

<p>Project Name:</p>	<p><b>ENVIRONMENTAL MANAGEMENT PLAN FOR THE RENEWAL OF THE ENVIRONMENTAL CLEARANCE FOR THE CLOSURE OF THE “PUBLIC OPEN SPACE” AND THE REZONING TO “INDUSTRIAL” ON ERF 547, EXTENSION 2, KATIMA MULILO, ZAMBEZI REGION</b></p>
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## **Table of Contents**

<b>1. INTRODUCTION .....</b>	<b>3</b>
<b>2. BACKGROUND AND SITE INFORMATION .....</b>	<b>3</b>
<b>3. RECOMMENDATION .....</b>	<b>4</b>
<b>4. ENVIRONMENTAL MANAGEMENT PLAN (EMP).....</b>	<b>6</b>
<b>4.1. THE OPERATIONAL PHASE.....</b>	<b>6</b>
4.1.1. <i>Human Waste Management (Sewage) .....</i>	<i>7</i>
4.1.2. <i>Storage of Raw Materials.....</i>	<i>7</i>
4.1.3. <i>Management of Waste Water.....</i>	<i>8</i>
4.1.4. <i>Solid Waste Management .....</i>	<i>8</i>
4.1.5. <i>Energy Management.....</i>	<i>9</i>
4.1.6. <i>Nature Conservation.....</i>	<i>10</i>
4.1.7. <i>Maintaining Sense of Place .....</i>	<i>10</i>
4.1.8. <i>Community Relations.....</i>	<i>11</i>
4.1.9. <i>Occupational Health &amp; Safety Issues &amp; Hospital Services .....</i>	<i>12</i>
<b>4.2. DECOMMISSIONING/CLOSURE PHASE .....</b>	<b>13</b>
4.2.1. <i>Equipment .....</i>	<i>14</i>
4.2.2. <i>Stormwater and Wastewater Management .....</i>	<i>15</i>
4.2.3. <i>Waste Management.....</i>	<i>15</i>
4.2.4. <i>Spillage .....</i>	<i>16</i>
4.2.5. <i>Remediation .....</i>	<i>16</i>
4.2.6. <i>Site Rehabilitation .....</i>	<i>17</i>
4.2.7. <i>Health and Safety of the Workers .....</i>	<i>18</i>
<b>5. ENVIRONMENTAL STATEMENT/AGREEMENT .....</b>	<b>19</b>

# 1. INTRODUCTION

According to the Environmental Management Act (2007), the renewal of the Environmental Clearance for the closure of the “public open space” and the rezoning to “industrial” on Erf 547, Extension 2, Katima Mulilo, Zambezi Region 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, Forestry and Tourism (MEFT) before implementation of the project. The MEFT indicated that they would consider the Environmental Clearance upon the submission of an Environmental Management Plan (EMP).

The proponent (JV Consultants and Project Managers) appointed *Green Earth Environmental Consultants* to prepare an Environmental Management Plan (EMP) to guide the operations of the proposed project. The EMP was prepared from information gathered from the proponent (JV Consultants and Project Managers) 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 operations 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 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 MEFT 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 land and immediate environment. The proponent is responsible to oversee that the EMP is implemented and adhered to at all time. MEFT 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 MEFT 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 needs 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 of the project 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 has been drafted.

### 3. RECOMMENDATION

The following measures are recommended:

- That JV Consultants and Project Managers be granted an Environmental Clearance to proceed with the operation by the Environmental Commissioner of the Ministry of Environment, Forestry and Tourism.
- The continuous monitoring of the identified impacts on the environment to be able to take preventative remedial action.
- The implementation of the Environmental Management Plan (EMP) to mitigate identified impacts which are associated with the operational phase of the project.
- The consideration of green building/environmentally sustainable designs in the planning, construction and operational phases for example making use of rainwater tanks, recycling depots, etc.
- Testing of the water quality is also recommended in order to determine a baseline of the current water quality which can be used to monitor contamination which might occur from the proposed operations and to determine if the water is suitable for use in the process. It is proposed that the water quality is monitored through annual testing and comparison with the baseline analysis.
- An Environmental Audit to be conducted on the operations a year from the date of the Environmental Clearance Certificate by an inspector (from the DEA) or an independent Environmental Practitioner to ensure that the Environmental Management Plan has been implemented and is adhered to on a continuous basis.
- Training and induction courses should be given to the managers, workforce and employees.
- The proponent is responsible for ensuring that environmental awareness education of all employees and contractors is done satisfactorily.

