

Draft Environmental Assessment Scoping Report for

*Subdivision, Permanent Closure
and Rezoning of Erf 5491,
Ondangwa Extension 25,
Oshana Region.*

May 2024

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PROJECT DETAILS

| | | | |
|--|--|--|---|
| Title | Environmental Scoping Report for the: <ul style="list-style-type: none"> Subdivision, Permanent Closure and Rezoning of Erf 5491, Ondangwa Extension 25, Oshana Region. | | |
| Report Status | Final | | |
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EXECUTIVE SUMMARY

Introduction

The Ondangwa Town Council hereinafter referred to as the proponent intends to undertake the following activities:

- 1. Subdivision of Erf 5491, Ondangwa Extension 25 Into 9 Erven and Remainder;**
- 2. Permanent Closure of Erven 1 to 9/5491, Ondangwa Extension 25 as a “Public Open Space”;**
- 3. Rezoning of Erven 1 to 9/5491, Ondangwa Extension 25 from “Public Open Space” to “Single Residential” with a density of 1:300;**

The above development triggers listed activities in terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012).

As such the proponent appointed Stubenrauch Planning Consultants (SPC) to undertake an independent Environmental Assessment (EA) in order to obtain an Environmental Clearance Certificate (ECC) for the above activities. The competent authority is the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry (MEFT: DEAF).

Project Description

The Ondangwa Town Council intends to create additional erven predominantly “Single Residential” to help cater to the increasing demand for serviced residential land and to create more housing options for its inhabitants in the town of Ondangwa.

Erf 5491, Ondangwa Extension 25, which is to be subdivided, closed and subsequently rezoned, currently features a water body which is connected to a local drainage channel, as well as an array of shrubs and trees.

The portion of Erf 5491 to be subdivided is situated on higher land, see below Figure 2 and will according to Council, be filled up to avoid any possible flooding in the future. As such the Council will only sell the newly created residential properties after the area has been appropriately filled and compacted.

Council will only sell the newly created residential properties after the area has been properly filled and compacted which will then render these properties as residential units.

Public Participation

Communication with Interested and Affected Parties (I&APs) about the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing descriptive information about the proposed activities was compiled and sent out to all identified and registered I&APs via email on **21 February 2024;**

- Notices were placed in the New Era newspapers and the Namibian newspapers dated **20 February 2024 and 27 February 2024**, briefly explaining the activity and its locality, inviting members of the public to register as I&APs (**Appendix B**); and
- A notice was fixed at the project site (see **Appendix A**);

Public consultation was carried out according to the Environmental Management Act's EIA Regulations. After the initial notification, the I&APs were given two weeks to submit their comments on the project (until **12 March 2024**). The comment period will remain open until the final scoping report is submitted to MEFT.

The Draft Scoping Report was circulated from the **11 April 2024 until the 25 April 2024** so that the public could review and comment on it. The overall commentary received from the public on the draft report will be documented in the comments and responses report document of this report.

Conclusions and Recommendations

With reference to **Table 10**, none of the negative construction phase impacts were deemed to have a high significant impact on the environment. The construction impacts were assessed to a **Medium to Low (negative)** significance, without mitigation measures. With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the construction phase impacts is likely to be reduced to a **Low (negative)**.

With reference to **Table 10**, none of the negative operational phase impacts were deemed to have a high significance impact on the environment. The operational impacts were assessed to a **Medium (negative)** significance, without mitigation measures. With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the construction phase impacts is likely to be reduced to a **Low (negative)**.

It is recommended that this project be authorised because should the development not proceed the subject area will remain in its current state. The local community is expected to benefit from the development as a result of the potential job opportunities during construction as well as the increased development within the area. Furthermore, the community of Ondangwa are further expected to benefit from the new erven which will make available much needed residential erven. The significance of the social impact was therefore deemed to be **Medium (positive)**.

The "no go" alternative was thus deemed to have a **High (negative)** impact, as all the benefits resulting from the development would not be realised.

The significance of negative impacts can be reduced with effective and appropriate mitigation provided in this report and the EMP. If authorised, the implementation of the EMP should be included as a condition of approval.

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LIST OF ACRONYMS

| | |
|-------------------|---|
| AIDS | Acquired Immune Deficiency Syndrome |
| CRR | Comments and response report |
| dB | Decibels |
| DESR | Draft Environmental Scoping Report |
| EA | Environmental Assessment |
| EAP | Environmental Assessment Practitioner |
| EAR | Environmental Assessment Report |
| ECC | Environmental Clearance Certificate |
| ECO | Environmental Control Officer |
| EIA | Environmental Impact Assessment |
| EMA | Environmental Management Act |
| EMP | Environmental Management Plan |
| FESR | Final Environmental Scoping Report |
| GTZ | Gesellschaft für Technische Zusammenarbeit |
| HIV | Human Immunodeficiency Virus |
| I&AP | Interested and Affected Party |
| IUCN | International Union for Conservation of Nature |
| MEFT | Ministry of Environment, Forestry and Tourism |
| MEFT: DEAF | Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry |
| MURD | Ministry of Urban and Rural Development |
| MWTC | Ministry of Works Transport and Communication |
| NAMPAB | Namibia Planning Advisory Board |
| NPC | Namibia Planning Commission |
| POS | Public Open Space |
| PPP | Public Participation Process |
| SADC | Southern African Development Community |
| SME | Small Medium Enterprise |
| SPC | Stubenrauch Planning Consultants |
| USAID | United States Agency for International Development |
| VMMC | Voluntary Medical Male Circumcision |

1 INTRODUCTION

1.1 PROJECT BACKGROUND

The Ondangwa Town Council hereinafter referred to as the proponent intends to undertake the following activities:

1. **Subdivision of Erf 5491, Ondangwa Extension 25 into 9 Erven and Remainder;**
2. **Permanent Closure of Erven 1-9/5491, Ondangwa Extension 25 as a “Public Open Space”;**
3. **Rezoning of Erven 1 to 9/5491, Ondangwa Extension 25 from “Public Open Space” to “Single Residential” with a density of 1:300;**

The above are listed activities in terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012).

