

APP-001174
REFURBISHMENT AND OPERATIONS OF MIDGARD
COUNTRY ESTATE
ENVIRONMENTAL MANAGEMENT PLAN



Prepared by:



Prepared for:



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Project:	REFURBISHMENT AND OPERATIONS OF MIDGARD COUNTRY ESTATE: ENVIRONMENTAL MANAGEMENT PLAN	
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TABLE OF CONTENTS

1	INTRODUCTION.....	1
2	OBJECTIVES OF THE EMP.....	1
3	IMPLEMENTATION OF THE EMP.....	1
4	MANAGEMENT OF IMPACTS.....	2
4.1	CONSTRUCTION AND OPERATIONS	2
4.1.1	<i>Planning.....</i>	2
4.1.2	<i>Skills and Development.....</i>	3
4.1.3	<i>Revenue Generation and Employment.....</i>	4
4.1.4	<i>Demographic Profile and Community Health</i>	5
4.1.5	<i>Traffic</i>	6
4.1.6	<i>Health, Safety and Security.....</i>	7
4.1.7	<i>Fire</i>	9
4.1.8	<i>Noise</i>	10
4.1.9	<i>Waste production</i>	11
4.1.10	<i>Ecosystem and Biodiversity Impact</i>	12
4.1.11	<i>Groundwater, Surface Water and Soil Contamination</i>	13
4.1.12	<i>Groundwater Availability</i>	14
4.1.13	<i>Water Reuse</i>	15
4.1.14	<i>Visual Impact.....</i>	16
4.1.15	<i>Archaeological, Heritage and Cultural Impact</i>	17
4.1.16	<i>Impacts on Utilities and Infrastructure.....</i>	18
4.1.17	<i>Cumulative Impact.....</i>	19
4.2	DECOMMISSIONING AND REHABILITATION	20

1 INTRODUCTION

O&L Leisure (Pty) Ltd requested Geo Pollution Technologies (Pty) Ltd to prepare an environmental management plan (EMP) for the continued operations and planned refurbishment activities associated with their existing Midgard Country Estate accommodation and events establishment. Midgard Country Estate is situated on Farm Midgard (FMJ/00191) along the D2102 District Road that connects Okahandja with the B6 Trunk Road, east of Windhoek. It was established in 1993 and currently has 46 rooms and refurbished rail carriages with 72 beds. The estate further provides various hospitality services including a restaurant, swimming pools, gym, sauna, spa, jungle gym, vintage automobile collection, a nine-pin bowling alley, tennis court, volleyball court, outdoor chess, hiking and driving trails, fuel supply, as well as events venues and conference facilities. Day to day operations rely on support infrastructure including water supply from boreholes and electricity supply from NamPower which is augmented by their own photovoltaic installation. Operational activities include day to day lodge operations with typical services such as guest bookings and reception, food and beverage, room cleaning and laundry, as well as grounds maintenance and gardening. Infrastructure maintenance continues on a daily basis and may include infrastructure repairs or replacements and some minor construction activities. In addition to the existing infrastructure, the Proponent plans to refurbish most of the current infrastructure, as well as demolish and reconstruct some of the older buildings with the purpose of converting them to rooms. Repurposing of these buildings will allow for an additional 39 new rooms to be constructed. A new biological waste water treatment plant will be installed that ultimately will treat waste water to such a standard that it can be re-used for irrigation purposes.

2 OBJECTIVES OF THE EMP

The 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 both the construction and operations associated with the project should be made aware of the contents of the EMP, so as to plan the relevant activities accordingly, in an environmentally sound manner.

The objectives of the EMP are:

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

3 IMPLEMENTATION OF THE EMP

Section 4 outline the management of the environmental elements that may be affected by the different activities. Impacts addressed and mitigation measures proposed are seen as minimum requirements which have to be elaborated on. Delegation of mitigation measures and reporting activities should be determined by the proponent and included in the EMP. The EMP is a living document that must be prepared in detail, and regularly updated, by the proponent as the project progress and evolve.

The EIA, EMP and environmental clearance certificate (ECC) must be communicated to the site managers. A copy of the ECC and EMP should be kept on site. 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 the ECC will require six monthly reports based on the monitoring prescribed in this EMP.

4 MANAGEMENT OF IMPACTS

4.1 CONSTRUCTION AND OPERATIONS

The following section provide management measures for both the operational phase as well as construction activities related to development of the mariculture activities.

