

Project Name:	<p align="center">ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A NEW SEWERAGE TREATMENT PLANT IN OSHAKATI, OSHANA REGION</p>
The Proponent:	<p align="center">Oshakati Town Council Private Bag 5530 Oshakati</p>
Prepared by:	<div data-bbox="557 754 1445 992" style="border: 1px solid black; padding: 10px;">  <p>Green Earth ENVIRONMENTAL CONSULTANTS</p> </div> <p>1st floor Bridgeview Offices & Apartments, No. 4 Dr Kwame Nkrumah Avenue, Klein Windhoek, Namibia PO Box 6871, Ausspannplatz, Windhoek</p>
Release Date:	<p align="center">June 2020</p>
Consultant:	<p align="center">C. Du Toit C. Van Der Walt Cell: 081 127 3145 Fax: 061 248 608 Email: charlie@greenearthnamibia.com</p>

Table of Contents

1. INTRODUCTION	4
2. BACKGROUND AND SITE INFORMATION	4
3. RECOMMENDATION	5
4. ENVIRONMENTAL MANAGEMENT PLAN (EMP).....	6
4.1. PLANNING PHASE	6
4.1.1. <i>Addressing of Aesthetic and Visual Issues</i>	<i>7</i>
4.1.2. <i>Ensuring water consumption efficiency.....</i>	<i>8</i>
4.1.3. <i>Ensuring energy consumption efficiency</i>	<i>9</i>
4.1.4. <i>Limiting creation of solid waste.....</i>	<i>9</i>
4.2. CONSTRUCTION PHASE	10
4.2.1. <i>Spillages of potentially toxic materials.....</i>	<i>11</i>
4.2.2. <i>Site Preparation</i>	<i>11</i>
4.2.3. <i>Building Materials</i>	<i>12</i>
4.2.4. <i>Facilities for Workers</i>	<i>13</i>
4.2.5. <i>Waste Management.....</i>	<i>14</i>
4.2.6. <i>Water Use.....</i>	<i>15</i>
4.2.7. <i>Wildlife</i>	<i>16</i>
4.2.8. <i>Fuel, Transport and Storage</i>	<i>16</i>
4.2.9. <i>Vehicles, Trucks, Roads and Tracks.....</i>	<i>17</i>
4.2.10. <i>Vegetation</i>	<i>18</i>
4.2.11. <i>Fauna</i>	<i>19</i>
4.2.12. <i>Noise</i>	<i>19</i>
4.2.13. <i>Dust.....</i>	<i>20</i>
4.2.14. <i>Visual Impacts.....</i>	<i>20</i>
4.2.15. <i>Historical, archaeological and cultural heritage.....</i>	<i>21</i>
4.2.16. <i>Accommodation and Sanitation</i>	<i>21</i>
4.2.17. <i>Rehabilitation of site after completion of construction phase.....</i>	<i>22</i>
4.2.18. <i>Health</i>	<i>23</i>
4.3. THE OPERATIONAL PHASE.....	24
4.3.1. <i>Human Waste Management</i>	<i>25</i>
4.3.2. <i>Solid Waste Management (namely kitchen scraps, tins, bottles, paper, etc.).....</i>	<i>26</i>
4.3.3. <i>Water Management.....</i>	<i>26</i>
4.3.4. <i>Energy Management.....</i>	<i>27</i>
4.3.5. <i>Visitor Management.....</i>	<i>28</i>
4.3.6. <i>Nature Conservation.....</i>	<i>28</i>

4.3.7.	<i>Maintaining Sense of Place</i>	29
4.3.8.	<i>Community Relations</i>	30
4.3.9.	<i>Worker Health</i>	30
4.4.	DECOMMISSIONING/CLOSURE PHASE	32
4.4.1.	<i>Equipment</i>	33
4.4.2.	<i>Stormwater and Wastewater Management</i>	34
4.4.3.	<i>Waste Management</i>	34
4.4.4.	<i>Spillage</i>	35
4.4.5.	<i>Remediation</i>	35
5.	ENVIRONMENTAL STATEMENT/AGREEMENT	36

1. INTRODUCTION

According to the Environmental Management Act (2007), the proposed construction and operation of the sewerage treatment plant in Oshakati are part of the listed activities for which an Environmental Impact Assessment (EIA) has to be conducted and which needs an Environmental Clearance (EC) from the Ministry of Environment and Tourism (MET) before implementation of the project. The MET indicated that they would consider the Environmental Clearance for Oshakati Town Council upon the submission of an Environmental Management Plan (EMP).

The proponent (Oshakati Town Council) appointed *Green Earth Environmental Consultants* to prepare an Environmental Management Plan (EMP) to guide the operations and activities of the proposed project. The EMP was prepared from information gathered from the proponent and knowledge of the site (based upon several site visits) as well as from experience with EIA's and EMP's conducted for other similar operations. The assessment concluded that the proposed activities will not pose any long term or irreversible threats to the receiving or surrounding environment if the operations are conducted along the guidelines of this EMP.