In terms of the Environmental Management Act (No. 7 of 2007) and Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012), the following listed activities in **Table 1** were triggered by the proposed project:

Table 1: List of triggered activities identified in the EIA Regulations which apply to the proposed project.

| Activity description and No(s): | Description of relevant Activity | The portion of the development as per the project description that relates to the applicable listed activity |
|--|--|---|
| Activity 5.1 (d) (Land Use and Development) | The rezoning of land from nature conservation or zoned open space to any other land use. | The proposed project involves the closure of a public open space. |

The above activities will be discussed in more detail in Chapter 4. The proponent appointed Stubenrauch Planning Consultants (SPC) to undertake an independent Environmental Assessment (EA) in order to obtain an Environmental Clearance Certificate (ECC) for the above activities. The competent authority is the Ministry of Environment, Forestry and Tourism: Department of Environmental Affairs and Forestry (MEFT: DEAF).

The process will be undertaken in terms of the gazetted Namibian Government Notice No. 30 Environmental Impact Assessment Regulations (herein referred to as EIA Regulations) and the Environmental Management Act (No 7 of 2007) (herein referred to as the EMA). The EIA process will investigate if there are any potential significant bio-physical and socio-economic impacts associated with the intended activities. The EIA process would also serve to provide an opportunity for the public and key stakeholders to provide comments and participate in the process.

1.2 PROJECT LOCATION

Erf 5491 is situated in the neighbourhood of Ondangwa Extension 25, and it measures 54912 m² in extent as depicted in **Figure 1** below.

1.3 LAND USE

Erf 5491, Ondangwa Extension is zoned “Public Open Space” in accordance with the Ondangwa Zoning Scheme. The subject erf is located in an area with erven zoned for different uses including “Single Residential”, “Business”, “General Residential”, “Local Authority” and “Government”.

Erf 5491, Ondangwa Extension 25, which is to be subdivided, closed and subsequently rezoned, currently features a water body which is connected to a local drainage channel, as well as an array of shrubs and trees. The erf is located on a relatively flat terrain as indicated by the contours on the maps.

The portion of Erf 5491 to be subdivided is situated on higher land and will according to Council, be filled up to avoid any possible flooding in the future.

1.4 OWNERSHIP

Ownership of Erf 5491, Ondangwa Extension 25 vests with the Ondangwa Town Council.

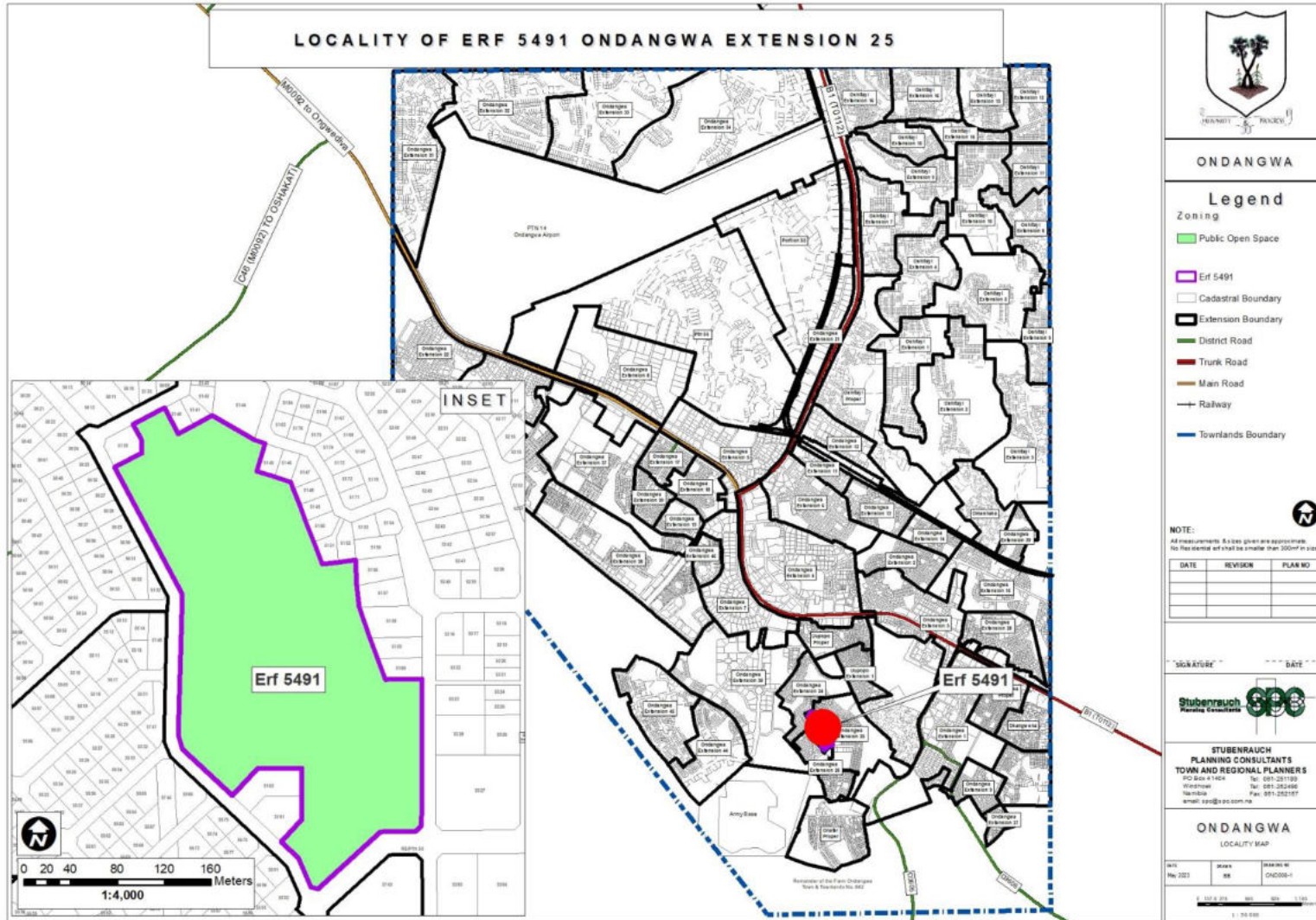


Figure 1: Locality map of Erf 5491, Ondangwa Extension 25

1.5 TERMS OF REFERENCE AND SCOPE OF PROJECT

The scope of this project is limited to conducting an environmental impact assessment and applying for an Environmental Clearance Certificate for the following as indicated in section 1.1 above:

- **Subdivision of Erf 5491, Ondangwa Extension 25 into 9 Erven and Remainder;**
- **Permanent Closure of Erven 1-9/5491, Ondangwa Extension 25 as a “Public Open Space”;**
- **Rezoning of Erven 1 to 9/5491, Ondangwa Extension 25 from “Public Open Space” to “Single Residential” with a density of 1:300;**

1.6 ASSUMPTIONS AND LIMITATIONS

In undertaking this investigation and compiling the Environmental Scoping Report, the following assumptions and limitations apply:

- Assumes the information provided by the proponent is accurate and discloses all information available.
- The limitation that no alternative except for the preferred layout plans and the ‘no-go’ option was considered during this assessment. The unique character and appeal of Ondangwa were however taken into consideration with the design perspective. Various layout alternatives were initially considered by the proponent, also taking terrain and environmental constraints into account, thus the current design plans being the most feasible result.

