The general guidance and impact descriptions provided below are based on the findings of the initial EIA and risk assessment carried out by Geo Pollution Technologies (Faul et al., 2019).

2.1 PLANNING

During the phases of planning for the operations, maintenance / construction and decommissioning phases of the facility, it is the responsibility of Proponent to ensure they are and remain compliant with all legal requirements. The Proponent must also ensure that all required management measures are in place prior to, and during all phases, to ensure potential impacts and risks are minimised. The following actions are recommended for the planning phase and should continue during various other phases of the project:

- ◆ Ensure that all necessary permits from the various ministries, local authorities and any other bodies that governs the operations, maintenance / construction and decommissioning activities of the project remains valid. These include registration with the Namibia Tourism Board, the petroleum products licence, a water abstraction permit and an effluent disposal permit.
- ◆ Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- ◆ Make provisions to have a Health, Safety and Environmental Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- ◆ Have the following emergency plans, equipment and personnel on site, where reasonable, to deal with all potential emergencies:
 - EMP / risk management / mitigation / emergency response plan and health safety and environment (HSE) manuals
 - Adequate protection and indemnity insurance cover for incidents;
 - Comply with the provisions of all relevant labour and safety standards;
 - Procedures, equipment and materials required for emergencies.
- ◆ If one has not already been established, establish and maintain a fund for future ecological restoration of the project site should project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.
- ◆ Establish and / or maintain a reporting system to report on aspects of operations, maintenance / construction, and decommissioning as outlined in the EMP.
- ◆ Submit bi-annual reports to the MEFT to allow for ECC renewal after three years. This is a requirement by MEFT.
- ◆ Appoint a specialist environmental consultant to update the EMP and apply for renewal of the ECC prior to expiry.

2.2 IMPACTS AND RELATED MANAGEMENT MEASURES

The following section provide management measures for both the operational phase as well as care and maintenance activities related to the project.

2.2.1 Skills and Development

During the operations and maintenance / construction phases some training is provided to a portion of the workforce to be able to conduct certain tasks according to the required standards. Skills are periodically transferred to an unskilled workforce for general tasks. Development of people and technology are key to economic development. Taleni Africa Tourism Holdings, through their tourism establishments and fuel retail facility on Farm Sesriem, plays a role in promoting and sustaining the Namibian tourism industry.

Desired Outcome: To see an increase in skills of local Namibians, as well as development and technological advancements in the construction industry.

Actions

Mitigation:

- ◆ If the skills exist locally, employees and contractors must first be sourced from the region, and then nationally. Deviations from this practice must be justified.
- ◆ Skills development and improvement programs to be made available as identified during performance assessments.
- ◆ Employees to be informed about parameters and requirements for references upon employment.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Record should be kept of training provided.
- ◆ Ensure that all training is certified or managerial references provided (proof provided to the employees) inclusive of training attendance, completion and implementation.

2.2.2 Revenue Generation and Employment

The change in land use, from agriculture to tourism, lead to changes in the way revenue is generated and paid to the national treasury. Skilled and unskilled labour are required for the operations and maintenance / construction activities associated with the facilities.

Desired Outcome: Contribution to national treasury and provision of employment to local Namibians. Create a competitive environment to enhance service delivery to the area.

Actions

Mitigation:

- ◆ The proponent must employ local Namibians where possible.
- ◆ If the skills exist locally, employees must first be sourced from the town, then the region and then nationally.
- ◆ Deviations from this practice must be justified.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Summary report based on employee records.

2.2.3 Demographic Profile and Community Health

The project is reliant on labour during the construction and operational phase. The scale of the project is limited and it has not created a large change in the demographic profile of the local community. Community health may be exposed to factors such as communicable disease like HIV/AIDS as well as alcoholism/drug abuse. These are typically aggravated during the presence of possible foreign construction teams and contractors. An increase in foreign people in the area may potentially increase the risk of criminal and socially/culturally deviant behaviour. However, such trends are considered unlikely.