The EMP included in this document contains practical measures that should be taken and maintained by the Developer and Manager of the project in order to prevent potentially negative impacts on the environment, both from the ecological and social perspective. The EMP assigns rules, regulations and responsibilities and can be used by the MET and other relevant authorities as checklist to monitor compliance at the site. The idea is to minimize any negative impacts or to completely avoid it if possible in the operation of the proposed project.

The actions stated in this document (EMP) should be diligently followed in order to maintain a safe and healthy sustainable environment for future generations residing on the site and immediate environment. The proponent is responsible to oversee that the EMP is implemented and adhered to at all time. MET is kindly requested to consider and approve the EMP below and to issue a Clearance Certificate.

2. BACKGROUND AND SITE INFORMATION

The EMP included in this document is based on the principle that the relevant authorities with the MET as responsible Ministry, through their Environmental Control Officer's (ECO) with the proponent of the project as responsible person, should ensure that:

- The necessary environmental authorizations and permits have been obtained and are in use;
- Open and direct communication between the proponent and Interested and Affected Parties (I&APs) with regards to environmental and ecological matters are maintained;

- Regular site inspections of constructed areas and operations is conducted to ensure compliance with the EMP of the site;
- By complying with the guidelines of the EMP, the impact on the receiving environment is kept to a minimum or avoided;
- Immediate action is taken if EMP specifications are not followed or adhered to;
- The proponent/manager of the activities need to find environmentally responsible solutions;
- All new personnel/workers should be informed on the stipulations of the EMP and that environmental awareness is regarded as a high priority;
- Level of implementation and adherence to the EMP is audited on a regular basis;

There should be a clear message to the management and staff/workforce that non-adherence to or non-compliance with the EMP can lead to the withdrawal of the Environmental Clearance Certificate and might lead to the closure of the operations. It is against this background that the EMP for the proposed construction and operation of the sewerage treatment plant in Oshakati has been drafted.

3. RECOMMENDATION

The following measures are recommended:

- That Oshakati Town Council be granted approval by the DEA. In addition it is also essential that the environmental assessment of the proposed development continue as a remainder of the project even after approval.
- This Environmental Management Plan (EMP) should be implemented to mitigate potential impacts which are associated with the construction and operational phase of the project.
- Sensitive zoned areas or plant life on the site that was identified in the biophysical assessment should be avoided during the construction and operational phase of the project. However, the identified sensitive zones should be incorporated into the development, but it should remain protected and preserved.
- When building infrastructure, consider green building designs and environmentally sustainable design principles in the layout plans of the development for example make use of solar panels, rainwater tanks, recycling depots, etc.
- All development on the project site should be undertaken in such a way as to enhance the natural landscape and considers the visual impacts and benefits.
- Any activities that could potentially contribute to the pollution of any river nearby will have to be directed away from sensitive zones such as drainage lines and smaller rivers.
- Specific consideration should be given to services such as police and fire brigades especially in areas identified for operational uses.

The Operator should allow for the site to be audited bi-annually ascertaining that they remain sensitive to the environmental integrity of the place in which they operate.

An Environmental Management Plan (EMP) will have to be conducted in order for the recommendations to be fully stated and taken in consideration by the proponent and manager.

4. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The proposed EMP has been drawn to give guidance to:

- Planning of future extensions or replacing of infrastructure, equipment and services **(Planning Phase)**;
- Constructing and developing any infrastructure on the site **(Construction Phase)**;
- Operations concerning the daily management and running of the proposed activities **(Operational phase)**;
- Decommissioning of the activities **(Decommissioning Phase)**.

4.1. PLANNING PHASE

The location and design of the infrastructure must fit into the natural environment. The manager and the leaseholders must ensure that the sense of place be kept in accordance with the surrounding areas. Specific actions are required to ensure the negative effects or impacts are minimized on the site. The following measures should be followed:

4.1.1. Addressing of Aesthetic and Visual Issues

Responsible Person	Measures
The Proponent, Developer or Builder	<ul style="list-style-type: none">a. Buildings on the site must be visually pleasing.b. The building shapes and roads must not contrast too much of the area.c. The use of certain African or earthy colors (paint) on the buildings/structures, which are in harmony with the environment, are recommended.d. Should there be any further development regarding communication masts, solar panels, water tanks and other prominent features, it must be placed or constructed at spots that prohibits visual destruction or minimize visual impact.e. Tourists, residents or any persons driving past the site or operations should not be able to notice visually unpleasing objects.f. Avoid any neon or non-earthly signs that will reduce the sense of place, rather use rustic metal or wood to construct signs.g. All additional or new pipes and cables must be buried underground and not be visible to the public.

4.1.2. Ensuring water consumption efficiency

Responsible Person	Measures
The Developer and Builder	<ul style="list-style-type: none">a. The electricity consumed during construction is expected to vary however the electricity consumed during operation has been estimated at 200 kWh daily. Energy/electricity usage is not expected to be an issue however it is recommended to use energy/electricity only when needed.b. Any addition of lawns or cultivated gardens on the site must be limited since it makes use of clean water that should rather be reserved for human consumption. The cultivation or enhancements of locally adapted natural grasses which can survive the natural conditions are preferred.c. Grey water from the wastewater recycling facility must be recycled and distributed to the various stands or portions to be used for cleaning of facilities and vehicles and watering of gardens. This should be done through a dedicated secondary water distribution network which is clearly marked to prevent the human consumption thereof.d. The importance of using water sparingly must be communicated to staff members residing on the site.e. The surface drainage systems bordering the site/passing through the site must be maintained and channels must be kept open to conserve the environment and flow of water.f. Water efficient systems/equipment which limit the use of water or make recycling of water possible should be introduced.