1.7 CONTENT OF ENVIRONMENTAL ASSESSMENT REPORT

Section 8 of the gazetted EIA Regulations requires specific content to be addressed in a Scoping / Environmental Assessment Report. **Table 2** below is an extract from the EMA and highlights the required contents of a Scoping / Environmental Assessment Report whilst assisting the reader to find the relevant section in the report.

Table 2: Contents of the Scoping / Environmental Assessment Report

| Section | Description | Section of FESR/ Annexure |
|---------|---|----------------------------|
| 8 (a) | The curriculum vitae of the EAPs who prepared the report; | Refer to Annexure D |
| 8 (b) | A description of the proposed activity; | Refer to Chapter 4 |
| 8 (c) | A description of the site on which the activity is to be undertaken and the location of the activity on the site; | Refer to Chapter 3 |

| Section | Description | Section of FESR/ Annexure |
|---------|--|---|
| 8 (d) | A description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed listed activity; | Refer to Chapter 3 |
| 8 (e) | An identification of laws and guidelines that have been considered in the preparation of the scoping report; | Refer to Chapter 2 |
| 8 (f) | Details of the public consultation process conducted in terms of regulation 7(1) in connection with the application, including | Refer to Chapter 5 |
| | (i) the steps that were taken to notify potentially interested and affected parties of the proposed application | Refer to Chapter 5 |
| | (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; | Refer to Annexures A and B for site notices and advertisements respectively. |
| | (iii) a list of all persons, organisations and organs of state that were registered in terms of regulation 22 as interested and affected parties in relation to the application; | Refer to Annexure C |
| | (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues; | Refer to Annexure C |
| 8 (g) | A description of the need and desirability of the proposed listed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives have on the environment and on the | Refer to Chapter 4 |

| Section | Description | Section of FESR/ Annexure |
|---------|--|---|
| | community that may be affected by the activity; | |
| 8 (h) | A description and assessment of the significance of any significant effects, including cumulative effects, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the proposed listed activity; | Refer to Chapter 7 |
| 8 (i) | terms of reference for the detailed assessment; | NB – Assessment of impacts are included in this EA Report |
| 8 (j) | An environmental management plan | Refer to Annexure F |

2 LEGAL FRAMEWORK

2.1 LEGISLATION RELEVANT TO THE PROPOSED DEVELOPMENT

There are multiple legal instruments that regulate and have a bearing on good environmental management in Namibia. **Table 3** below provides a summary of the legal instruments considered to be relevant to this development and the environmental assessment process.

Table 3: Legislation applicable to the proposed development

| LEGISLATION/POLICIES | RELEVANT PROVISIONS | RELEVANCE TO PROJECT |
|---|--|--|
| The Constitution of the Republic of Namibia as Amended | Article 91 (c) provides for duty to guard against “the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia.” Article 95(l) deals with the “maintenance of ecosystems, essential ecological processes and biological diversity” and sustainable use of the country’s natural resources. | Sustainable development should be at the forefront of this development. |
| Environmental Management Act No. 7 of 2007 (EMA) | Section 2 outlines the objective of the Act and the means to achieve that. Section 3 details the principle of Environmental Management | The development should be informed by the EMA. |
| EIA Regulations GN 28, 29, and 30 of EMA (2012) | GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate. GN 30 provides the regulations governing the environmental assessment (EA) process. | Activity 5.1 (d) (Land Use and Development) |
| Convention on Biological Diversity (1992) | Article 1 lists the conservation of biological diversity amongst the objectives of the convention. | The project should consider the impact it will have on the biodiversity of the area. |
| Draft Procedures and Guidelines for conducting EIAs and compiling EMPs (2008) | Part 1, Stage 8 of the guidelines states that if a proposal is likely to affect people, certain guidelines should be considered by the proponent in the scoping process. | The EA process should incorporate the aspects outlined in the guidelines. |

| LEGISLATION/POLICIES | RELEVANT PROVISIONS | RELEVANCE TO PROJECT |
|--|--|---|
| Namibia Vision 2030 | Vision 2030 states that the solitude, silence and natural beauty that many areas in Namibia provide are becoming sought after commodities and must be regarded as valuable natural assets. | Care should be taken that the development does not lead to the degradation of the natural beauty of the area. |
| Water Act No. 54 of 1956 | Section 23(1) deals with the prohibition of pollution of underground and surface water bodies. | The pollution of water resources should be avoided during construction and operation of the development. |
| The Ministry of Environment and Tourism (MET) Policy on HIV & AIDS | MET has recently developed a policy on HIV and AIDS. In addition, it has also initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments. | The proponent and its contractor have to adhere to the guidelines provided to manage the aspects of HIV/AIDS. Experience with construction projects has shown that a significant risk is created when migrant construction workers interact with local communities. |
| Urban and Regional Planning Act 5 of 2018 | The Act provides to consolidate the laws relating to urban and regional planning; to provide for a legal framework for spatial planning in Namibia; to provide for principles and standards of spatial planning; to establish the urban and regional planning board; to decentralise certain matters relating to spatial planning; to provide for the preparation, approval and review of the national spatial development framework, regional structure plans and urban structure plans; to provide for the preparation, approval, review and amendment of zoning schemes; to provide for the establishment of townships; to provide for the alteration of boundaries of approved townships, to provide for the disestablishment of approved townships; to provide for the change of name of approved townships; to provide for the subdivision and consolidation of land; to provide for the alteration, | The subdivision, closure and rezoning is to be done in accordance with the act. |