4.1.1 Planning

During the phases of planning for the operations, refurbishment / 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 avoided/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, Hospitality Association of Namibia (voluntary), 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 plan, emergency response plan and HSE manuals.
 - Adequate protection and indemnity insurance cover for incidents.
 - Procedures, equipment and materials required for emergencies (e.g. firefighting, first aid, etc.).
 - Relevant labour and safety standards.
- ◆ 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.
- ◆ Keep monitoring reports on file for submission every six months to allow for environmental clearance certificate renewal applications where needed. This is a requirement by MEFT.
- ◆ Appoint a specialist environmental consultant to update the EIA and EMP and apply for renewal of the environmental clearance certificate prior to expiry.

4.1.2 Skills and Development

During the operational 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. Midgard 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:

- ◆ Sourcing of employees and contractors must first be at local level and if not locally available, regional or national options should be considered. Deviations from this practice must be justified.
- ◆ Skills development and improvement programs must be made available as identified during performance assessments of employees.
- ◆ Inform employees 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.
- ◆ Include all information in a bi-annual report.

4.1.3 Revenue Generation and Employment

The change in land use, from agriculture to tourism, led 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 Midgard. Livelihoods are thus sustained and the spending power of the local community increased. Revenue is generated through the provision of hospitality and tourism services. Increased travel within Namibia and specifically to this region may increase the demand for accommodation and related services.

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

Enhancement:

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

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Bi-annual summary report based on employee records.

4.1.4 Demographic Profile and Community Health

Jobseekers migrating to the area may lead to increased unemployment and expansion of informal settlements. Here, factors such as communicable disease like HIV / AIDS as well as alcoholism and drug abuse may thrive. These are typically aggravated when an influx of seasonal workers, and possible foreign construction teams and contractors, occur. An increase in foreign people in the area, linked to unemployment, may potentially increase the risk of criminal and socially / culturally deviant behaviour. However, the contribution by the Proponent to these problems is considered to be unlikely.

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

Actions:

Prevention:

- ◆ Appointment of reputable contractors where applicable.
- ◆ Employ only people from the area, deviations from this practice should be justified.
- ◆ Adhere to all local authority by-laws relating to environmental health, which includes, but is not limited to, sanitation requirements for employees.
- ◆ Educational programmes for employees on various topics of social behaviour and HIV/AIDs and general upliftment of employees' social status.
- ◆ Disciplinary steps, within the legal parameters of Namibia, to be taken for socially deviant behaviour at the employee-housing compound or during working hours should be clearly stipulated in employment contracts.

Mitigation:

- ◆ Take disciplinary action against employees not adhering to contractual agreements with regard to socially deviant behaviour (e.g. alcohol or drug abuse during working hours).

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Bi-annual summary report based on educational programmes and training conducted.
- ◆ Employee contracts on file.
- ◆ Bi-annual report and review of employee demographics.

4.1.5 Traffic

Potential traffic impacts are limited to the turnoff from the district road to Midgard and the gravel road leading to the lodge and campsite. The D2102 District Road is however a relatively low traffic road and impacts here are expected to be unlikely.

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 facility as well as speed limits and animal crossings on the gravel road leading to the lodge and campsite.

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.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Record all traffic related complaints and the actions taken to prevent impacts from repeating itself.
- ◆ Compile a bi-annual report of all incidents reported, complaints received, and actions taken.

4.1.6 Health, Safety and Security

Daily operational and maintenance and construction activities on Midgard are reliant on human labour. Such activities have varying degrees of health and safety risks. Examples include the operation of vehicles and machinery with moving parts and the handling of hazardous chemicals with inherent health hazards, such as fuel and disinfectants, when ingested, inhaled or physical contact occur. Treated effluent used for irrigation may still contain parasitic cysts, even after treatment with chlorine. As such exposure and ingestion of such water, or contact with plants and lawns irrigated with such water, continue to pose health risks. Encounters with wild animals and especially venomous species like snakes may pose risks to staff and especially uninformed guests. Security risks will be related to unauthorized entry, theft and sabotage.

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

Actions

Prevention:

- ◆ Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool.
- ◆ Comply with all health and safety standards as specified in the Labour Act and related legislation.
- ◆ Clearly label dangerous and restricted areas as well as dangerous equipment and products. This includes the waste water treatment plant as well as, in future, all taps and outlets for treated effluent used for irrigation purposes.
- ◆ Do not use treated sewage effluent to water lawns (or other areas) where guests and employees can come into contact with it.
- ◆ Lock away or store all equipment and goods on site in a manner suitable to discourage 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 the operational procedures of equipment and machinery and the handling of hazardous substances.
- ◆ Train selected personnel in first aid and ensure first aid kits are available on site.
- ◆ The contact details of all emergency services must be readily available.
- ◆ Implement a maintenance register for all equipment whose malfunction can lead to injury or exposure to hazardous substances.
- ◆ 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 baboons, and to be vigilant for, and not to confront, snakes or other potentially venomous animals. Guest should be encouraged to report sightings of, or encounters with, dangerous animals.