Desired Outcome: To prevent the occurrence of social ills and prevent the spread of diseases such as HIV/AIDS.

Actions:

Prevention:

- ◆ Employ only local people from the area, deviations from this practice should be justified appropriately.
- ◆ Adhere to all local authority by-laws relating to environmental health which includes, but is not limited to, sand and grease traps for the various facilities and sanitation requirements.

Mitigation:

- ◆ Educational programmes for employees on various topics of social behaviour and HIV/AIDs and general upliftment of employees' social status.
- ◆ Appointment of reputable contractors.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Summary report based on educational programmes and training conducted.
- ◆ Report and review of employee demographics.

2.2.4 Fuel Supply

The operations of the fuel retail facility aid in securing a reliable fuel supply to the residents, tourists and business in the area. According to local knowledge, the only nearby fuel supply alternative at the entrance to the Namib Naukluft National Park, experiences regular fuel shortages. Secure and continued fuel supply at Sossus Oasis therefore contribute to the tourism sector and visitors to the park and area.

Desired Outcome: Ensure a secure fuel supply remains available during peak tourism times.

Actions

Mitigation:

- ◆ Ensure compliance to the petroleum regulations of Namibia.
- ◆ Proper management to ensure constant supply.
- ◆ Record supply problems and take corrective actions.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Record supply problems and corrective actions taken and compile a summary report.

2.2.5 Traffic

Traffic impacts can be expected on the D0826 and C27 roads and the turnoffs to the accommodation establishments and fuel retail facility. Traffic has strong cumulative impacts due to the number of tourists and tourist related vehicles traveling to specifically Sossusvlei on a daily basis.

Desired Outcome: Minimum impact on traffic and no transport or traffic related incidents.

Actions

Prevention:

- ◆ Erect clear signage regarding access and exit points at the various establishments of Taleni Africa Tourism Holdings as well as speed limits and animal crossings on the internal roads leading to the facilities.

Mitigation:

- ◆ If any traffic impacts are expected, possibly as a result of delivery of equipment or construction material, traffic management should be performed to prevent these.
- ◆ The placement of signs to warn and direct traffic will mitigate traffic impacts.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Any complaints received regarding traffic issues, directly related to the facilities on Farm Sesriem and its guests, should be recorded together with action taken to prevent impacts from repeating itself.
- ◆ A report should be compiled of all incidents reported, complaints received, and action taken.

2.2.6 Health, Safety and Security

Activity associated with operations and maintenance / construction is reliant on human labour and therefore health and safety risks exist. Activities such as the operation of vehicles and machinery as well as handling of hazardous chemicals pose risks to employees. Inhalation and carcinogenic effect of some petroleum products. Encounters with wild animals and especially venomous species like snakes may pose risks to staff and especially uninformed guests. The air strip may pose safety risks if not properly operated, and regularly maintained. Security risks will be related to unauthorized entry, theft and sabotage.

Desired Outcome: To prevent injury, health impacts and theft.

Actions

Prevention:

- ◆ Clearly label dangerous and restricted areas as well as dangerous equipment and products. This includes the waste water treatment plants as well as all taps and outlets for treated effluent used for irrigation purposes.
- ◆ Equipment and goods locked away on site must be placed in a way that does not encourage criminal activities (e.g. theft).
- ◆ Provide all employees with required and adequate personal protective equipment (PPE) where required.
- ◆ Ensure that all personnel receive adequate training on operation of equipment / handling of hazardous substances.
- ◆ All health and safety standards specified in the Labour Act should be complied with.
- ◆ Implementation of maintenance register for all equipment and fuel/hazardous substance storage areas.
- ◆ All industry specific health and safety procedures and regulations applicable to the kitchen and the preparation of food for guests should be in place and adhered to.
- ◆ Inform all guests upon arrival not to approach seemingly tame wild animals like kudu and to be vigilant for, and not to confront, snakes or other potentially venomous animals.
- ◆ Adhere to legislation pertaining to safety of the NCAA on the operational procedures and maintenance of the landing strip to ensure all necessary safety parameters are in place.