| LEGISLATION/POLICIES | RELEVANT PROVISIONS | RELEVANCE TO PROJECT |
|---|--|---|
| | suspension and deletion of conditions relating to land; and to provide for incidental matters. | |
| Local Authorities Act No. 23 of 1992 | The Local Authorities Act prescribes the manner in which a town or municipality should be managed by the Town or Municipal Council. | The development must comply with provisions of the Local Authorities Act. |
| Labour Act no. 11 of 2007 | Chapter 2 details the fundamental rights and protections. Chapter 3 deals with the basic conditions of employment. | Given the employment opportunities presented by the development, compliance with the labour law is essential. |
| National Heritage Act No. 27 of 2004 | The Act is aimed at protecting, conserving and registering places and objects of heritage significance. | 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. |
| Roads Ordinance 17 of 1972 | <ul style="list-style-type: none"> • Section 3.1 deals with width of proclaimed roads and road reserve boundaries • Section 27.1 is concerned with the control of traffic on urban trunk and main roads • Section 36.1 regulates rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads • Section 37.1 deals with Infringements and obstructions on and interference with proclaimed roads. | Adhere to all applicable provisions of the Roads Ordinance. |
| Public and Environmental Health Act of 2015 | This Act (GG 5740) provides a framework for a structured uniform public and environmental health system in Namibia. It covers notification, prevention and control of diseases and sexually transmitted | Contractors and users of the proposed development are to comply with these legal requirements. |

| LEGISLATION/POLICIES | RELEVANT PROVISIONS | RELEVANCE TO PROJECT |
|--|--|--|
| | infections; maternal, ante-natal and neo-natal care; water and food supplies; infant nutrition; waste management; health nuisances; public and environmental health planning and reporting. It repeals the Public Health Act 36 of 1919 (SA GG 979). | |
| Nature Conservation Ordinance no. 4 of 1975 | Chapter 6 provides for legislation regarding the protection of indigenous plants | Indigenous and protected plants must be managed within the legal confines. |
| Water Quality Guidelines for Drinking Water and Wastewater Treatment | Details specific quantities in terms of water quality determinants, which wastewater should be treated to before being discharged into the environment (see Appendix B). | These guidelines are to be applied when dealing with water and waste treatment |
| Environmental Assessment Policy of Namibia (1995) | The Policy seeks to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ENVIRONMENT is broadly interpreted to include biophysical, social, economic, cultural, historical and political components. | This EIA considers this term of Environment. |
| Water Resources Management Act No. 11 of 2013 | Part 12 deals with the control and protection of groundwater Part 13 deals with water pollution control | The pollution of water resources should be avoided during construction and operation of the development. Should water need to be abstracted, a water abstraction permit will be required from the Ministry of Water, Agriculture and Forestry. |
| Forest Act 12 of 2001 and Forest Regulations of 2015 | To provide for the establishment of a Forestry Council and the appointment of certain officials; to | Protected tree and plant species as per the Forest Act No 12 of 2001 and Forest Regulations of 2015 may |

| LEGISLATION/POLICIES | RELEVANT PROVISIONS | RELEVANCE TO PROJECT |
|---|---|--|
| | <p>consolidate the laws relating to the management and use of forests and forest produce; to provide for the protection of the environment and the control and management of forest fires; to repeal the Preservation of Bees and Honey Proclamation, 1923 (Proclamation No. 1 of 1923), Preservation of Trees and Forests Ordinance, 1952 (Ordinance No. 37 of 1952) and the Forest Act, 1968 (Act No. 72 of 1968); and to deal with incidental matters.</p> | <p>not be removed without a permit from the Ministry of Agriculture, Water and Forestry.</p> |
| <p>Atmospheric Pollution Prevention Ordinance No 45 of 1965</p> | <p>Part II - control of noxious or offensive gases, Part III - atmospheric pollution by smoke, Part IV - dust control, and Part V - air pollution by fumes emitted by vehicles.</p> | <p>The development should consider the provisions outlined in the act. The proponent should apply for an Air Emissions permit from the Ministry of Health and Social Services (if needed).</p> |

| LEGISLATION/POLICIES | RELEVANT PROVISIONS | RELEVANCE TO PROJECT |
|--|--|---|
| Hazardous Substance Ordinance 14 of 1974 | To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the division of such substances into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and to provide for matters connected therewith. | The handling, usage and storage of hazardous substances on site should be carefully controlled according to this Ordinance. |
| Soil Conservation Act No 76 of 1969 | Act to consolidate and amend the law relating to the combating and prevention of soil erosion, the conservation, improvement and manner of use of the soil and vegetation and the protection of the water sources | The proposed activity should ensure that soil erosion and soil pollution is avoided during construction and operation. |

This EIA process will be undertaken in accordance with the EIA Regulations. A Flow Diagram (refer to **Figure 2** below) provides an outline of the EIA process to be followed.

