

**ENVIRONMENTAL MANAGEMENT PLAN (EMP)
FOR THE PROPOSED
NEW TOWNSHIPS ESTABLISHMENT,
SUBDIVISION & CONSOLIDATION OF ERVEN
AT OKAHANDJA TOWN IN OTJOZONDJUPA**



Prepare for:

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TABLE OF CONTENTS

TABLE OF CONTENTS	2
List of Tables	2
1. INTRODUCTION	4
2. RESPONSIBILITIES	6
2.1. Employer's Representative	7
2.2. Environmental Control Officer (ECO)	9
2.3. Contractor (Construction and Operations and Maintenance)	10
3. SUMMARY OF ENVIRONMENTAL IMPACTS & PROPOSED MITIGATION MEASURES	11
3.1. Construction Tender Preparation	11
3.2. Construction Phase	12
3.3. Operational Phase	13
3.4. Decommissioning Phase	15
4. CONCLUSION AND RECOMMENDATIONS	16

List of Tables

Table 1: Relevant guidelines and legislated permit requirements	9
Table 2: Construction Tender Preparation Requirements	12
Table 3: Construction Phase Mitigation Measures	13
Table 4: Operational Phase Mitigation Measures	15

Table 5: Decommissioning Phase Mitigation Measures..... 16

Abbreviations

Abbreviations	Meaning
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ER	Employee Representative
I&AP	Interested and Affected Parties
MET	Ministry of Environment and Tourism

1. INTRODUCTION

As part of its mandate, the Okahandja Town Council in its efforts to create much needed serviced land and provide housing, identified the proposed extensions for development purposes. The proposed extensions are also in support of the central government's commitment to service land as part of alleviating poverty and providing housing for the growing low to middle class across the country. The creation of the extensions will create a street network within each extension providing access to the newly created erven. The proposed township establishment consists of:

- Oshetu Proper, Extensions 1 and 2;
- Ekunde Proper, Extensions 1, 2, 3, 4 and 5;
- Five Rand Extensions 2 and 3;
- Veddersdal Extensions 2 and 3;
- Okahandja Extensions 16;
- Subdivision of remainder of the Okahandja Townlands No.277 into the 20 portions & Internal street network (Agriculture Plots);
- Subdivision & Permanent closure of Erf 697, Okahandja as a street;
- Consolidation of Erven 117 & 118, Okahandja and the subsequent subdivision thereof.

Bulk infrastructure and services to the proposed townships will be provided as follow:

- **Water:** A water reticulation system in accordance with the Sewerage and Drainage Regulations (amendments) Local Authorities Act, Section 23 of 1992 and guidelines will be constructed. All erven will be provided with individual water connection points.
- **Sewer:** A sewerage system will be provided on a Municipal zoned Erf to accommodate the line accordingly. Extensions of the sewer network to enable individual connections will also be made.

- **Streets:** Access to the planned Extensions will be through existing streets that will be extended into the new areas.
- **Electrical services:** An electrical network system will be constructed to accommodate individual connections. Electricity infrastructure will also be connected to the Okahandja grid and managed accordingly.

The development of an EMP is a requirement for any EIA project as per Namibia's Environmental Management Act (7 of 2007). Therefore this EMP is a legal document that must accompany the EIA Report before an Environmental Clearance is issued. The EIA process comprised a full Scoping process that included an assessment of all potential environmental impacts as identified through the process. Section 8 (j) of the EIA Regulations require that a draft EMP is submitted as part of the Scoping Report so that these documents can be considered simultaneously. The EMP has been included in the Scoping Report to provide a link between the impacts identified in the EIA Process and the required environmental management on the ground during project implementation and operation. The main purpose of this EMP is to guide environmental management throughout the life-cycle stages of the establishment of new townships and to:

- Minimize adverse impacts on the environment;
- Protect the environmental quality of the site;
- Meet the requirements of all national and local legislations;
- Outline guidelines for construction of services and operational phase of the project.
- Provide detailed specifications (table 2) for the management and mitigation of activities that have the potential to impact negatively on the environment.