Mitigation:

- ◆ Treat all minor work related injuries immediately and obtain professional medical treatment if required.
- ◆ Assess any safety problems and implement corrective action to prevent future occurrences.
- ◆ 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:

- ◆ Any incidents must be recorded with action taken to prevent future occurrences.

- ◆ Compile a bi-annual report of all incidents reported. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained.

4.1.7 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 stored and handled on site are flammable and increases the fire risk. Veld fires as a result of for example lightning may impact on the estate and its infrastructure.

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

Actions:

Prevention:

- ◆ Prepare a holistic fire protection and prevention plan. This plan must include evacuation plans and signage, an emergency response plan and a firefighting plan.
- ◆ Personnel training (safe operational procedures, firefighting, fire prevention and responsible housekeeping practices).
- ◆ Ensure all flammable chemicals are stored according to material safety data sheet (MSDS) and SANS instructions and all spills or leaks are cleaned immediately.
- ◆ Maintain regular site, mechanical and electrical inspections and maintenance.
- ◆ Maintain firefighting equipment and promote good housekeeping.
- ◆ Clean and maintain firebreaks at strategic locations on the property.
- ◆ Notify the local farmers' association as well as all surrounding farmers if planned burns (e.g. to create firebreaks) are planned.
- ◆ Allow fires used for purposes such as cooking (by staff or guests) in designated areas only.

Mitigation:

- ◆ Implement the fire protection and firefighting plan in the event of a fire.
- ◆ Quick response time by trained staff will limit the spread and impact of fire.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Maintain a register of all incidents on a daily basis. Include measures taken to ensure that such incidents do not repeat themselves.
- ◆ Compile a bi-annual incidents report. The report should also contain dates when fire drills were conducted and when firefighting equipment were tested and training given.

4.1.8 Noise

Since Midgard is a tourist establishment, 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 and a nuisance to guests.

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

Actions

Prevention:

- ◆ Follow 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.
- ◆ Scheduling of high noise activities to avoid guest disturbances.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ WHO Guidelines.
- ◆ Contractor HSE plan.
- ◆ Maintain a complaints register.
- ◆ Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.

4.1.9 Waste production

Various waste streams result from the operational and possible construction and maintenance activities. Waste may include hazardous waste associated with hydrocarbon products and chemicals, as well as soil and water contaminated with such products. Construction waste may include building rubble and discarded equipment. Domestic waste will be generated by the guests and employees on Midgard. Waste presents a contamination risk and when not removed regularly may become a health and / or fire hazard and attract wild animals and scavengers. Sewage is a form of liquid biological waste that needs disposal.

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

Actions

Prevention:

- ◆ Implement waste reduction measures. All waste that can be re-used / recycled must be kept separate.
- ◆ Ensure adequate temporary storage facilities for disposed waste are available.
- ◆ Prevent windblown waste from entering the environment.
- ◆ Prevent scavenging (human and non-human) of waste at the storage facilities.
- ◆ Educate employees on the importance of proper waste handling and disposal.

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).
- ◆ Empty chemical containers that may present a contamination / health risk must be treated as hazardous waste. Workers should not be allowed to collect such containers for purposes of storing water or food. This can be achieved by puncturing or crushing such containers prior to disposal.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Maintain a register of disposal of hazardous waste. 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 bi-annual report.

4.1.10 Ecosystem and Biodiversity Impact

Midgard is an existing facility. The construction and refurbishment planned at the lodge and campsite may have an impact on vegetation. Poaching and illegal collection of plant and animal materials may occur as well as illegal grazing by neighbours' livestock. Impacts may also be related to pollution of the environment.

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

Actions.