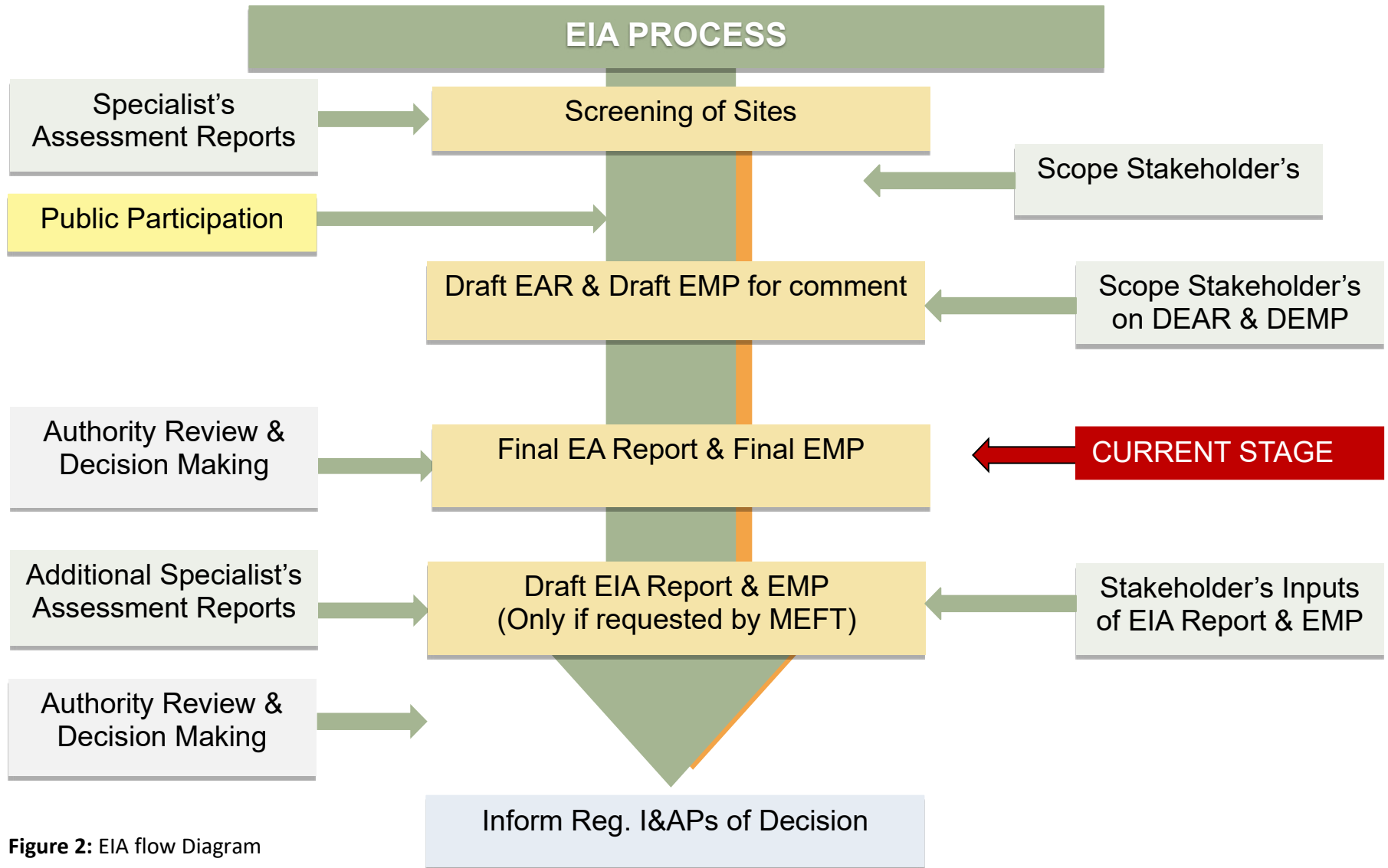


Figure 2: EIA flow Diagram

3 ENVIRONMENTAL BASELINE DESCRIPTION

3.1 SOCIAL ENVIRONMENT

3.1.1 Socio-Economic Context

The statistics shown in **Table 4** below are derived from the 2011 Namibia Population and Housing Census (Namibia Statistics Agency, 2011), and presented from a local and regional perspective.

Table 4: Statistics of the Ondangwa Constituency (Namibia Statistics Agency, 2011)

| ONDANGWA CONSTITUENCY | |
|---|--------------------------|
| ATTRIBUTE | INDICATOR |
| Population | 22 822 |
| Females | 19 744 |
| Males | 17 102 |
| Population under 5 years | 12% |
| Population aged 5 to 14 years | 19% |
| Population aged 15 to 59 years | 63% |
| Population aged 60 years and above | 6% |
| Female: male ratio | 87:100 |
| Literacy rate of 15 years old and above | 96% |
| People above 15 years who have never attended school | 8% |
| People above 15 years who are currently attending school | 18% |
| People above 15 years who have left school | 71% |
| People aged 15 years and above who belong to the labour force | 65% |
| Population employed | 62% |
| Homemakers | 7% |
| Students | 64% |
| Retired or old age income recipients | 30% |
| Income from pension | 16% |
| Income from business and non-farming activities | 20% |
| Income from farming | 12% |
| Income from cash remittance | 4% |
| Wages and salaries | 44% |
| Main Language | Oshiwambo Languages- 94% |
| OSHANA REGION | |
| ATTRIBUTE | INDICATOR |
| Population | 176 674 |
| Population aged 60 years and above | 8% |
| Population aged 5 to 14 years | 21% |
| Population aged 15 to 59 years | 59% |

3.1.2 Archaeological and Heritage Context

No archaeological and heritage sites are known to be located within the proposed development area. The project management should however be made aware of the provisions of the National Heritage Act regarding the prompt reporting of archaeological finds.

3.2 BIO-PHYSICAL ENVIRONMENT

3.2.1 Climate

The climate of the subject area can be described as semi-arid. Average annual temperatures are usually more than 22 °C, with average maximum temperatures between 34°C and 36 °C and average minimum temperatures between 6°C and 8 °C (Mendelsohn, Jarvis, Roberts & Roberston, 2002).