This EMP describes the mitigation and monitoring measures to be implemented during the following phases of these developments:

- **Construction Tender Preparation** – the period during which the Okahandja Town Council, having secured the necessary legislative and administrative arrangements, prepare construction tender documents for the development of services infrastructure to service the various erven as well as any other construction process(s) within the development areas;
- **Construction** – the period during which the services infrastructure will be constructed to service the various erven within the townships and subdivided areas;
- **Operation and Maintenance** – the period during which the services infrastructure will be fully functional and maintained by the Okahandja Town Council.
- **Decommissioning and rehabilitation** - not envisaged for these developments.

2. RESPONSIBILITIES

The responsibility for the implementation of the EMP ultimately lies with the Okahandja Town Council (the Developer), who is also responsible for the eventual operation of these developments. The implementation of this EMP requires the involvement of several key individuals, each fulfilling a different but vital role to

ensure sound environmental management during each phase of these developments.

The Developer should appoint an Employer's Representative (ER) to oversee all aspects of these developments for all development phases (including all contracts for work outsourced). The Developer may decide to assign this role to one person for the full duration of these developments, or may assign an ER to each of the development phases – i.e. one for the Planning and Design Phase, one for the Construction Phase and one for the Operational and Maintenance Phase. The ER will in turn appoint an Environmental Control Officer (ECO) to oversee the implementation of the whole EMP during the Construction and Operation and Maintenance Phases. Again, the ER (and/or the Developer) may decide to assign this role to one person for both phases, or may assign a different ECO for each phase – i.e. one for the Construction Phase and another for the Operation and Maintenance Phase. The following positions and their respective responsibilities are outlined below:

- Employer's Representative;
- Environmental Control Officer; and
- Contractor (Construction and Operations and Maintenance).

2.1. Employer's Representative

The ER is appointed by the Developer to manage all contracts for work/services that are outsourced during all development phases. Any official communication regarding work agreements is delivered through this person. The ER should with the commencement of the project appoint a competent ECO who will represent the Developer on-site.

During the Planning and Design and Construction Tender Preparation Phase, the ER will have the following responsibilities regarding the implementation of this EMP:

- Ensuring that the necessary legal authorisations have been obtained (see Table 1);

- Developing, managing implementation of and maintaining all Development Guidelines;
- Ensure that the management requirements included in Table 2 inform the planning and design of the relevant infrastructure developments (i.e. that these requirements are considered during the Planning and Design Phase not as an afterthought); and
- Ensure that the management requirements included in Table 2 inform the preparation of tender documents for the construction of the relevant infrastructure developments.

During the Construction and Operation and Maintenance Phases the ER shall assist the ECO where necessary and will have the following responsibilities regarding the implementation of this EMP:

- Ensuring that the necessary legal authorizations and permits (see Table 1) have been obtained by the Contractor;
- Assisting the Contractor in finding environmentally responsible solutions to problems with input from the ECO where necessary;
- 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 Developer.

Theme	Legislation Instrument	Management Requirements
Archeology	National Heritage Act 27 of 2004	All protected heritage resources (e.g. human remains etc.) discovered, need to be reported immediately to the National Heritage Council (NHC) and require a permit from the NHC before they may be relocated.
Environmental	Environmental Management Act (EMA) 7 of 2007 EIA Regulations (EIAR) (GN) No. 28/2007 (GG No. 4878)	The amendment, transfer or renewal of the Environmental Clearance Certificate (ECC) (EMA S39-42; EIAR S19 & 20). Amendments to this EMP will require an amendment of the ECC for these developments.

	"List of activities that may not be undertaken without ECC" GG No. 4878 GN No. 29	Any activities listed in this listing notice require an ECC and hence an Environmental Assessment.
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.
Roads	Roads Ordinance 17	<ul style="list-style-type: none"> • Width of proclaimed roads and road reserve boundaries (S3.1) • Control of traffic on urban trunk and main roads (S27.1) • Rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads (S36.1) • Infringements and obstructions on and interference with proclaimed roads. (S37.1) • Distance from proclaimed roads at which fences are erected (S38)
Water	Water Act 54 of 1956	Section 21 details provisions relating to effluent discharge permits.
	Water Quality Guidelines for Drinking Water and Waste Water Treatment	Details specific quantities in terms of water quality determinants, which waste water should be treated to before being discharged into the environment

Table 1: Relevant guidelines and legislated permit requirements

2.2. Environmental Control Officer (ECO)

The ECO should be a competent person appointed by the ER. The ECO is the Developer's on-site representative primarily responsible for the monitoring and review of on-site environmental management and implementation of the EMP by the Contractor. If no ECO is appointed the duties of the ECO fall upon the ER.