- The proponent should ensure that employees and contractors are made aware of the environmental requirements of the project.
- The staff should familiarize themselves with the full content of the Environmental Management Plan.
- Periodic environmental monitoring must be taken on a regular basis. This should be done to ensure compliance with all aspects of the Environmental Management Plan.
- A copy of the Environmental Management Plan should be kept at the site office and should be distributed to the manager, contractors and sub-contractors.
- Non-compliance to the measures stated in the Environmental Management Plan: Implement suitable corrective action and prevent recurrence of the incident.
- An independent environmental control officer should be appointed to monitor and review the on-site environmental management and implementation of the Environmental Management Plan.
- The environmental control officer should ensure that the impacts are kept to a minimum.
- He/she should be inspecting the site and surrounding areas regularly and should monitor an ongoing program to promote environmental awareness.
- He/she should request the removal of people or equipment not complying with the specifications of the Environmental Management Plan.
- Any areas outside the designated working zone should be considered “no go” areas.

## 4. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The proposed EMP has been drawn to give guidance to:

- Operations concerning the daily management and running of the project and associated activities (**Operational phase**).
- Decommissioning of the project (**Decommissioning Phase**).

### 4.1. THE OPERATIONAL PHASE

Steps to be taken in the daily management and running of the proposed operations are stated in the following section. To ensure that the project is 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/clients 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 of the activities.
- e. 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:

#### 4.1.1. Human Waste Management (Sewage)

Responsible Person	Measures
The Proponent, Developer, Constructor and Builders	<ul style="list-style-type: none"><li>a. All the toilets must be flush-type toilets.</li><li>b. Notices must be placed in the toilets indicating that staff members or workers should not flush foreign objects down the toilet to ensure a healthy environment and the sustained functioning of the sewer system.</li></ul>

#### 4.1.2. Storage of Raw Materials

Responsible Person	Measures
The Proponent and Manager	<ul style="list-style-type: none"><li>a. Smelly products should be managed in order that it will have a limited impact on the surrounding neighbours.</li><li>b. The storage areas should be clearly marked and have clear/highly visible instructions on procedures to be followed in the handling and in case of spillages or other emergencies.</li><li>c. The handling, operations and storage areas should be hygienically managed to prevent the breeding of flies and the generation of bad smells.</li></ul>

<b>4.1.3. Management of Waste Water</b>	
<b>Responsible Person</b>	<b>Measures</b>
The Proponent and Manager	<ul style="list-style-type: none"> <li>a. The possibility of leakages must be managed by ensuring that the condition of the pipelines and channels are continuously visually monitored by the manager and staff members.</li> <li>b. The staff must monitor and limit water consumption as efficiently as possible.</li> <li>c. Staff members must not have lawns or gardens that need to be watered (small vegetable gardens are permitted on the site).</li> <li>d. All pipes must be well maintained and leaks must be repaired immediately.</li> <li>e. All taps must be turned off after it had been used.</li> <li>f. A water meter must be installed and it must be checked regularly to keep a register of water consumption and to monitor trends.</li> <li>g. Special care should be taken to prevent chemicals from washing/leaching into surface or groundwater systems.</li> <li>h. During operations, it should be ensured that the conditions as stated under the Waste Water Permit obtained during construction are adhered to at all times.</li> </ul>

<b>4.1.4. Solid Waste Management</b>	
<b>Responsible Person</b>	<b>Measures</b>
The Proponent, Constructor, Builders, Manager and Residents	<ul style="list-style-type: none"> <li>a. The solid waste must be contained in an enclosed area to prevent it from being blown away.</li> <li>b. This waste must be taken out of the area once construction is completed and be disposed of at an approved landfill site.</li> <li>c. Special care must be taken during the transportation of the waste out of the construction area.</li> </ul>