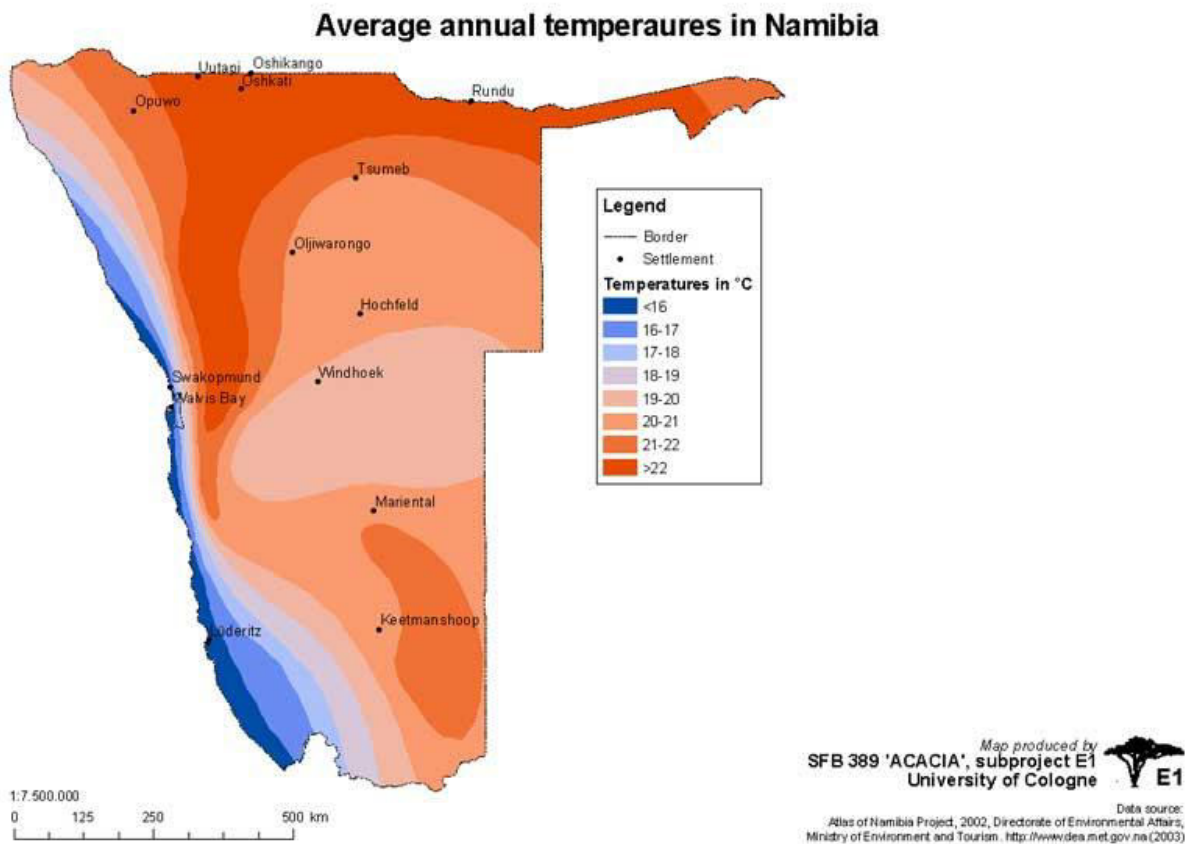


Figure 3: Annual average temperature (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/e1_download_climate_e.htm#temperature_annual)

The subject area generally experiences more rainfall than the south and west of the country with an average rainfall of 350 to 550 mm as indicated in **Figure 4** below.

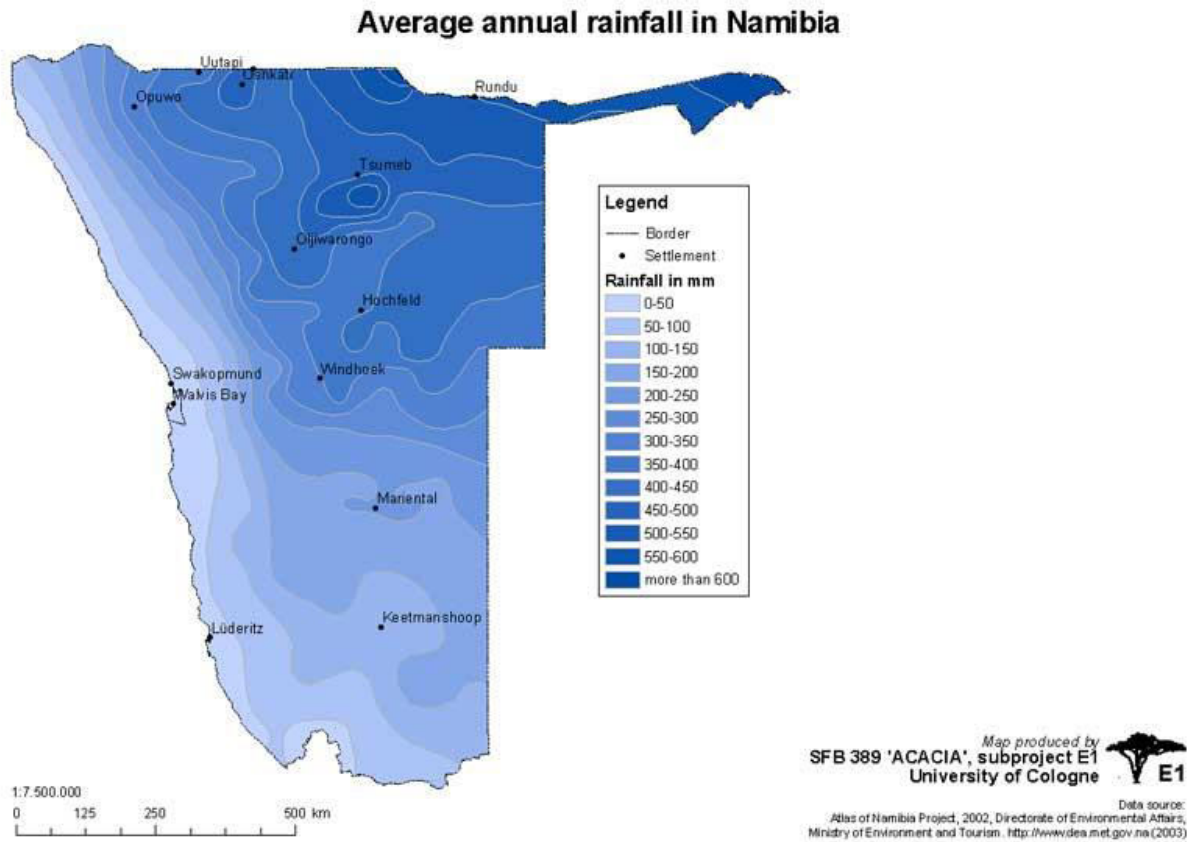


Figure 4: Average annual Rainfall (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/climate/rainfall-annual.jpg)

3.2.2 Topography, Geology and Soils

The Oshana Region forms part of the Kalahari Group Geological division depicted in pale yellow in **Figure 5** below. The dominant soils within the area are predominantly deep Kalahari and Namib sand that mostly occur in the formation of sands and other sedimentary materials, while the clay sodic sands dominate in the Oshanas (Mendelsohn *et al.*, 2002).

The slope of the subject area is generally flat, and the soil conditions and topography are suitable for the proposed development.