During the Construction Phase and Operation and Maintenance Phase 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, the Construction and/or Operations and Maintenance

Contractor, and Interested and Affected Parties (I&APs) with regard to this EMP and matters incidental thereto;

- Monthly site inspection of all construction and/or infrastructure maintenance 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;
- 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 an annual review of the EMP.

2.3. Contractor (Construction and Operations and Maintenance)

The Contractor is responsible for the implementation of the EMP, on-site monitoring and evaluation of the EMP. It is envisaged that various contractors might be appointed at various periods for various tasks throughout the life cycle (construction through to decommissioning phase) of this project. These can be broadly grouped into Construction Contractors and Operations and Maintenance Contractors. 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 and sub-contractors. All contractors shall ensure that adequate environmental awareness training of senior site personnel takes place and that all construction workers and newcomers receive an induction presentation on the importance and implications of the EMP. The presentation shall be conducted, as far as is possible, in the employees' language of choice.

The Contractor should keep records of all environmental training sessions, including names, dates and the information presented.

3. SUMMARY OF ENVIRONMENTAL IMPACTS & PROPOSED MITIGATION MEASURES

3.1. Construction Tender Preparation

The management requirements described below should be consulted and carried out when the construction tender documents for the services infrastructure are prepared.

Aspect	Management Requirements
EMP implementation	Relevant sections of this EMP should be included in the tender documents for all development so that tenderers can make provision for the implementation of the EMP: <ul style="list-style-type: none"> • Construction of services infrastructure • Maintenance of services infrastructure
Financial provision	<ul style="list-style-type: none"> • Financial provision for the compilation of a Waste Management Plan should be included as a cost item within tenders concerning the construction and/or maintenance of services infrastructure. • Financial provision for topsoil management and the rehabilitation of exhausted borrow pits should be included as a cost item within construction tender documents. • Financial provision for the co-opting of a health officer from the Ministry of Health and Social Services to facilitate HIV/AIDS and TB education programmes periodically on site during the construction phase should be included as a cost item within construction tender documents. • Financial provision for the facilitation of an induction programme for both senior, temporary construction personnel as well as subcontractors and associated personnel should be included as a cost item within tenders concerning the construction and/or maintenance of services infrastructure. • 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 drafting of a Communication Plan should be included as a cost item within construction tender documents.
Recruitment	<ul style="list-style-type: none"> • Provisions designed to maximize the use of local labour should be included within tender documents concerning the construction and/or maintenance of services infrastructure. • A provision stating that all unskilled labour should be sourced from local communities should be included within tenders concerning the construction and/or maintenance of services infrastructure. • Specific recruitment procedures ensuring qualified local companies enjoy preference during tender adjudication should be included within tenders concerning the construction and/or maintenance of services infrastructure. • Provisions promoting gender equality pertaining to recruitment should be included within tender documents concerning the construction and/or maintenance of services infrastructure. • Women should be given preference for certain unskilled jobs (e.g. flag bearers).

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Table 2: Construction Tender Preparation Requirements

3.2. Construction Phase

Table 2 below provides mitigation measures for the various environmental aspects identified in the EIA report.