4.1.3. Ensuring energy consumption efficiency	
Responsible Person	Measures
The Developer or Builder	<ul style="list-style-type: none"> a. Preference must be given to the implementation of energy conserving and efficient systems. Renewable energy sources like gas produced from household waste or solar should be considered to replace the current commercially supplied electricity where possible. b. Devices or equipment which conserves energy must be introduced and used in the operations.

4.1.4. Limiting creation of solid waste	
Responsible Person	Measures
The Manager	<ul style="list-style-type: none"> a. Consumables and containers which can be recycled or which are biodegradable must be introduced in order to limit the creation of solid waste which has to be taken out of the area to be managed and handled at another site. b. Concepts like pollution control, material substitution and maximization on recycling content in order to reduce waste generation and disposal should be introduced.

4.2. CONSTRUCTION PHASE

Construction is generally characterized by various activities that will take place on the site namely landscaping of the site, earthworks for the construction of bulk services and infrastructure, construction of buildings, removal, relocation, removal and planting of trees and shrubs, installation of drains/sewage systems, water pipelines, and installation of poles for power supply. All these activities have an unavoidable effect on the natural environment. Various actions must thus be undertaken to minimize the effect on the receiving and surrounding natural environment. The responsible persons in the entire process will be the proponent, the developer, project manager, subcontractors, etc. The developer takes the ultimate responsibility during the construction.

MET can ensure that the operations adhere to the EMP stipulations through regular site inspections. The manager must ensure that the contractor are aware of the EMP stipulations and enforces it on site. Throughout any construction it will be the project manager's obligation to inspect the site at least once per month to make sure that all the mitigations measures are followed, adhered to and implemented. The project manager must do a final inspection and evaluation once the development is completed. The project manager must also issue the building contractor with a completion letter once he or she is satisfied that the project has been done in accordance with the Environmental Management Plan. A copy of the final letter must be sent to the Director of Environmental Affairs (DEA).

Damage to the environment during construction has a few origins that differ to large degree: accidental, negligent, spillage, vehicles, earthmoving equipment, generators, workshops and plant areas excessive noise or heat, workers exposed to physical, chemical and ergonomic hazards. There are mitigation measures that must be followed in order to minimize or avoid damage and pollution. The following measures are based on the Ministry of Environment and Tourism (MET) regulations and must strongly be adhered to:

4.2.1. Spillages of potentially toxic materials

Responsible Person	Measures
The Developer, Builders and Workforce	<ul style="list-style-type: none"> a. Any spillages of potentially toxic materials, whether by accident or through negligence, must be reported and the corrective action must be undertaken to 'clean' and to remove the evidence of the spillage. b. Make use of design structures and transfer equipment so as to avoid spillage as far as possible. c. Train the staff members on how to make use of diesel/fuel transfer and to avoid spillage. d. Any spill must be cleaned up immediately by removing the spill together with the polluted soil and disposing of it at a recognized dumping site or facility. e. Install oil traps in all appropriate places to collect potentially toxic materials. f. When there is made use of diesel generators on site it must be placed on concrete slabs. g. When a workshop is introduced, the entire work area must be lined by concrete. h. Any runoff from the work areas either arising from wash downs or rainfall must be channeled into a pollution control pond. i. There must be a weekly monitoring of all equipment namely a visual check; there must also be a weekly monitoring of work areas.

4.2.2. Site Preparation

Responsible Person	Measures
The Developer and Builders	

	<ul style="list-style-type: none"> a. Before any workers, equipment or building materials are brought in; the developer must set out the entire plan. The corners of every building, walkway, driveway, parking area, water installation, power generator, etc must clearly be marked. b. The marked out area must be inspected and approved before any construction is started. c. The protected trees and plants should be marked by hazard tape or markers to ensure that it is not removed or damaged. If any protected trees or plants have to be removed the necessary permits from the Department of Forestry must be obtained. d. The building contractor must demarcate the area with metal droppers and hazard tape so that there will be no confusion about which area may be disturbed for additional development and which areas will strictly be off-limits. e. Disturbance and risks related to sitting and construction should be minimized at all time. Construction activities and site location should comply with national environment protection legislations and best practice environmental management guidelines. f. Construction should be carried out in a safe and effective manner and obstruction or danger to visitors or vehicles caused by the location of the facility, construction activity or material used in construction should be minimized.
--	--

4.2.3. Building Materials	
Responsible Person	Measures
The Developer, Builders and Workforce	<ul style="list-style-type: none"> a. All the materials needed for construction namely steel, bricks, sand, cement, poles, roofing, etc., must be brought into the site from outside.