Mitigation:

- ◆ Selected personnel should be trained in first aid and a first aid kit must be available on site. The contact details of all emergency services must be readily available.
- ◆ Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes: colour coding of pipes, operational, safe work and medical procedures, permits to work, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.).
- ◆ Security procedures and proper security measures must be in place to protect workers and clients, especially during cash in transit activities.
- ◆ Reduce the amount of cash kept on site to reduce the risk of robberies.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ NCAA regulations
- ◆ Any incidents must be recorded with action taken to prevent future occurrences.
- ◆ A report should be compiled of all incidents reported. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained.

2.2.7 Fire

Construction activities, failing electrical infrastructure and fires outside of designated areas may increase the risk of the occurrence of uncontrolled fires which may spread into the nearby veld. Fuel, especially unleaded petrol, is highly flammable and therefore presents a fire and explosion risk.

Desired Outcome: To prevent property damage, veld fires, possible injury and impacts caused by uncontrolled fires.

Actions:

Prevention:

- ◆ Ensure all chemicals are stored according to MSDS and SANS instructions and all spills / leaks are cleaned.
- ◆ Maintain regular site, mechanical and electrical inspections and maintenance.
- ◆ Clean and maintain fire breaks at strategic locations around the property.
- ◆ Fire used for purposes such as cooking (by staff and campers) must only be allowed within designated areas.
- ◆ For all fuel storage and the fuel retail facility, special note must be taken of the regulations stipulated in sections 47 and 48 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990).
- ◆ Follow SANS standards for operation and maintenance of the fuel retail facility and other fuel storage facilities where relevant.
- ◆ All dispensers must be equipped with devices that cut fuel supply during fires.

Mitigation:

- ◆ A holistic fire protection and prevention plan is needed. This plan must include evacuation plans and signage, an emergency response plan and a firefighting plan.
- ◆ Maintain firefighting equipment and promote good housekeeping.
- ◆ Personnel training (firefighting, fire prevention and responsible housekeeping practices).

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat themselves.
- ◆ A report should be compiled of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested and training given.

2.2.8 Noise

Since Farm Sesriem hosts tourist establishments, noise are typically kept to a minimum not to be a disturbance to guests. However, during construction and maintenance activities some noise generating activities can exist that may lead to hearing loss in workers. Aircraft landing and taking off from the airstrip may cause noise disturbances at nearby receptors. The closest receptors are the accommodation establishments on Farm Sesriem.

Desired Outcome: To prevent any nuisance and hearing loss due to noise generated.

Actions

Prevention:

- ◆ Follow Labour Act regulations and World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment.
- ◆ All machinery must be regularly serviced to ensure minimal noise production.

Mitigation:

- ◆ Hearing protectors as standard PPE for workers in situations with elevated noise levels.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Labour Act Regulations and WHO Guidelines.
- ◆ Maintain a complaints register.
- ◆ Report on complaints and actions taken to address complaints and prevent future occurrences.

2.2.9 Waste production

Various waste streams are produced during the operational and construction / maintenance phases. Waste may include hazardous waste associated with hydrocarbon products and chemicals, and soil and water contaminated with such products. Construction waste may include building rubble and discarded equipment. Domestic waste will be generated by the facility and related operations. Waste presents a contamination risk and when not removed regularly may become a health and / or fire hazard.

Desired Outcome: To reduce the amount of waste produced, and prevent pollution and littering.