Prevention:

- ◆ Where possible, removal of trees, especially protected species and large trees, must be avoided during construction activities.
- ◆ The necessary permits from the Directorate of Forestry, MEFT, must be obtained for removal of all protected species.
- ◆ Educate all contracted and permanent employees on the value of biodiversity and strict conditions prohibiting harvesting and poaching of fauna and flora must be part of employment contracts. Include prohibitions or regulations on the collection of firewood.
- ◆ Regular inspection of fences and river courses for snares, traps or any other illegal activities.
- ◆ Strictly adhere to pesticide application instructions and use pesticides only for the purposes for which it is registered and marketed. Importantly, pesticides should not be used to kill vermin unless specifically registered for that purpose, and even then alternative, environmentally friendly methods should be investigated and used.
- ◆ Disciplinary actions to be taken against all employees failing to comply with contractual conditions related to poaching and the environment.
- ◆ Over-abstraction of groundwater may potentially have devastating effects on plant and animal populations reliant on it. This include the drying up of springs, dying of trees and migration or dying of animals.

Mitigation:

- ◆ For construction activities, contain construction material to a designated laydown area and prevent unnecessary movement out of areas earmarked for clearing and construction.
- ◆ Report any extraordinary animal (endangered or protected) sightings to the MEFT.
- ◆ 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.
- ◆ Take disciplinary action against any employees failing to comply with contractual conditions related to poaching and the environment.

Responsible Body:

- ◆ Contractor
- ◆ Proponent

Data Sources and Monitoring:

- ◆ Report on all extraordinary animal or plant sightings or instances of poaching.
- ◆ Keep frequent records of borehole water levels and abstracted water volumes to identify any trends or consistent reduction in water levels.
- ◆ Compile a bi-annual report on all monitoring results and incidents.

4.1.11 Groundwater, Surface Water and Soil Contamination

During the refurbishment phase various activities will require the use of fuel and lubricants. Additional hazardous materials such as paints and solvents may further be used. The use of such materials poses a contamination risk to the soil, groundwater and surface water. Spills and leaks may occur which may detrimentally affect the environment. Porous surface substrate can allow hazardous substances to seep down to the water table either at the location of the spillage or after being washed away by surface flow. Groundwater might spread pollutants to neighbouring receptors and may create an impact on downstream water users. During operations, contamination risks are limited to the maintenance of the facility and is not expected to be a significant risk. Such risks include sewage leakages in plant and pipeline infrastructure. Disposal of treated effluent should not be allowed into the primary aquifer associated with the Swakop River, as where the water supply of the lodge is located.

Desired Outcome: Prevent any form of contamination of the groundwater, surface water and soil.

Actions

Prevention:

- ◆ The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, must be audited and corrections made where necessary.
- ◆ All vehicles and machines to have the necessary spill kits.
- ◆ All chemicals should be stored and used as per their MSDS.
- ◆ Regular inspection and maintenance of all equipment and sewage pipelines.

Mitigation:

- ◆ Any fuel spillage of more than 200 litres must be reported to the Ministry of Mines and Energy.
- ◆ Spill clean-up means must be readily available on site as per the relevant MSDS and spills must be cleaned up immediately.
- ◆ Polluted soil must be remediated where possible. Polluted soil and building rubble must be transported away from the site to an approved and appropriately classified waste disposal site.
- ◆ Removal of waste should be at regular (weekly) intervals, or sooner if necessary, to maintain visual orderliness, but more so to not give time for liquid waste to enter the soil substrate.
- ◆ Strictly adhere to the effluent standards as determined by the effluent disposal permit.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Department of Water Affairs, Ministry of Agriculture Water and Forestry – Code of Practice Vol 3 Biological Filtration Systems, Code of Practice Vol 6 Wastewater Re-use and Water Quality Standards for Effluent.
- ◆ Maintain MSDS file for all hazardous chemicals kept on site.
- ◆ Effluent Disposal Permit
- ◆ Effluent monitoring as per effluent disposal permit conditions including daily residual chlorine concentrations which should not be lower than 0.5 mg/l when water will be re-used for irrigation purposes.
- ◆ A report should be compiled bi-annually of all spills or leakages reported and effluent and groundwater quality analysis results. The report should contain the following information: date and duration of spill, product spilled, volume of spill, remedial action taken and the results of the quality analysis of effluent and groundwater.

4.1.12 Groundwater Availability

The over abstraction of groundwater may lead to declining water levels. This may negatively impact on surrounding users as well as existing habitats that depend on groundwater. For example the availability of groundwater may have an operational impact on Midgard and surrounding farms, as well as a wider spatial scale. Over abstraction of groundwater by surrounding users may contribute to the decline in water levels (cumulative impact).

Desired Outcome: To utilise the groundwater sustainably.

Actions

Prevention:

- ◆ Spread the water abstraction points over a larger area to diffuse the impact.
- ◆ Monthly water level monitoring.
- ◆ Bi-annual re-evaluation of abstraction strategy based on monitoring data.