	<ul style="list-style-type: none"> b. In the case of items that are not brought from a registered shop for example poles, the contractor must ensure that the harvesting of these materials did not cause any serious impacts at the place which they came from. c. Sand or filling materials required for the landscaping or leveling of the platforms/stands or for building purposes may only be collected or purchased from approved sites or from a registered shop/construction company and not from the rivers or streams nearby. d. However, rocks that will be used for cladding may be collected from the site. e. No materials, including rocks for building purposes may be collected from the environmentally sensitive areas pointed out in the Environmental Impact Assessment. f. The design, location, installation and operation of the underground cables or ducts must be in accordance with the principles as set out. g. Where underground cable or duct require the removal of protected plant species, a permit from the Department of Forestry is required for the removal of such plant.
--	--

4.2.4. Facilities for Workers	
Responsible Person	Measures
The Proponent, Developer and Builders	<ul style="list-style-type: none"> a. All workers that need to reside on the site while construction is in progress will have to be housed in temporary structures like tents or structures to limit the impact on the environment. The majority of the workforce will consist of people already living in the area which will commute on a daily basis between the site and their residences' and therefore minimum impact on the environment is expected. b. The workforce residing on the site must be provided with water, proper toilets and washing facilities. c. The toilets established on the site must preferably be flush type toilets that are mounted over a septic tank or a dry toilet system that is similar to the units used during road construction projects.

	<p>d. Cooking on the site must be done on gas or open fires. When the workers make use of open fires, these must be made in a designated spot so that there will be no possibility for a veldt fire occurring.</p> <p>e. Although the surrounding settlers collect wood in the area, construction workers working or residing on site should not be allowed to collect wood for cooking purposes. The manager or developer must provide them with wood/charcoal preferably from intruder bush from approved outside sources.</p>
--	--

4.2.5. Waste Management	
Responsible Person	Measures
<p>The Contractor, Developer and Builders</p>	<p>a. It is proposed that the proponent early on engage the services of a professional waste collection and management company like Rent-A-rum or Kleen Tek to advise, manage and operate the solid waste management of the site.</p> <p>b. It is advised that no combustible waste for example empty cement bags is burnt on site due to the danger of starting a veldt fire. These materials should be collected and temporary stored in enclosed wire or metal cages to be collected and removed to an approved landfill site on a regular basis.</p> <p>c. All non-combustible waste must be removed from the site at least once a week.</p> <p>d. Any waste that is stored temporarily on the site must be secured in refuse bags stored in a fenced-in area to avoid it being blown into the veldt.</p> <p>e. A temporary waste storage site may not be set up close to any dam, river, stream, borehole or any water courses.</p> <p>f. Measures must be taken to prevent waste that attracts scavengers for example jackals, baboons or birds.</p> <p>g. All waste must be dumped at an approved landfill site.</p> <p>h. No paint, solvents, thinners, diesel, oil or any other harmful substances may be poured onto the ground. The substances must be collected in containers and be removed from the site for proper disposal.</p>

--	--

4.2.6. Water Use	
Responsible Person	Measures
The Developer, Builders and Workforce	<ul style="list-style-type: none"> a. The proposed project will make use of water in its construction phase and operations however it is not anticipated that it will entirely be water-based operations. b. Water must at all times be used sparingly in the construction period as well as in all the other phases. c. All taps, pipes and tanks that will be constructed must be maintained and managed so that they do not leak. d. Water pipelines laid to the site shall be done in such a manner that the surface and natural vegetation are not unduly disturbed. e. Weekly visual checks on possible spillages must be conducted. f. Effluent water from washing facilities must be disposed of in properly constructed drains that must be located as far as possible, but not less than 50 meters from a stream, river, pan, dam or borehole. g. Drains may only collect domestic type wash water, any effluent containing oil, grease or other industrial substances must be collected in a suitable receptacle and must be removed from the site, it could either be for resale or for appropriate disposal at a recognized facility. h. There must be weekly inspections of drains. i. These drains must be demolished after construction and the sites must be cleaned and restored to its natural state. j. If concrete reservoir walls are built, it must be painted in a camouflage colour to aid in concealing it. k. When reservoirs are built, it must be covered to reduce evaporation. l. No reservoirs must be visible from the main road.

	<p>m. There must also be weekly visual checks of the reservoirs and it must be supervised on site by the managers.</p> <p>n. Water must be recovered if used for cutting, cooling or washing.</p> <p>o. The workforce must be advised to use water sparingly for human consumption.</p> <p>p. Water consumption must be checked on a three monthly basis.</p>
--	---

4.2.7. Wildlife	
Responsible Person	Measures
The Workforce, Builders, Contractors and Residents	<p>a. No wild animals on the site may be trapped or killed for any reason whatsoever by the workers, builders, contractors or residents.</p> <p>b. Problem animals should be reported and removed under the auspices of the MET.</p>

4.2.8. Fuel, Transport and Storage	
Responsible Person	Measures
The Vehicle Drivers, Builders, Contractors	<p>a. Vehicles that transport materials to and from the site must be road worthy.</p> <p>b. All drivers that transport materials must have a valid driver's license and must at all times adhere to traffic rules and regulations.</p> <p>c. Vehicles carrying loads must be properly secured in order to completely avoid items falling off the vehicle at any time.</p>