Actions

Prevention:

- ◆ Educate staff in the importance of proper waste disposal.
- ◆ Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate.
- ◆ Ensure adequate disposal storage facilities are available.
- ◆ Ensure waste cannot be blown away by wind.
- ◆ Prevent scavenging (human and non-human) of waste at the storage facilities.
- ◆ The spill catchment traps and oil water separator at the fuel retail facility should be cleaned regularly and waste disposed of appropriately.
- ◆ Surfactants (soap) may not be allowed to enter the oil water separator at the fuel retail facility.

Mitigation:

- ◆ Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous material (empty chemical containers, and contaminated materials, soil and water).
- ◆ Liaise with the applicable authority regarding waste and handling of hazardous waste.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A register of hazardous waste disposal should be kept. This should include type of waste, volume as well as disposal method/facility.
- ◆ Any complaints received regarding waste should be recorded with notes on action taken.
- ◆ All information and reporting to be included in a report.

2.2.10 Ecosystem and Biodiversity Impact

The facilities on Farm Sesriem are existing facilities and no further impact on vegetation and habitat is expected. Poaching and illegal collection of plant and animal materials may occur. Impacts may also be related to pollution of the environment. Birds and animals colliding with aircraft landing or taking-off from the airstrip.

Desired Outcome: To avoid pollution of, and impacts on, the ecological environment.

Actions.

Prevention:

- ◆ The necessary permits from the Directorate of Forestry, Ministry of Agriculture, Water and Forestry, must be obtained for removal of all protected species if ever required.
- ◆ Educate all contracted and permanent employees on the value of biodiversity.
- ◆ Strict conditions prohibiting harvesting and poaching of fauna and flora should be part of employment contracts. This includes prohibitions or regulations on the collection of firewood.
- ◆ Regular inspection of fences and river courses for snares, traps or any other illegal activities.
- ◆ Disciplinary actions to be taken against all employees failing to comply with contractual conditions related to poaching and the environment.

Mitigation:

- ◆ Report any extraordinary animal sightings to the Ministry of Environment, Forestry and Tourism.
- ◆ Mitigation measures related to waste handling and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.
- ◆ Avoid scavenging of waste by fauna.

Responsible Body:

- ◆ Contractor
- ◆ Proponent

Data Sources and Monitoring:

- ◆ All information and reporting to be included in a report.

2.2.11 Groundwater, Surface Water and Soil Contamination

Various sources exist that may potentially pollute soil and subsequently groundwater. This include vehicles and machinery that leak oil or hydraulic fluids (e.g. earthmoving equipment and graders), leaking fuel pipes or tanks, spills during fuel offloading, etc. Operations entail the storage and handling of diesel and chemicals which present contamination risks if not sufficiently contained. Raw sewage or effluent not sufficiently treated that enters the environment can reach groundwater.

Desired Outcome: To prevent the contamination of water and soil.

Actions

Prevention:

- ◆ Proper training of operators of machinery and vehicles and employees must be conducted on a regular basis (fuel and chemical handling, spill detection, spill control).
- ◆ All construction machines should be maintained to be in a good working condition during operations.
- ◆ Employ drip trays and spill kits when servicing / repairs of equipment is needed.
- ◆ Spill control structures and procedures must be in place according to SANS standards or better and connection of all surfaces where fuel is handled, with an oil water separator.
- ◆ All fuelling should be conducted on surfaces provided for this purpose. E.g. Concrete slabs with regularly maintained seals between slabs.
- ◆ The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, must be audited and corrections made where necessary.
- ◆ Proper training of operators must be conducted on a regular basis (fuel handling, spill detection, spill control).
- ◆ The sewage treatment plants must be regularly inspected and serviced to ensure proper working condition.

