

ENVIRONMENTAL MANAGEMENT PLAN

TOWNSHIP ESTABLISHMENTS AND CONSTRUCTION OF INFRASTRUCTURE FOR ONGHA PROPER AND EXTENSIONS 1 - 7

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TABLE OF CONTENTS

1	INTRODUCTION	1
2	RESPONSIBILITIES	1
3	PERMIT REQUIREMENTS.....	3
4	PLANNING AND DESIGN PHASE.....	4
5	CONSTRUCTION MITIGATION DETAILS	5
5.1	Plan Component 1: Waste Management	6
	General Waste.....	6
	Hazardous Waste.....	6
5.2	Plan Component 2: Health And Safety	7
	HIV/AIDS and TB training	7
	Road Safety	7
	Safety around Excavated and Work Areas	7
	Ablutions.....	8
5.3	Plan Component 3: Noise And Dust.....	8
	Noise.....	8
	Dust	8
5.4	Plan Component 4: Environmental Training And Awareness	9
5.5	Environmental Conservation.....	9
	Conservation of Vegetation.....	9
	Materials Camp and Lay-Down Areas.....	10
	Rehabilitation of borrow Pits.....	10
5.6	Plan Component 6: Employment/Recruitment	11
	Recruitment	11
	Legislation.....	11
5.7	Plan Component 7: Stakeholder Communication	11
	Communication Plan.....	11
	General Communication	12
5.8	Plan Component 8: Socio-Economic And Miscellaneous.....	12

LIST OF TABLES

Table 1: Relevant Legislated Permit Requirements3
Table 2: Management Requirements for the Planning and Design Phase4
Table 3: Generic and site-specific Environmental Management Actions for the Construction Phase5

1 INTRODUCTION

The Ohangwena Regional Council identified the need to establish a new settlement located at Ongha, at the junction of the B1 (TR0112) and D3638 roads, approximately 35 kilometres North of Ondangwa. The council appointed Urban Dynamics to assist with the identification and establishment of the new townships and to undertake the subsequent project management.

The overall aim of these townships is to provide serviced land for a variety of land uses in Ongha. Managing the environmental implications of such a project from construction to operation requires a set of management measures laid out in the form of an Environmental Management Plan (EMP) to guide the development and ensure sustainability.

An EMP is one of the most important products of the Environmental Assessment (EA) process. An EMP synthesises all recommended mitigation and monitoring measures, laid out according to the various stages of a project life cycle, with clearly defined follow-up actions and responsibility assigned to specific actors. This EMP has been drafted in accordance with the Namibian Environmental Management Act (No. 7 of 2007) and its Environmental Impact Assessment Regulations (2012).

This plan has been compiled in conjunction with the accompanying Environmental Clearance Application. It describes the mitigation and monitoring measures to be implemented during the following phases of the township establishment and provision of utility services:

- Planning and Design;
- Construction and
- Operation

2 RESPONSIBILITIES

Implementation of the EMP is ultimately the responsibility of the Ohangwena Regional Council, the employer and the administrator of the township after construction. Due to the magnitude of the project, it may be necessary to outsource certain functions pertaining to managing all aspects of the servicing of the township. When implementing the EMP, the following roles and responsibilities apply.

Each role player's responsibilities are described below.

EMPLOYERS REPRESENTATIVE (ER)

The ER is appointed by the Developer (Ohangwena Regional Council) to manage all contracts for work/services that are outsourced during the construction phase. Any competent employee or third party organisation, which possesses the appropriate experience, may fill this position. Any official communication regarding work agreements is delivered through this person/organisation.

The ER shall assist the Environment Control Officer (ECO) where necessary and will have the following responsibilities regarding the implementation of this EMP:

- Ensuring that the necessary legal authorisations and permits have been obtained by the Contractor;
- Assisting the Contractor in finding environmentally responsible solutions to problems with input from the ECO where necessary;
- Warning and ordering the removal of individuals and/or equipment not complying with the EMP;
- Issuing fines for transgression of site rules and penalties for contravention of the EMP; and
- Providing input into the ECO's ongoing internal review of the EMP. This review report should be submitted on a monthly basis to the Ohangwena Regional Council (ORC).