	<ul style="list-style-type: none"> d. The materials used in the construction process for example cement, bricks, poles, etc., must be stored at a central storage area on the site in order that the site be neat and orderly and to avoid a situation where materials are lying all over the place. e. Fuels, paints, solvents and chemicals must be stored in watertight containers that will ensure it cannot react with each other or be spilled onto the ground.
--	---

4.2.9. Vehicles, Trucks, Roads and Tracks	
Responsible Person	Measures
<p>The Vehicle Drivers, Builders and Contractors</p>	<ul style="list-style-type: none"> a. Any haphazard driving of any vehicles across the veldt where there are no existing routes must be avoided. b. Vehicles, trucks and earthmoving equipment with headlights must switch their headlights on at all times. c. No vehicles or trucks that move in the area may exceed 40km/h with warning, and speed signs must be positioned at relevant locations. d. All the personnel responsible for the driving of transport vehicles must be in possession of a valid driver's license. e. Any access points off the gravel road must be well signposted in advance. f. No littering is allowed along the road, dumping of waste and scrap, etc. and all drivers must be made aware of this. g. Daily or weekly visual checks are required and all drivers must be supervised. h. The safety of surrounding residents and land users, other motorists and animals should not be compromised by the vehicle associated with the constructional operation. i. Traffic control measures should be taken during construction in accordance with the traffic control regulations.

4.2.10. Vegetation

Responsible Person	Measures
<p>The Builders, Contractors and Workforce</p>	<ul style="list-style-type: none"> a. The proposed project will be in a semi disturbed natural area which is sparsely covered with vegetation. Special care should be taken to limit the destruction or damage of the vegetation. However, impacts on fauna and flora are expected to be minimal. Disturbance of areas outside the designated working zone is not allowed. b. There must be an overall preservation of vegetation communities to ensure minimal disruption of important vegetation communities and valuable plant specimens. c. At all times, clearance of vegetation for firewood must be avoided. d. Alternative fuel and/or power sources must be made available namely paraffin stoves and diesel-driven generators if workers are accommodated on the site. e. No trees or shrubs must be damaged for the purpose of obtaining firewood. f. Daily inspections must be carried out and weekly checks whether the stock of alternative sources is sufficient. g. The developers or constructors must ensure the maximum use of local plant material for rehabilitation processes. h. Before new site construction begins, the upper level of the soil must be stripped and stockpiled separately so that this layer can be utilized in the rehabilitation process. i. There must also be a visual check on the wind erosion on a monthly basis. j. Disturbance of flora and fauna should be minimized during construction and vegetation replaced to the satisfaction of the responsible authority at the conclusion of work.

4.2.11. Fauna	
Responsible Person	Measures
The Developers, Constructors, Residents and Workforce	<ul style="list-style-type: none"> a. No hunting and trapping of resident animals will be allowed on the site. b. The developers or constructors must fence off waste pit storage areas to prevent animals from falling in or getting entangled in waste. c. The fences must be sufficient to control the access of large and small animals. d. There must be weekly visual checks of the fences and staff must report to the managers.

4.2.12. Noise	
Responsible Person	Measures
The Workforce, Contractor and Builders	<ul style="list-style-type: none"> a. An increase of ambient noise levels at the proposed site is expected due to the construction activities. Noise pollution due to excavation, heavy-duty equipment and machinery will be generated. It is not expected that the noise generated during construction will impact any third parties due to the distance of the neighbouring activities. Ensure all mufflers on vehicles are in full operational order; and any audio equipment should not be played at levels considered intrusive by others. b. Construction works should not be carried out during undue hours or at nighttime. c. The construction staff should be equipped with ear protection equipment. d. If a generator is used, it must be positioned away from neighbouring land and must have boarding to help suppress noise. e. There must be limited impacts on the surroundings and on the workforce. f. There must be a weekly noise check of the generator and other equipment namely of trucks and construction machinery.

4.2.13. Dust	
Responsible Person	Measures
The Developers, Constructors and Builders	<ul style="list-style-type: none"> a. Dust generated during the transportation of building materials; construction and installation of bulk services, and problems thereof are expected to be low and site specific due to the sandy nature of the topsoils. Dust is expected to be worse during the winter months when strong winds occur. Release of various particulates from the site during the construction phase and exhaust fumes from vehicles and machinery related to the construction of bulk services are also expected to take place. Dust is regarded as a nuisance as it reduces visibility, affects the human health and retards plant growth. It is recommended that regular dust suppression be included in the construction activities, when dust becomes an issue. b. No unnecessary revving of engines or operation of vehicles is allowed. c. The impact of dust on the air quality in general and on the fauna and flora must be limited. d. The general speed limit on the haul road and construction site must be kept below 40km/h to limit dust generated by construction traffic. e. There must be daily visual monitoring of transport activities and dust generation in the area.