Mitigation:

- ◆ Spill clean-up means must be readily available on site as per the relevant MSDS.
- ◆ Any spill must be cleaned up immediately.
- ◆ The spill catchment traps and oil water separator should be cleaned regularly and waste disposed of at a suitably classified hazardous waste disposal facility.
- ◆ Surfactants (soap) may not be allowed to enter the oil water separator e.g. no soap usage on spill control surfaces.
- ◆ Adhere to the effluent standards as determined by the effluent disposal permit.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Effluent Disposal Permits
- ◆ Inspection holes at the ends of the tanks must as a minimum be inspected every 14 days and measurements must be recorded for future reference. Inspection must include the evaluation of LNAPL on the water surface, if liquid is present.
- ◆ A report should be compiled of all spills or leakages reported. The report should contain the following information: date and duration of spill, product spilled, volume of spill, remedial action taken.

2.2.12 Visual Impact

This is an impact that not only affects the aesthetic appearance, but also the integrity of the facility.

Desired Outcome: To minimise aesthetic impacts associated with the facility.

Actions

Mitigation:

- ◆ Regular waste disposal, good housekeeping and routine maintenance on infrastructure will ensure that the longevity of structures are maximised and a low visual impact is maintained.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A report should be compiled of all complaints received and actions taken.

2.2.13 Cumulative Impact

Possible cumulative impacts associated with the operational phase and any maintenance / construction activities are mainly linked to increased traffic that can result in accidents and dust.

Desired Outcome: To minimise cumulative all impacts associated with the facility.

Actions

Mitigation:

- ◆ Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.
- ◆ Reviewing biannual and annual reports for any new or re-occurring impacts or problems would aid in identifying cumulative impacts and help in planning if the existing mitigations are insufficient

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Summary report based on all other impacts must be created to give an overall assessment of the impact of the operational phase.

2.3 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the ECC. Decommissioning was however assessed as construction activities may include modification and decommissioning. Should decommissioning occur at any stage, rehabilitation of the area may be required. Decommissioning will entail the complete removal of all infrastructure including buildings and underground infrastructure that will not be retained for future land use. Any pollution present on the site must be remediated. The impacts associated with this phase include noise and waste production as structures are dismantled. Noise must be kept within Labour Act and WHO standards and waste should be contained and disposed of at an appropriately classified and approved waste facility and not dumped in the surrounding areas. Future land use after decommissioning should be assessed prior to decommissioning and rehabilitation initiated if the land would not be used for future purposes. The EMP for the facility will have to be reviewed at the time of decommissioning to cater for changes made to the site and implement guidelines and mitigation measures.

2.4 ENVIRONMENTAL MANAGEMENT SYSTEM

The proponent could implement an Environmental Management System (EMS) for their operations. An EMS is an internationally recognized and certified management system that will ensure ongoing incorporation of environmental constraints. At the heart of an EMS is the concept of continual improvement of environmental performance with resulting increases in operational efficiency, financial savings and reduction in environmental, health and safety risks. An effective EMS would need to include the following elements:

- ◆ A stated environmental policy which sets the desired level of environmental performance;
- ◆ An environmental legal register;
- ◆ An institutional structure which sets out the responsibility, authority, lines of communication and resources needed to implement the EMS;
- ◆ Identification of environmental, safety and health training needs;
- ◆ An environmental program(s) stipulating environmental objectives and targets to be met, and work instructions and controls to be applied in order to achieve compliance with the environmental policy; and
- ◆ Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMS.
- ◆ The EMP

3 CONCLUSION

The above updated EMP, if properly implemented will help to continually minimise adverse impacts on the environment. Where impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts. To ensure the relevance of this document to the specific stage of project, it needs to be reviewed throughout all phases.

The EMP should continue to be used as an on-site reference document during all phases of the project, and auditing should take place in order to determine compliance with the EMP for the proposed site. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken.

Monitoring reports must be submitted to the Ministry of Environment, Forestry and Tourism every six months (bi-annually) to allow for the future renewal of the ECC.

4 REFERENCES

Faul A, Botha P, Coetzer W, Short S; 2019 March; Sossusvlei Lodge, Sossus Oasis Campsite and Fuel Retail Facility, Desert Camp and Desert Quiver Camp on Farm Sesriem, Hardap Region: Environmental Impact Assessment