ENVIRONMENTAL CONTROL OFFICER (ECO)

The ECO should be a competent person appointed by the ER. If the ECO has no training in occupational safety and health on a construction site, they should be sent for such training. The ECO is the ER's on-site representative primarily responsible for the monitoring and review of onsite environmental management and implementation of the EMP by the Contractor(s). If no ECO is appointed the duties of the ECO fall upon the ER. The Ohangwena Regional Council should, with the commencement of the project monitor the implementation of the EMP on-site on an ad hoc basis.

The ECO's duties include the following:

- Assisting the ER in ensuring that the necessary legal authorisations have been obtained;
- Maintaining open and direct lines of communication between the ER, developer (ORC), contractor, and interested and affected parties (I&APs) with regard to this EMP and matters incidental thereto;
- Monthly site inspection of all construction areas with regard to compliance with this EMP;
- Monitor and verify adherence to the EMP (audit the implementation of the EMP) and verify that environmental impacts are kept to a minimum;
- Taking appropriate action if the specifications of the EMP are not adhered to;
- Assisting the contractor in finding environmentally responsible solutions to problems;
- Training of all construction personnel with regard to the construction and operation mitigation measures of this EMP and continually promoting awareness of these;
- Ensure that all contractors shall provide for adequate environmental awareness training (see plan component 4) of senior site personnel by the ECO, and that all construction workers and newcomers receive an induction presentation on the importance and implications of this EMP. The presentation shall be conducted, as far as is possible, in the employees' language of choice;
- Monthly inspection to verify if new personnel have received appropriate environmental, health and safety training and training those who have not;
- Advising on the removal of person(s) and/or equipment not complying with the specifications of the EMP in consultation with the ER;

- Recommending the issuing of fines for transgressions of site rules and penalties for contraventions of the EMP; and
- Undertaking a 3 monthly review of the EMP and recommending additions and/or changes to the document.

CONTRACTOR

The contractor is responsible for the implementation of the EMP, on-site monitoring and evaluation of the EMP. In order to ensure sound environmental management, the relevant sections of this EMP should be included in all contracts of work outsourced, thus legally binding all appointed contractors.

The contractor must keep records of all environmental training sessions, including names, dates and the information presented for inspection and reporting by the ER and ECO at all times necessary.

3 PERMIT REQUIREMENTS

Table 1: Relevant Legislated Permit Requirements

THEME	LEGISLATION INSTRUMENT	MANAGEMENT REQUIREMENTS	CONTACT PERSON
ENVIRONMENTAL	Environmental Management Act 7 of 2007 EIA Regulations (EIAR) GN57/2007 (GG 3812)	The amendment, transfer or renewal of the environmental Clearance Certificate (EIAR s19 & 20).	Dr Freddy Sikabongo/ Ms Saima Angula Tel: (061) 284 2717
FORESTRY:	Forest Act 12 of 2001	Protected tree species and any vegetation within 100m from a watercourse may not be removed without a permit from the Ministry of Agriculture, Water and Forestry.	Eenhana Forestry Office
LABOUR:	Labour Act 11 of 2007 Health and Safety Regulations (HSR) GN 156/1997 (GG 1617).	Adhere to all applicable provisions of the Labour Act and the Health and Safety regulations.	