Mitigation:

- ◆ Implement water use reduction measures.
- ◆ Optimise water usage and implement water loss prevention strategies.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Monthly rest water level monitoring.
- ◆ Bi-annual re-evaluation of abstraction strategy based on monitoring data.
- ◆ Maintain a register of all monitoring and compile a bi-annual report.

4.1.13 Water Reuse

Water is a valuable commodity in Namibia. The re-use of water through the sewage reclamation process for irrigation purposes, will reduce possible demand on water supply as provided by boreholes. The re-purposed water will be used for irrigation for the gardens.

Desired Outcome: Provision and sustainable supply of reclaimed water for irrigation purposes to reduce the demand on the borehole water supply.

Actions

Mitigation:

- ◆ All personnel and guest must be educated (e.g. notices in toilets) on items that may not be disposed of in the toilets and drains, such as sanitary products and chemicals that may block, fill or reduce the capacity of the reclamation facility. This will maximize the efficiency of the reclamation facility.
- ◆ Regular maintenance of the facility to ensure optimum functioning.
- ◆ Ensure employees responsible for operations of the facility are trained on the correct operational procedures.
- ◆ Educational programs on water conservation, use (and dangers) of reclaimed water to be presented to all employees.
- ◆ Reused water must be free of pathogens.

Responsible Body:

- ◆ O & L Leisure (Pty) Ltd

Data Sources and Monitoring:

- ◆ Water sampling according to permit conditions.
- ◆ Recording of all maintenance conducted on facility.
- ◆ Register of training provided.

4.1.14 Visual Impact

This is an impact that not only affects the aesthetic appearance, but also the integrity of the facility. Visual impacts during operations will be very unlikely unless temporary structures are erected.

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:

- ◆ Compile a bi-annual report of all complaints received and actions taken.

4.1.15 Archaeological, Heritage and Cultural Impact

Areas along the river may previously have been inhabited by San people. Although unlikely some archaeological artefacts may thus be present. The nearby graveyard has heritage and cultural value. No impact on the graveyard is expected from Midgard's operational and construction activities.

Desired Outcome: To preserve any artefacts of archaeological, heritage or cultural significance.

Actions

Prevention:

- ◆ Inform all employees to be vigilant for any extraordinary finds and to take action not to cause any damage.

Mitigation:

- ◆ If such a site or any other archaeologically important artefact is found a "chance finds procedure" must be initiated which includes stopping any further work that can cause damage and reporting to superiors and the relevant authorities.
- ◆ For any human remains, the Namibian Police must be informed as a first action.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Compile a bi-annual report of all chance finds, proof of reporting to authorities and actions taken.

4.1.16 Impacts on Utilities and Infrastructure

Any damage caused during construction and maintenance activities to existing infrastructure and services supply like roads and electricity where present. This includes infrastructure essential for the operations of Midgard.

Desired Outcome: No impact on utilities and infrastructure.

Actions

Prevention:

- ◆ Appointing qualified and reputable contractors is essential.
- ◆ The contractor must determine exactly where amenities and pipelines are situated before construction commences (utility clearance e.g. ground penetrating radar surveys).
- ◆ Liaison with the suppliers of services is essential.

Mitigation:

- ◆ Emergency procedures for corrective action available on file.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Emergency procedures for corrective action available on file.
- ◆ Compile a bi-annual report on all incidents that occurred and corrective action taken.

4.1.17 Cumulative Impact

Possible cumulative impacts associated with the operational phase and any maintenance / construction activities are mainly linked to increased traffic. Being isolated, cumulative impacts are however expected to be unlikely.

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 reports for any new or re-occurring impacts or problems would aid in identifying cumulative impacts. Planning and improvement of the existing mitigation measures can then be implemented.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Create a summary report based on all other impacts to give an overall assessment of the impacts of the operational phase.

4.2 DECOMMISSIONING AND REHABILITATION

Closure and decommissioning of Midgard as a whole is not foreseen during the validity of the environmental clearance certificate or in the foreseeable future. However, it is more likely that certain components of Midgard may be decommissioned or changed. Decommissioning is therefore included for this purpose as well as the fact that construction activities may also include modification and decommissioning. Future land use after decommissioning should be assessed prior to decommissioning and rehabilitation initiated if the land would not be used for future purposes. 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. 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 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. The EMP for the facility will have to be reviewed at the time of decommissioning to cater for changes made to the site and to implement guidelines and mitigation measures.