4.2.14. Visual Impacts	
Responsible Person	Measures
The Proponent, Developer, Constructor and Builders	<ul style="list-style-type: none"> a. The height of the buildings must ensure that the development is aesthetically pleasing. Waste and stockpile dumps must not be visible from the road or neighbouring developments. b. The developer must ensure that all structures on the sites are blending with the surrounding landscape.

	c. The design and architectural concepts proposed in the planning phase must be adhered to and implemented to ensure that the development is in harmony with the surrounding natural environment.
--	---

4.2.15. Historical, archaeological and cultural heritage	
Responsible Person	Measures
The Contractor, Developer and Builders	<ul style="list-style-type: none"> a. No archaeological or cultural heritage sites had been identified or observed during the environmental assessment. However the developer and his sub contractors must carefully examine on the area before any construction is undertaken. b. If any archaeological or cultural heritage sites are found on the site, the manager must immediately advise the National Monuments Council to ensure that steps are taken for the preservation of the site or artefacts.

4.2.16. Accommodation and Sanitation	
Responsible Person	Measures
The Constructors, Developers and Builders	<ul style="list-style-type: none"> a. There must be no camp or office site located closer than 100 meters from any spring, river, dam, pan or stream. There are no springs, rivers, dams or pans located on the project site; however surface drainage channels and streams (containing only water in the rainy season – ephemeral streams) are present on the site that should be avoided. b. If space is required for a camp or office site, it must be kept to a minimum.

	<p>c. Biodegradable chemical toilet facilities are preferred by the Ministry of Environment and Tourism. Other approved toilet facilities such as a septic drain must be used and located on the camp site in a way that it does not cause harm to any water bodies or the environment. If tanks should be emptied, it should be conducted by an approved truck system that will prevent spillages of harmful substances.</p>
--	---

4.2.17. Rehabilitation of site after completion of construction phase	
Responsible Person	Measures
<p>The Builders, Workforce and Developers</p>	<ul style="list-style-type: none"> a. Before any final rehabilitation is started on the site, the Ministry of Environment and Tourism must be advised to set certain terms and conditions. b. Qualified or accredited personnel from the constructing or developing companies must refill pits alternately with waste and not saleable stockpiled blocks and smaller fragments of larger blocks. c. Refilled rock waste must be covered with saved topsoil and complemented if necessary by scraping the area adjoining the pit on the condition that no vegetation is cleared for this operation. d. All rehabilitated areas must be monitored over a 4 year time period from the onset of the rehabilitation procedures. (The frequency of monitoring suggested is dependent on satisfactory performance. If however the requirements are not being met, the frequency of the monitoring must be increased). e. Unwanted materials and all waste namely domestic or industrial must be collected. Remaining domestic waste on site must be collected and transported to a recognised disposal facility. f. Waste material must be collected in drums and transported to a recognised disposal facility as well. g. All weedy species present on the site must manually be removed. h. Monitoring must be conducted when grasses are flowering. i. Upon the completion of all construction activities, remove workshops, surrounding fencing, generators and any scrap materials in the vicinity of the work area.

	<ul style="list-style-type: none"> j. Seal all petrol, diesel, oil and grease containers and remove it from the site to a recognised storage facility. k. Break up all unnecessary concrete slabs and structures on the site and transport the fragments to a suitable site for disposal or dump it in one of the pits. l. There must be photographic evidence at different rehabilitated places with a camera providing dates on the prints. These photographs must be taken every year around the same period at the same places.
--	--

4.2.18. Health	
Responsible Person	Measures
<p>The Builders, Workforce, Constructors, Developers and Residents</p>	<ul style="list-style-type: none"> a. The workforce should receive an induction course on awareness and spreading of HIV/AIDS. b. The workers should be informed that prevention is better than cure however condoms should be made available to the workers. c. The Ministry of Health and Social Services can be consulted to inform the workers of the dangers regarding the disease. d. HIV/AIDS's negative impacts/aspects should be discussed, and the workers should know the dangers regarding the disease for instance sickness, loss of energy and eventually death.

4.3. THE OPERATIONAL PHASE

Steps to be taken in the daily management and running of the proposed activities are stated in the following section. To ensure that the activities are operated on an environmentally sustainable manner the following **general guidelines** are included in the EMP:

- a. The project must be managed with minimal disturbance to the surrounding natural environment.
- b. It must be ensured that guests to the site behave in an appropriate manner that does not impact negatively on the environment, wildlife and local communities.
- c. The conservation of the natural and human environment must be regarded as high priority.
- d. An “environmental friendly behavior” must be cultivated and maintained amongst all people involved in the operation/activities.
- e. The entire operation on the site must ideally conform to the standards usually ascribed to “eco-tourism”.
- f. The job description for the manager must include his/her responsibilities and duties towards the implementation and adherence to the EMP.

The following specific environmental management issues which require daily operational attention from management and staff are included in the EMP:

4.3.1. Human Waste Management

Responsible Person	Measures
The Proponent, Developer and Builders	<ul style="list-style-type: none">a. All the toilets must be flush-type toilets and must drain into septic tanks/French drains which are connected to a wastewater recycling facility.b. The grey water from the wastewater treatment facility should be reused for washing of infrastructure and vehicles and the watering of gardens.c. They must make use of biodegradable toilet cleaners that do not kill the bacteria in the wastewater recycling facility.