4 PLANNING AND DESIGN PHASE

Table 2: Management Requirements for the Planning and Design Phase

ASPECT	MANAGEMENT REQUIREMENTS
Natural Building Material	All building material (sand and gravel) must be sourced from drainage basins on site local or alternatively, registered borrow pits. Road building material, (G4, G5, etc. material) must be sourced in collaboration with the Ohangwena Regional Council from these sites within the Ongha townlands.
EMP Implementation	Relevant sections of this EMP should be included in the tender documents for all development so that tenderers can make provision for implementation of the EMP.
Financial Provisions	<ul style="list-style-type: none"> • Financial provision for the facilitation of an induction programme for all construction personnel as well as subcontractors and associated personnel should be included as a cost item within tenders concerning the construction and/or operation and maintenance of the proposed development. • Financial provision for the compilation of a Tree Management Plan should be included as a cost item within construction tender documents. • Financial provision for the compensation of current occupants on the site as per the Compensation Policy Guidelines for Communal land by the ORC.
Recruitment	<ul style="list-style-type: none"> • Provisions designed to maximise the use of local labour should be included within tenders concerning construction of services. • A provision stating that all unskilled labour should be sourced locally should be included in tenders concerning the construction of all services in the township. • Specific recruitment procedures ensuring local firms enjoy preference during tender adjudication should be included in tenders concerning the construction of the township's services. • Provisions promoting gender equality pertaining to recruitment should be included in tenders concerning the construction of the township services. • Women should be given preference for certain jobs (e.g. those jobs that require relatively less physical strength).

5 CONSTRUCTION MITIGATION DETAILS

Table 4 provides a scale overview of all the major environmental management themes pertaining to both generic and site-specific construction mitigation details. This table serves to act as quick reference, for the detailed mitigation details that follow subsequently for each theme. This is done to simplify the implementation of the construction component of this EMP.

Table 3: Generic and site-specific Environmental Management Actions for the Construction Phase

THEME	OBJECTIVE	MITIGATION DETAIL	
		GENERIC	SITE-SPECIFIC
Waste management	Minimise and avoid all pollution associated with construction.	PLAN COMPONENT 1	YES
Health and safety	Focusing on the wellbeing of the labourers on and the community near the construction.	PLAN COMPONENT 2	YES
Noise and dust	Minimise and/or avoid noise and dust associated with construction.	PLAN COMPONENT 3	YES
Environmental training and awareness	Awareness creation regarding the provisions of the EMP as well as importance of safeguarding environmental resources.	PLAN COMPONENT 4	YES
Environmental conservation	Minimise the effect of the construction and protect the natural environment in which it is happening.	PLAN COMPONENT 5	YES
Employment/ Recruitment	Reduce negative conflict through legal and fair recruitment practices of local people.	PLAN COMPONENT 6	YES
Stakeholder communication	Provide a platform for stakeholders to raise grievances and receive feedback and hence minimize conflict.	PLAN COMPONENT 7	YES
Socio-economic and Miscellaneous	Protecting cultural and general wellbeing of the affected population.	PLAN COMPONENT 8	N/A

5.1 Plan Component 1: Waste Management

At the construction site, high importance shall be placed on waste management. This needs to be performed on a daily basis. Solid waste is the expected major source of waste at the construction site and therefore a **waste management plan** must be compiled. The waste management plan must address measures for the uses and the disposal of general waste and hazardous waste at the site, as indicated below:

General Waste

- The construction site should be kept tidy at all times. All general construction waste produced should be cleaned and contained daily.
- No waste may be buried or burned.
- No waste may be dumped in any watercourse in and around the project area.
- A sufficient number of separate waste containers (bins) for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such.
- Construction labourers should be sensitised to dispose of waste in a responsible manner and not to litter.