Aspect Description	Mitigation Measure	Responsibility
Aesthetic (Change in landscape) / Sense of place	The town strategic development plan is assessed for its impact on sense of place. Indicators: <ul style="list-style-type: none"> An expert assesses the effects of the current strategic development plan on sense of place; The current development plan is amended to consider sense of place. 	Okahandja Town Council Town Planning Consultants (SPC)
Employment Creation (Influx of job seekers)	The Contractor should compile a formal recruitment process including the following provisions as a minimum: <ul style="list-style-type: none"> Recruitment should not take place at construction sites. 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 who are qualified and 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 contracts (e.g. period of employment etc.) – make use of interpreters where necessary. 	Contractor
Health & Safety related impacts	<ul style="list-style-type: none"> No human waste should come in contact with open soil. Every construction site should have at least one portable toilet. Only one or two security guards may reside/sleep on-site during construction. No other construction personnel may sleep/reside on-site. No open fires may be made anywhere on-site during the construction period. Heating and cooking facilities (where necessary) should be provided by the Contractor. 	Contractor
Noise and Vibration	<ul style="list-style-type: none"> All workers on site must be equipped with ear plugs to be used when the noise becomes unbearable. Switch off machines that are not used. 	Safety Officer / ECO

Aspect Description	Mitigation Measure	Responsibility
	<ul style="list-style-type: none"> Construction activities which known to generate vibration should be scheduled for day periods and not at night. Duration of vibration should be kept as short as possible. Proper maintenance including routine servicing of equipment. 	
Dust	<ul style="list-style-type: none"> Equip all the workers exposed to dust with dust masks; Spray the areas that are mostly affected with water to minimize dust; Minimize activities that can generate dust during windy days; Limit the speed within the whole construction area to a maximum of 40 km/h; Dust will significantly be reduced if excavation and land clearing is carried out after it has rained and the soil is wet. 	Site Manager and Environmental Control Officer
Conservation and Vegetation (Soil Erosion)	<ul style="list-style-type: none"> The layout and building design should incorporate existing trees (a "tree" is defined as an indigenous woody perennial plant with a trunk diameter ≥ 150 mm). The Contractor should compile a Tree Management Plan which should include the following as a minimum: <ul style="list-style-type: none"> Trees (as defined above) if not already accounted for in an existing GIS, should be surveyed, coordinates/location incorporated into the Contractor's GIS, marked with paint (or other means so as to be readily visible) and protected; Trees, which are impossible to conserve, need to be identified and their location recorded on a map; The Contractor should apply to the local authority for a permit remove these trees. A list should be compiled of all trees to be removed detailing the erf on which they are located, the species as well as which trees will be planted to replace these. The nursery where these trees will be sourced from should also be included; Each tree that is removed needs to be replaced after construction; Only a limited width +/- 5 m on the side of roads may be partially cleared of vegetation. 	Contractor

Table 3: Construction Phase Mitigation Measures

3.3. Operational Phase

Aspect Description	Mitigation Measure	Responsibility
Traffic Congestion	<ul style="list-style-type: none"> Introduce traffic calming measures on strategic routes. Encourage heavy traffic to avoid residential areas and the CBD 	Okahandja Town Council

Aspect Description	Mitigation Measure	Responsibility
Effluent Generation	<ul style="list-style-type: none"> • Sewage should not be discharged directly onto open soil. All sewage must be removed regularly and disposed of at a recognized (municipal) sewage treatment facility. • The water collected from wash basins and showers (grey water), should not be left standing for long periods of time as this promotes parasite and bacterial proliferation. • Grey water should be recycled: <ul style="list-style-type: none"> - Used for dust suppression; - Used to water a vegetable garden, or to support a small nursery; - Used to clean equipment. • Grey water that is not recycled should be removed along with sewage on a regular basis. 	Okahandja Town Council
Impact on Water resources	<ul style="list-style-type: none"> • All accommodation establishments provide awareness materials to their guests; • The municipality reinforces water awareness by including a message relating to water saving on their monthly municipal accounts. 	Okahandja Town Council Contractor
Waste Generation	<ul style="list-style-type: none"> • The construction site should be kept tidy at all times. All domestic and general construction waste produced on a daily basis should be cleaned and contained daily. • No waste may be buried or burned. • Waste containers (bins) should be emptied regularly and removed from site to a recognized (municipal) waste disposal site. All recyclable waste needs to be taken to the nearest recycling depot. • A sufficient number of separate bins for hazardous and domestic/general waste must be provided on site. These should be clearly marked as such. • Construction labourers should be sensitized to dispose of waste in a responsible manner and not to litter. • No waste may remain on site after the completion of the project. 	Contractor
Flooding	<p>A Storm water Management Plan should be developed by Okahandja Town Council for all planned development and should address as a minimum the following:</p> <ul style="list-style-type: none"> • Ensure that the storm water system is separate from the sewerage system. • Canalizing of run-off with concrete should be avoided as far as possible and natural run-off surfaces utilized or enhanced. • Storm water channels should be accommodated next to roads in the reserve. • Where practical/feasible consider soft/permeable road shoulder options – minimise paved or impermeable areas. • Run-off from areas where surface water might become contaminated should be captured, detained and treated to sewage effluent standards. 	Okahandja Town Council