4.3.2. Solid Waste Management (namely kitchen scraps, tins, bottles, paper, etc.)	
Responsible Person	Measures
The Proponent and Manager	<ul style="list-style-type: none"> a. Workers should be made aware of the importance of recycling waste to ensure that the recycling thereof starts at the source where the waste is generated. b. Operators of the stands should have access to facilities supporting recycling like dedicated containers for glass, metal, plastics, paper and others. c. At the end of each day waste must be taken to a dedicated waste management area. The site must be properly managed at the site to reduce the mass, to reduce the flies, to reduce the scavengers, to reduce the smell and to reduce wind-blown litter. d. The bins or drums must be washed after having been emptied. The bins must return to the site clean and dry. e. Cans, bottles or beverage containers must either be recycled or reused, or taken to the waste management area. The cans, bottles and containers must not accumulate on the site either near the buildings or anywhere on the site.

4.3.3. Water Management	
Responsible Person	Measures
The Proponent and Manager	<ul style="list-style-type: none"> a. The workforce and visitors must keep their water consumption below 90 liters of water per person. b. The manager must place notices that inform new staff about the importance of saving water on a daily basis. c. The grey water distribution network, taps and facilities should be clearly marked to prevent the human consumption of the water.

	<ul style="list-style-type: none"> d. Buildings, machines and vehicles must be washed with grey water from the wastewater treatment facility. e. Driveways on the site must be cleaned with brooms and not with water. f. All pipes must be well maintained and leaks must be repaired immediately. g. All taps must be turned off after it had been used. h. Floors must be cleaned with mops and not with a hosepipe. i. A water meter must be installed and it must be checked regularly to keep a register of water consumption, identify leaks early and to monitor trends.
--	--

4.3.4. Energy Management	
Responsible Person	Measures
The Proponent, Builders and Manager	<ul style="list-style-type: none"> a. Electricity must be obtained from approved electrical suppliers to ensure efficiency of generation and use as well as sustainability of supply. However solar panels are advised to be installed and used. b. Gas must be used as alternative to electricity in kitchens due to its efficiency and low pollution factor. c. They may only use a generator as emergency source of electricity as continues operation thereof normally creates additional noise, require the bulk storage of fuel and oil which can have a negative impact on the environment if not managed properly. d. When fires are used on the site, the workforce must make use of alien-invasive wood that is readily available for example wood that comes from bush encroaching species for example <i>Acacia melifera</i>. The workers must avoid using species that might be harvested unsustainably.

	e. The workers may not buy wood from the local people since that might lead to increased deforestation by cutting down protected species or the natural forests.
--	--

4.3.5. Visitor Management	
Responsible Person	Measures
The Proponent, Manager and Visitors	<ul style="list-style-type: none"> a. Information/notices must be placed in rooms in which staff must be informed about the importance of conserving water. b. Visitors must receive information on how to use energy efficiently. c. Certain rules must be communicated and enforced regarding the feeding of animals. d. Staff must be informed not to throw foreign objects down the toilets. e. Staff must refrain from making a noise and playing radios or musical instruments, etc.

4.3.6. Nature Conservation	
Responsible Person	Measures
The Proponent and Manager	<p>To sustain the natural attributes on the site, it needs to be preserved and protected to the best of their abilities. The manager of the activities has a key responsibility in protecting the wildlife on the site and the following measures should be taken:</p> <ul style="list-style-type: none"> a. Management must adopt pest control measures as also noted earlier in this EMP. b. They must have adequate waste management control. c. They must have adequate water management control.

	<ul style="list-style-type: none"> d. They must adopt and encourage responsible behavior during driving on the site. e. The workforce must refrain from planting alien plants. f. A general environmental awareness must be established amongst staff members and visitors.
--	--

4.3.7. Maintaining Sense of Place	
Responsible Person	Measures
The Proponent and Manager	<p>Sense of place is seen as the style of the area, the atmosphere present when entering the site and the general “vibe” of the place. The “sense of place” normally differentiates one area from the other and therefore management must avoid the following:</p> <ul style="list-style-type: none"> a. They may not make use of any inappropriate décor for example bright or clashing colors, unattractive murals or art, unnecessary statues, etc. b. No shabbiness may be experienced on the site; management must make sure that they abstain from untidiness, un-emptied ashtrays, rubbish bins etc. c. The manager must repair and maintain all infrastructure since un-repaired infrastructure creates a poor impression. d. Noise pollution must be avoided as far as possible namely no radio’s, televisions, hi-fi’s, noisy staff members, revving vehicles, lawnmowers, air conditioners, low-flying aircrafts, motorcycles, quad bikes, etc. e. Waste must be properly managed on the site; visitors and residents may not smell rubbish bins. The manager must keep drains clean in order to avoid unpleasant smells. f. The site may not have many signs or objects that distract tourists driving past it from the natural beauty of the area.

	<ul style="list-style-type: none"> g. No scrap metal for example old vehicles or equipment may lie around in various states of disrepair, the site must be clean and neat. h. The manager may not allow overcrowding at the sites since this will destroy the sense of place in a way that it will takes away the feeling of exclusivity. i. There may be no people loitering around at the site, whether visiting or looking for work.
--	--

4.3.8. Community Relations	
Responsible Person	Measures
The Proponent and Manager	<ul style="list-style-type: none"> a. The manager must have sound relations with neighbours/communities in the vicinity. b. They may not damage any cultural or archaeological sites. c. They must employ as many local people as possible for all levels of operation. d. They must make use of dispute resolution methods and labour practices that are within the law and cultural norms. e. All staff must be trained in order that they have the knowledge to do their work properly. f. The manager must provide opportunities for career advancement and skills development.