Hazardous Waste

- All heavy construction vehicles and large fuel-powered equipment on site should be provided with a drip tray.
 - If the vehicle used is suspected of having an oil leakage, drip trays are to be transported with vehicles wherever they go on site.
 - Drip trays should be cleaned daily and spillage handled, stored, and disposed of as hazardous waste.
- Spilled concrete (wet) should be treated as waste and disposed of by the end of each day in the appropriate waste containers.
- Unbound cement (dry) in its raw state and cement infused water from mixers is classified as hazardous waste, due to its high alkalinity content. Treatment would be the same as for hazardous waste and disposal of such should take place in the appropriate labelled hazardous waste containers.
- A hazardous waste spill clean-up kit should be kept onsite and its stock replenished as needed. The kit will consist of the following items (with the numbers of each item is up to the discretion of the ER):
 - Medium sized shovels, strong plastic bags, drip trays, dust masks, heavy-duty gloves, and a biodegradable hand wash (degreasing) agent.
- A storage location must be provided for the use of all hazardous substances (e.g. fuel etc.) or chemicals. The storage area must be of an impermeable surface; this is bonded awaiting use and disposal afterwards.

5.2 Plan Component 2: Health And Safety

The importance of health and safety aspect of workspaces is something that cannot be overstated; considering that a serious unexpected event can occur at any given moment. Careful planning and prevention measures are necessary to reduce the risk of serious injuries while on duty.

HIV/AIDS and TB training

The contractor should approach the Ministry of Health and Social Services to appoint a health officer to facilitate HIV/AIDS and TB education programmes periodically on site during the construction phase.

Road Safety

- Vehicles' contents/ consignments should be properly secured to avoid items falling off the vehicle.
- All trucks carrying sand or fine material loads should be covered with a shade net cover to prevent these materials from being blown off onto approaching vehicles from both directions.

Safety around Excavated and Work Areas

- A meeting with the surrounding community will be held and the safety precautions of the construction area explained.
- Excavations should be left open for an absolute minimum time only.
- Excavate short lengths of trenches and box areas for services or foundations in such a way that the trench will not be left unattended for more than 24 hours.
- Demarcate the following areas with danger tape or orange demarcation netting:
 - All excavation works;
 - Soil and other building material stockpiles; and
 - Temporary waste stockpiles.
- Two dry chemical powder fire extinguishers should be available at fuel storage areas and the workshop area, as well as the site office.

Ablutions

- Separate ablutions (toilet) should be available for men and women and should clearly be indicated as such.
- Portable toilets (i.e. easily transportable) should be available at every construction site:
 - 1 toilet for every 25 females.
 - 1 toilet for every 50 males.

The ER should compile a checklist of all health and safety aspects contained in this section and once a month a compliance assessment should be done. The findings should be discussed at monthly management meetings, and all recommendations for improvements proposed to be implemented with immediate effect.

5.3 Plan Component 3: Noise And Dust

The construction site is on the periphery of the townlands. High priority will be placed on mitigation measures at the construction site to manage dust and noise. The following measures are provided below to minimise noise and dust:

Noise

- Work hours should be restricted to between 07h00 and 18h00 where construction involving the use of heavy equipment, and the movement of heavy vehicles is less than 500 m from residential areas.
- In the event that work is necessary outside the designated working hours, all receptors (residents or businesses within 500 m from the work areas) will need to be notified at least 2 days in advance.

Dust

A watering truck should be used on gravel roads with the most heavy vehicle movement, especially during dry and windy conditions. However, due consideration should be given to water restrictions during times of drought and applicable seasons.

- Stockpiles of building material and earth material need to be kept moist or the surfaces need to be kept stabilised. A nylon mesh cover which reduces dust lift with $\pm 50\%$ can be an alternative option.
- Limit the size of stockpiles of large quantities of soil, topsoil and other fine material.
- Dust protection masks should be issued to all workers exposed to dust on the site.
- Improve awareness of ambient air quality and consideration regarding wind speed and direction when undertaking dust generating activities

During the construction phase, emphasis should be placed on preventing the removal of vegetation or the removal of soil on the site, if not absolutely necessary. However, when complaints are received regarding dust nuisance, abatement in the form of water spraying should be implemented on the site.

5.4 Plan Component 4: Environmental Training And Awareness

All construction workers at the development site are to undergo environmental training and awareness programs. The following aspects should be included:

- Explanation of the importance of complying with the EMP.
- Discussion of the potential environmental impacts of construction activities.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the mitigation measures that must be implemented when particular work groups carry out their respective activities.
- Explanation of the specific mitigation measures within this EMP especially unfamiliar provisions.