Aspect Description	Mitigation Measure	Responsibility
Increase Crime	Policing Neighborhood Watches	Okahandja Town Council
Soil Contamination	<ul style="list-style-type: none"> • All heavy construction vehicles and equipment on site should be provided with a drip tray. <ul style="list-style-type: none"> - Drip trays are to be transported with vehicles wherever they go. - Drip trays should be cleaned daily and spillage handled, stored and disposed of as hazardous waste. • All heavy construction vehicles should be maintained regularly to prevent oil leakages. • Maintenance and washing of construction vehicles should be take place only at a designated workshop area. <ul style="list-style-type: none"> - The workshop area should be lined with concrete and sloped so as to collect and detain all run-off. - The workshop should have an oil-water separator for collected run-off from washing. • Spilled cement and/or concrete (wet or dry) should be treated as hazardous waste and disposed of by the end of each day in the appropriate hazardous waste containers. • All hazardous substances (e.g. fuel etc.) or chemicals should be stored in a specific location on an impermeable surface that is bunded. 	

Table 4: Operational Phase Mitigation Measures

3.4. Decommissioning Phase

The permanent closure of these developments is not envisaged. However, in the event that they are decommissioned the following mitigation measures should be adhered to.

Aspect Description	Mitigation Measure	Responsibility
Construction related activities	<ul style="list-style-type: none"> • Many of the mitigation measures prescribed for construction activity for these developments (see construction phase mitigation measures) would be applicable to some of the decommissioning activities. These should be adhered to where applicable. 	Okahandja Town Council Contractor
Rehabilitation	<ul style="list-style-type: none"> • Upon completion of the construction phase consultations should be held with the local community/property owner(s) regarding the post-construction use of exhausted borrow pits. • In the event that no post-construction uses are requested, all exhausted borrow pits and excavated areas need to be rehabilitated as follows: <ul style="list-style-type: none"> - Borrow pits and excavated areas may only be backfilled with clean or inert fill. No material of hazardous nature (e.g. sand removed with an oil spill) may be dumped as backfill. 	Okahandja Town Council Contractor

Aspect Description	Mitigation Measure	Responsibility
	<ul style="list-style-type: none"> - Rehabilitated borrow pits and excavated areas need to match the contours of the existing landscape. - The rehabilitated area should not be higher (or lower) than nearby drainage channels. This ensures the efficiency of revegetation and reduces the chances of potential erosion. - Topsoil is to be spread across borrow pit and excavated areas evenly. - Deep ripping is required, not just simple scarification, so as to enable rip lines to hold water after heavy rainfall. - Ripping should be done along slopes, not up and down a slope which could lead to enhanced erosion. Rehabilitated borrow pits need to remain fenced-off after the decommissioning of the project to prevent livestock from denuding the newly established vegetation on the area. - 	

Table 5: Decommissioning Phase Mitigation Measures

4. CONCLUSION AND RECOMMENDATIONS

The EMP must be regarded as a living document and changes must be made to the EMP as required by the Okahandja Town Council, while retaining the underlying principles and objectives on which the document is based. The compilation of the EMP has incorporated impacts and mitigation measures from the Scoping Report as well as incorporating principles of best practice in terms of environmental management.

Various impacts of activities within the town on the environment were identified. It is acknowledged that implementation of some measures would require substantial time and / or financial resources, while others are achievable within operational norms. The Okahandja Town Council can thus decide on the prioritization of mitigation measures according to their resource capacity within the institution.