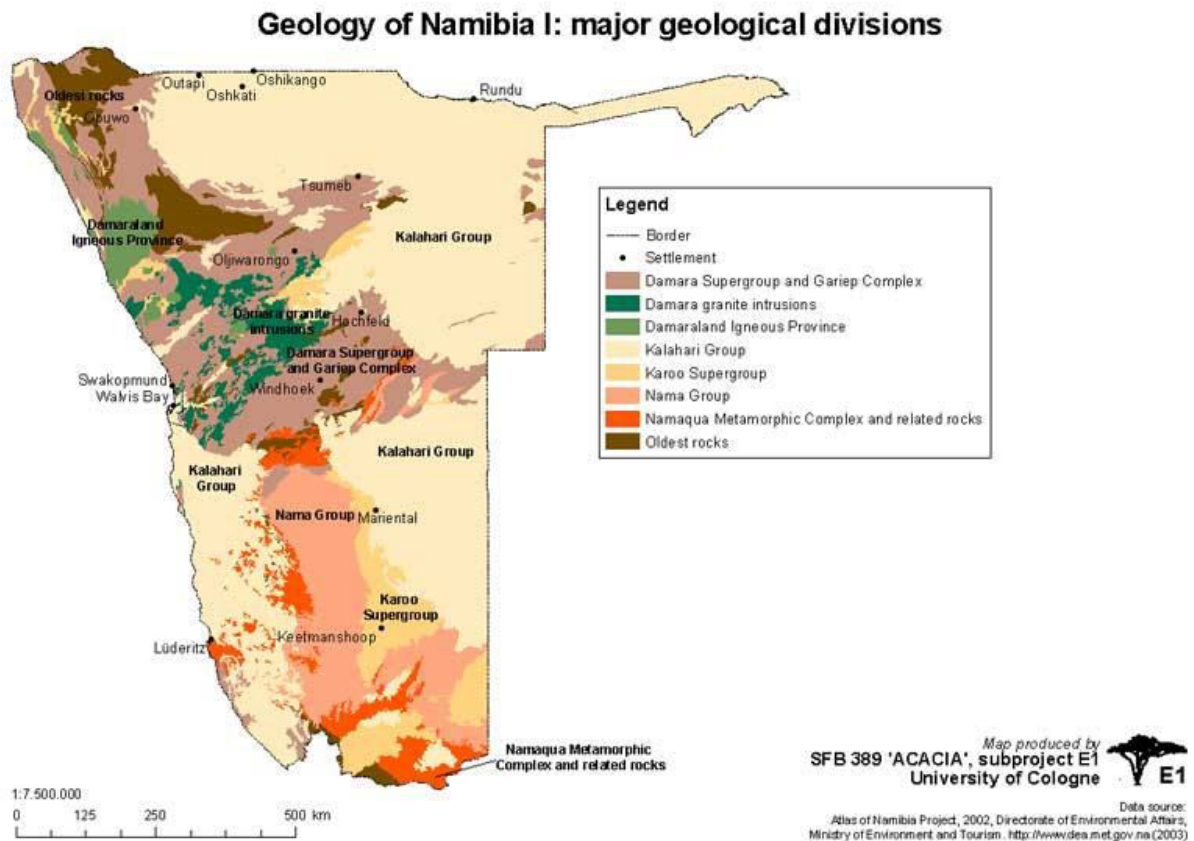


Figure 5: Geology of Namibia (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/physical/geology.jpg)

3.2.3 Hydrology and Hydrogeology

In terms of groundwater, the area falls within the Cuvelai-Etoshia groundwater basin as depicted in **Figure 6** below. The hydrogeological Cuvelai Basin comprises the Omusati, Oshana, Ohangwena, and Oshikoto Regions and parts of the Kunene Region (Ministry of Agriculture Water and Rural Development, 2011). The groundwater of the Cuvelai Basin is relatively shallow but mostly brackish or saline. All groundwater within the basin flows towards the Etosha Pan (Ministry of Agriculture Water and Rural Development, 2011).

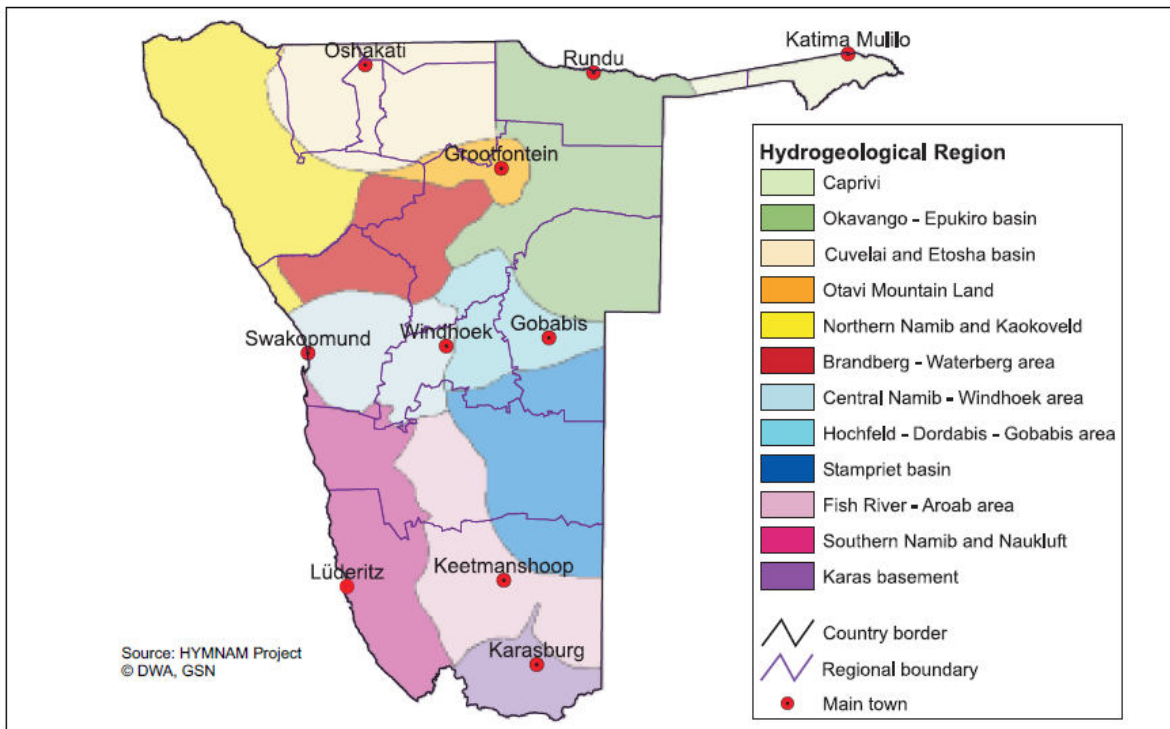


Figure 6: Groundwater basins and hydrogeological regions in Namibia

The Cuvelai Basin consists of thousands of drainage channels or oshanas which flow during the rainy season. The oshanas are “shallow, often vegetated and poorly defined, interconnected flood channels and pans through which surface water flows slowly or may form pools depending on the intensity of the floods (“efundja”)” (Ministry of Agriculture Water and Rural Development, 2011).