	<ul style="list-style-type: none"> <li>d. The normal household waste generated during operation must be collected on site and sorted and temporarily stored in an enclosed facility which prevents materials to be blown away, the access of flies as well as the visibility thereof.</li> <li>e. Through this process it will be assured that all the waste generated at the project site or through the other activities will be taken out of the area.</li> </ul>
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<b>4.1.5. Energy Management</b>	
<b>Responsible Person</b>	<b>Measures</b>
<p>The Proponent, Constructor, Builders, Manager and Residents</p>	<ul style="list-style-type: none"> <li>a. Electricity must be obtained from approved electrical suppliers like NamPower to ensure efficiency of generation and use as well as sustainability of supply.</li> <li>b. Gas must be used as alternative to electricity in kitchens due to its efficiency and low pollution factor.</li> <li>c. They may only use a generator as emergency source of electricity as continued 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.</li> <li>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 Mopani, Leadwood or other species that might be harvested unsustainably.</li> <li>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.</li> </ul>

<b>4.1.6. Nature Conservation</b>	
<b>Responsible Person</b>	<b>Measures</b>
The Proponent, Manager and Residents	<p>To sustain the natural attributes on the site, it needs to be preserved and protected to the best of their abilities. The manager has a key responsibility in protecting the environmental aspects on the site and the following measures should be taken:</p> <ol style="list-style-type: none"> <li>a. There must be adequate waste management control.</li> <li>b. There must be adequate water management control.</li> <li>c. The workforce/manager/proponent must refrain from planting alien plants.</li> <li>d. A general environmental awareness must be established amongst staff members/workers and visitors.</li> </ol>

<b>4.1.7. Maintaining Sense of Place</b>	
<b>Responsible Person</b>	<b>Measures</b>
The Proponent, Manager and Residents	<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> <ol style="list-style-type: none"> <li>a. They may not make use of any inappropriate décor for example bright or clashing colors, unattractive murals or art, unnecessary statues, etc.</li> <li>b. No shabbiness may be experienced on the site; management must make sure that they abstain from untidiness, un-emptied ashtrays, rubbish bins etc.</li> </ol>

	<ul style="list-style-type: none"> <li>c. The manager must repair and maintain all infrastructure since un-repaired infrastructure creates a poor impression.</li> <li>d. 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.</li> <li>e. The site may not have many signs or objects that distract tourists driving past the site from the natural beauty of the area.</li> <li>f. No scrap metal for example old vehicles or equipment may lie around in various states of disrepair, the site must be clean and neat.</li> <li>g. The manager may not allow overcrowding at the site since this will destroy sense of place in a way that it will takes away the feeling of exclusivity.</li> <li>h. There may be no people loitering around at the site, whether visiting staff or looking for work.</li> </ul>
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<b>4.1.8. Community Relations</b>	
<b>Responsible Person</b>	<b>Measures</b>
The Proponent, Manager and Residents	<ul style="list-style-type: none"> <li>a. The manager must have sound relations with communities in the vicinity.</li> <li>b. They may not damage any cultural or archaeological sites.</li> <li>c. They must employ as many local people as possible for all levels of operation.</li> <li>d. They must make use of dispute resolution methods and labour practices that are within the law and cultural norms.</li> <li>e. All staff must be trained in order that they have the knowledge to do their work properly.</li> <li>f. The manager must provide opportunities for career advancement and skills development.</li> </ul>

#### 4.1.9. Occupational Health & Safety Issues & Hospital Services

Responsible Person	Measures
The Workforce and Residents	<ul style="list-style-type: none"><li>a. Potential accidents may require the use of emergency services and hospital facilities nearby.</li><li>b. Personnel on site should be trained in handling emergencies such as response to fire, accidents etc.</li><li>c. There should be careful planning of emergency procedures.</li><li>d. Training in first aid and emergency response to employees on site should be done.</li><li>e. The Labour Act (No. 6 of 1992) makes certain provisions with regard to occupational health and safety, e.g. in relation to hazardous substances.</li><li>f. It is expected that workers will need to be protected against dust and noise in the work place.</li></ul>

## 4.2. DECOMMISSIONING/CLOSURE PHASE

The decommissioning phase normally 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 facility or project site.