During the training sessions, an attendance register should be completed, including the names, positions, designations and signatures of everyone whom attended the training and kept on file for auditing purposes. Thereby, all the training sessions prior to it being conducted, must be approved by the ECO.

5.5 Environmental Conservation

The areas below the flood lines (in height) are earmarked for public open space. The council wishes to protect large trees as far as possible. Thus, during the planning process large trees were identified and the layout designed to accommodate them. However, in connection with the environmental conservation aspect on the site, the following conservation measures should be included:

Conservation of Vegetation

Any post-construction layout and building design submitted for constructing a building on any erf within the township should incorporate existing large indigenous trees. Refer to the planning and design phase specifications in this EMP for more details. Thereby the contractor should compile a ***Tree Management Plan***, which should include the following as content at minimum level:

- As an initiative, trees with a trunk size of 250 mm and bigger should be surveyed, marked with paint and taken into consideration in the alignment of services erven and roads;
- Every effort shall be made to avoid such trees, to the extent that the roadway be designed in such a way that large trees can be retained.
- Trees with a trunk size of 250 mm and bigger, which are impossible to conserve, need to be identified and their location recorded on a map.

Materials Camp and Lay-Down Areas

A suitable location for the **materials camp and lay-down** areas should be identified with the assistance of the ER and the following should be considered in selecting these sites:

- The areas designated for the proposed services infrastructure should be used as far possible.
- The second choice should be degraded land.
- Sensitive areas should be avoided.

Rehabilitation of borrow Pits

It will be necessary that during construction material be sourced. Where possible this should be taken from existing borrow pits in the area. The use of the borrow pit should be planned so that rehabilitation can commence upon completion of construction. In the case that a new borrow pit is required an EIA should be conducted for this. The following criteria should be included in the EIA, and in the rehabilitation of existing borrow pits that are used:

- The final land use of the borrow pit site should be decided upon by the Ohangwena Regional Council
- Sites should be progressively rehabilitated according to the decided upon use and returned to a safe and stable state. Material should be sourced in 'stages' towards terminal areas so that progressive rehabilitation can be undertaken.
- On-site infrastructure should be demolished and removed upon completion of use of the site.
- They should be finished off so that they blend with the surrounding natural area.
- Erosion, siltation or watercourses/water bodies and permanent visual aesthetic intrusion (otherwise known as "scarring") must be minimised.
- Material in and around the borrow pit, whether spoil, excess stockpiled material, oversize material left in the borrow pit, material resulting from clearing and grubbing operations or excess overburden should be used for shaping or appropriately disposed of. Material not capable of supporting vegetation shall be buried in the borrow pit and covered with at least 500 mm of soft material.
- All access roads made specifically for the mining activities, and which are not required by the regional council, should be rehabilitated. – This includes ripping the surface crust in surrounding areas disturbed by heavy-duty machinery to ensure the re-growth of vegetation.
- The developer should ensure that subsoil and topsoil is stripped ahead of quarrying activities and stockpiled separately to a height not exceeding 2 metres to ensure productivity of the soil is preserved so it is suitable for rehabilitation works. These stockpiles should be located as near to the borrow pit as possible and not buried, driven on or contaminated.
- Approximately 50 to 100 mm of previously stripped and stockpiled overburden materials should be applied to the newly shaped and scarified/ripped borrow pit.

- The areas should be re-vegetated with vegetation and waste should not be disposed of in the pit.
- Where the borrow pits pose a risk after rehabilitation (i.e. slopes steeper than 1:2) or unstable they should be cordoned off with permanent fencing.
- There should be no adverse impact to surface water or groundwater caused by mining operations to existing users and water dependant ecosystems.