4.3.9. Worker Health	
Responsible Person	Measures
The Proponent and Manager	<ul style="list-style-type: none"> a. Dust levels should be managed and kept as low as possible. b. There should be good air flow and ventilation systems.

- | | |
|--|---|
| | <ul style="list-style-type: none">c. Employees' health should be protected and regarded as a high priority.d. Dust masks should be provided to employees if required.e. Employee health checks should be conducted regularly. |
|--|---|

4.4. DECOMMISSIONING/CLOSURE PHASE

The decommissioning phase follows the operational phase. This is a site-specific plan developed to ensure that appropriate environmental management practices are followed during the decommissioning phase of this project and to detail remediation, site control, and monitoring activities that will continue once the project/infrastructure is no longer required/needed.

The decommissioning phase:

- Provide effective, site-specific, and implementable procedures and mitigation measures to monitor and control environmental impacts throughout this phase of the project, such that the related activities do not adversely impact amenity, traffic, or the environment in the surrounding area.
- Establish long-term management of the project site for its next intended use, detailing plan for site assessment, remediation of contamination, and ecological restoration activities.
- Eliminate the long-term liability issues related to the site for the proponent or owner of the development or project site.

The decommissioning/closure of this specific project is not anticipated. However, should this be required for any reason, the following conditions are generally required.

4.4.1. Equipment

Responsible Person	Measures
The Proponent, Manager and the Environmental Control Officer	<ul style="list-style-type: none">a. An investigation on the soil and groundwater contamination must be conducted to determine the presence, nature and extent of any contamination. This will provide information as to the current status of the site in terms of the level of contamination, which will influence the level or type of remediation that needs to be undertaken.b. Prior to the infrastructure being destroyed, all residue products must be carefully removed for recycling or safe disposal.c. Solid materials must be used for filling. Only clean soil should be used for filling purposes.

4.4.2. Stormwater and Wastewater Management

Responsible Person	Measures
The Proponent, Manager and the Environmental Control Officer	<ul style="list-style-type: none">a. Water used for flushing the pipes and tanks must be disposed off safely if it is not suitable for disposal via the sewer system. The relevant department must be contacted with regard to the discharge of water containing waste to the sewer system.b. The water containing waste must pass through a separator prior to discharge through the sewer system.c. Any water containing waste should not contaminate clean storm water.

4.4.3. Waste Management

Responsible Person	Measures
The Proponent, Manager and the Environmental Control Officer	<ul style="list-style-type: none">a. Solid waste generated from the removal of the tanks must be handled according to the precautionary principle meaning that waste (including soils, metals and other material) should be treated as hazardous unless proven otherwise.b. Contaminated soil and other waste material must be disposed of at an authorized/permitted landfill site.c. Waste must not be allowed to be stockpiled on the site for extensive periods but must be disposed off as generated/soon as possible.d. If waste material is stockpiled temporarily on site, it must be adequately protected from the environment to prevent leaching of potentially harmful contaminants.

4.4.4. Spillage	
Responsible Person	Measures
The Proponent, Manager and the Environmental Control Officer	e. Spillages during the decommissioning must be reported to the relevant authorities.

4.4.5. Remediation	
Responsible Person	Measures
The Proponent, Manager and the Environmental Control Officer	<ul style="list-style-type: none"> a. Clean-up or remediation of any contamination must be done. b. The owner of the land, the person in control of land or the person who occupies or uses the land on which pollution has occurred is not absolved from the responsibility of any further and/or associated pollution arising from this property. c. Should there be a risk to downstream users or the environment from this site in the future, it would be requested that further remedial measures be instituted at this site.

5. ENVIRONMENTAL STATEMENT/AGREEMENT

After all assessing was done and information available was reviewed, the conclusion was reached that the proposed construction and operation of the sewerage treatment plant in Oshakati is suitable as it will have a low significance impact rating. The activities associated with the proposed project will exert a general low impact on the environment and are easily manageable as long as the impact on the environment is mitigated through the implementing of the Environmental Management Plan (EMP) as proposed in this document. Management actions prescribed and recommended in this EMP are especially designed to minimize or manage the impacts exerted by the proposed activities and operations on the site.

It should however be noticed that the management activities should further be strengthened with continuous and well orchestrated monitoring of the implementation of the given EMP. The manager of the proposed activities needs to understand the severity of the situation and all efforts should be made to ensure that the message is conveyed to the workforce and visitors.

It should further be noted the proposed EMP will have little or no value in managing the impact of the activities on the environment if it is not implemented by the proponent and not monitored by the responsible authorities. **It is thus suggested that the level of implementation of the EMP is audited at regular intervals by the Environmental Control Officer of the MET or Tourism Board in order to ensure that remedial actions are taken on time and on a continues basis.**

The Ministry of Environment and Tourism is herewith requested to accept and approve the EMP for the proposed construction and operation of the sewerage treatment plant in Oshakati and to issue the site/project with an Environmental Clearance Certificate.