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

#### 4.2.1. Equipment

##### Responsible Person

##### Measures

The Proponent,  
Manager and the  
Environmental Control  
Officer

- 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.

#### 4.2.2. Stormwater and Wastewater Management

Responsible Person	Measures
The Proponent, Manager and the Environmental Control Officer	<ul style="list-style-type: none"><li>a. Water used for flushing the pipes and tanks must be disposed 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.</li><li>b. The water containing waste must pass through a separator before discharge could be allowed.</li><li>c. Any water containing waste should not contaminate clean storm water.</li></ul>

#### 4.2.3. Waste Management

Responsible Person	Measures
The Proponent, Manager and the Environmental Control Officer	<ul style="list-style-type: none"><li>a. Solid waste generated from the operations 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.</li><li>b. Contaminated soil and other waste material must be disposed of at an authorized/permited landfill site.</li><li>c. Waste must not be allowed to be stockpiled on the site for extensive periods but must be disposed of as generated/soon as possible.</li><li>d. If waste material is stockpiled temporarily on site, it must be adequately protected from the environment to prevent leaching of potentially harmful contaminants.</li></ul>

#### 4.2.4. Spillage

##### Responsible Person

##### Measures

The Proponent,  
Manager and the  
Environmental Control  
Officer

- a. Spillages during the decommissioning must be reported to the relevant authorities.

#### 4.2.5. Remediation

##### Responsible Person

##### Measures

The Proponent,  
Manager and the  
Environmental Control  
Officer

- 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.



#### 4.2.6. Site Rehabilitation

Responsible Person	Measures
The Proponent, Manager, Contractor and the Environmental Control Officer	<ul style="list-style-type: none"><li>a. It should be ensured that all structures, equipment, materials, waste, rubble, notice boards and temporary fences used during the construction and operation and decommissioning be removed with minimum damage to the surrounding and receiving area or environment.</li><li>b. The site should be cleaned and cleared to the satisfaction of the ECO.</li><li>c. In the case of accidental spills of oil or chemicals in the construction camp, the affected soil should be dug out and removed from the site for disposal at a hazardous waste site and replace with fresh topsoil.</li></ul>

#### 4.2.7. Health and Safety of the Workers

Responsible Person	Measures
The Contractor, Builders, Workforce, Constructors and Developers	<ul style="list-style-type: none"><li>a. The safety and security of labourers in the decommissioning phase of the project are required and of high importance.</li><li>b. The Contractor shall comply with all standard and legally required health and safety regulations as promulgated under the Occupational Health and Safety Act and Labour Act and associated regulations.</li><li>c. The Contractor must provide and maintain personal protective equipment and facilities to employees working with hazardous chemical substances.</li><li>d. The Contractor shall provide a standard first aid kit at the site and/or at additional identified locations where needed.</li><li>e. Disturbed soils, slopes and areas of open excavation must be minimised to avoid wind erosion.</li><li>f. A health and safety officer should again be employed to manage, coordinate and monitor risk and hazard and report all health and safety related issues in the work place.</li><li>g. Conversely, it is anticipated that the process should not affect the overall health of persons related to the project including the neighbours.</li></ul>

## 5. ENVIRONMENTAL STATEMENT/AGREEMENT

After all assessing was done and information available was reviewed, the conclusion was reached that the site of land allocated for the closure of the “public open space” and the rezoning to “industrial” on Erf 547, Extension 2, Katima Mulilo, Zambezi Region for JV Consultants and Project Managers, is suitable to be used as the operations will have a low significance impact rating. The project will also not have a large negative impact on the environment, and it is therefore recommended to proceed with the process. The activities associated with the project will exert a general low impact on the environment and are easily manageable if 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 designed to minimize or manage the impacts exerted by the activities and operations and the staff members working/residing 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 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 impacts 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 MEFT in order to ensure that remedial actions are taken on time and on a continues basis.**

The Ministry of Environment, Forestry and Tourism is herewith requested to accept and approve the Renewed EMP for the closure of the “public open space” and the rezoning to “industrial” on Erf 547, Extension 2, Katima Mulilo, Zambezi Region for JV Consultants and Project Managers and to issue the site with a Renewed Environmental Clearance Certificate.