5.6 Plan Component 6: Employment/Recruitment

The formal recruitment process should be compiled and shall include the following minimum provisions:

Recruitment

- A recruitment process whereby local residents shall be given preference shall be designed by the ER and the contractor.
- Ensure that all sub-contractors are aware of recommended recruitment procedures and discourage any recruitment of labour outside the agreed upon process.
- Contractors should give preference in terms of recruitment of sub-contractors and individual labourers to those from the project area and only then look to surrounding towns.
- Clearly explain to all job-seekers the terms and conditions of their respective employment contract (e.g. period of employment, etc.) – make use of interpreters when required.

Legislation

The contractor needs to adhere to the legal provisions in the Labour Act for the recruitment of labour (target percentages for gender balance, optimal use of local labour and SME's, etc.) in the contract.

5.7 Plan Component 7: Stakeholder Communication

During the construction phase, the ORC shall draft a **Communication Plan** to be implemented by the ECO. The **Communication Plan** shall at least spell out how liaison between the contractor, stakeholders, developer, and consultant shall take place and frequency of formal scheduled meetings.

Communication Plan

The plan shall specify:

- How stakeholders, who require ongoing communication for the duration of the construction period, will be identified and recorded and who will manage and update these records;
- How these stakeholders will be consulted on an ongoing basis;
- How grievances shall be handled – i.e. how concerns can/ will be lodged/ recorded and how feedback will be delivered as well as further steps of arbitration in the event that feedback is deemed unsatisfactory.

General Communication

- The Contractor shall at every site meeting report on the status of the implementation of all provisions of the EMP.
- The ECO must list the stakeholders of the project and their contact details with whom ongoing communication would be required for the duration of the contract. This list, together with the **Communication Plan** must be agreed upon and given to the ER before construction commences.
- The Communication Plan, once agreed upon by the ORC, shall be binding.
- All communication with the stakeholders must take place through the ECO.
- A copy of the EMP must be available at the site office and should be accessible to all stakeholders.
- Key representatives from the above-mentioned list need to be invited to attend monthly site meetings to raise any concerns and issues regarding project progress.
- The Contractor should liaise with the ORC regarding all issues related to community consultation and negotiation before construction commences.
- A procedure should be put in place to ensure that concerns raised have been followed-up and addressed.
- All people on the stakeholders list should be informed about the availability of the complaints register in writing by the ER prior to the commencement of construction activities.
- A copy of the details of residents who were previously consulted during the planning phase in the area is attached to the EMP for future reference (Annexure 2).

5.8 Plan Component 8: Socio-Economic And Miscellaneous

No heritage or archaeological sites were found in the areas. However, the EMP's standard procedures for heritage or archaeological sites are still included in this plan. No formal survey for archaeological remains was conducted during the field studies of the site, therefore the possibility of it containing some or the other form of remnants cannot be ruled out, especially when excavations are done.

Heritage or Archaeological Sites

In the case where a heritage or archaeological site is uncovered or discovered during the construction phase of the development, a 'chance find' procedure should be applied as follows:

- If operating machinery or equipment to stop work immediately;
- Demarcate the site with danger tape;
- Determine GPS position if possible;
- Report findings to foreman;
- Cease any works in the immediate vicinity;

- Visit site and determine whether the work can proceed without damage to the findings;
- Determine and demarcate exclusion boundary;
- Inspect site and confirm the exact location.
- Advise the National Heritage Council (NHC) and request written permission to remove findings from the work area; and
- Recovery, packaging and labelling of findings for transfer to the National Museum.

Should human remains be found, the following actions will be required:

- Apply the 'chance find' procedure as formerly described;
- Schedule a field inspection with an archaeologist to confirm that the remains are human;
- Advise and liaise with the NHC and Police; and
- Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.

If it is found that the construction site is on a heritage site or an archaeological site, the ORC will need to apply for a permit from the National Heritage Council in order to carry out works in a protected place as indicated in the National Heritage Act 27 of 2004.