The Cuvelai Basin is one of the most densely populated areas in the country with most communities living in rural areas largely dependent on agriculture (Ministry of Agriculture Water and Rural Development, 2011). The villages and towns located within the Cuvelai Basin are supplied with water from the Calueque Dam, north of the Angolan border, via an extensive system of canals and pipelines. “Water stored in the Calueque Dam on the Kunene River just north of the border is pumped via a canal to the Olushandja Dam in Namibia, from where it is gravity fed via a concrete-lined canal to Oshakati” (Ministry of Agriculture Water and Rural Development, 2011).

Surface water is only available during the rainy season, people rely on other water sources during the dry season. As such groundwater is sourced in the region through dug wells and boreholes.

Most of the settlements within the Cuvelai basin experience flooding during the rainy season. Oshakati is no exception, however the developed part of the town generally is not severely affected by these seasonal flood occurrences as it is developed on higher ground than the surrounding Oshana areas (Stubenrauch Planning Consultants, 2016). This however cannot be said for the extended Townlands which experiences greater flooding challenges (Lithon Project Consultants, 2016).

Lower lying areas within town coupled with increasing run-off during flood occurrences pose a challenge for stormwater management. As such it is essential that stormwater management systems be implemented within town. Flooding occurring in Oshakati results mainly from local run-off that cannot drain away to the nearby iishana (Lithon Project Consultants, 2016).

The subject area currently features a water body which is connected to a local drainage channel, as well as an array of shrubs and trees and is located on a relatively flat terrain.

The portion of Erf 5491 to be subdivided is situated on higher land and will be filled up by the proponent to avoid any possible flooding in the future.

3.3 TERRESTRIAL ECOLOGY

3.3.1 Flora and Fauna

The Oshana Region falls within the broader Tree-and-Shrub Savanna Biome and forms part of the Acacia Tree-and-shrub Savanna sub-biome. The Acacia Tree-and-shrub Savanna sub-biome is characterized by large, open expanses of grasslands dotted with Acacia trees (Mendelsohn *et al.*, 2002). The trees within this biome are tallest in the east where they grow in deeper sands and become more shrub-like to the west where they grow in shallower soils.

The region falls within the Cuvelai Drainage vegetation type. Within north-central Namibia, Mopane is a very common tree species in the Cuvelai Drainage where grassy channels of oshana carry floodwater during heavy rains from the higher areas in the north of Angola (Mendelsohn & el Obeid, 2005). The indigenous trees found within the region include the Makalani Palm Trees (*Hyphaene petersiana*) and Mopane Trees (*Colophospermum mopane*). If removal of protected tree species is required a permit needs to be obtained from the local Department of Forestry prior to removal. Trees protected under the Forestry Act 12 of 2001 should be protected within the layout of the proposed development.

Most wildlife is located within the Etosha National Park and thus it is mostly animals such as cattle, donkeys and goats which are dominant within the subject area.

The proposed development is located within the urban locality of Ondangwa as such the area has already been developed and can therefore not be considered to be pristine. The natural vegetation within the area has been disturbed by human activities but does accommodate some trees scattered within the proposed sites which need to be considered in the proposed layouts of the development.

4 PROJECT DESCRIPTION

4.1 PROJECT COMPONENTS

As previously outlined in Section 1.1, the proposed project involves the following activities:

- **Subdivision of Erf 5491, Ondangwa Extension 25 into 9 Erven and Remainder;**
- **Permanent Closure of Erven 1-9/5491, Ondangwa Extension 25 as a “Public Open Space”;**
- **Rezoning of Erven 1 to 9/5491, Ondangwa Extension 25 from “Public Open Space” to “Single Residential” with a density of 1:300;**

These components will be described in further detail below, in terms of their design, layout and footprint.

4.2 ALTERNATIVES

As pointed out in Section 1.4 above various layouts alternatives were initially considered by the proponent, ultimately resulting in the final layouts. As such only the no-go alternative will be discussed below.

4.2.1 No – Go Alternative

The no-go alternative is the baseline against which all alternatives are assessed. The no-go alternative would essentially entail maintaining the current situation of uncontrolled informal settlement growth. Thus, the Ondangwa Town Council and the residents will not be able to receive the benefits which may result from the construction and operational phase of the development. The residents will not be able to expand their financial security, as they will be able to use these land rights to expand their business, renovate their homes, pass their homes on to their dependants in the form of inheritance, which all works towards wealth generation and economic empowerment. Thus, the no-go alternative is not considered to be the preferred option.

4.3 THE PROPOSED DEVELOPMENT

The Ondangwa Town Council intends to subdivide Erf 5491, Ondangwa Extension 25, close and subsequently rezone. The subject erf currently features a water body which is connected to a local drainage channel, as well as an array of shrubs and trees.

The portion of Erf 5491 to be subdivided is situated on higher land, see below **Figure 8** and will according to Council, be filled up to avoid any possible flooding in the future. As such the Council will only sell the newly created residential properties after the area has been appropriately filled and compacted.

The development on Erf 5491, Ondangwa Extension 25 is intended towards the creation of additional erven predominantly "Single Residential" to help cater to the increasing demand for serviced residential land and to create more housing options for its inhabitants in the town of Ondangwa.

The following town planning steps are required to facilitate the intended development:

- **Subdivision of Erf 5491, Ondangwa Extension 25 into 9 Erven and Remainder;**
- **Permanent Closure of Erven 1-9/5491, Ondangwa Extension 25 as a "Public Open Space";**
- **Rezoning of Erven 1 to 9/5491, Ondangwa Extension 25 from "Public Open Space" to "Single Residential" with a density of 1:300;**

4.3.1 The Subdivision of Erf 5491, Ondangwa Extension 25

Erf 5491, Ondangwa Extension 25 is to be subdivided into 9 Erven and Remainder as depicted in **Figure 8** and **Table 5** below.

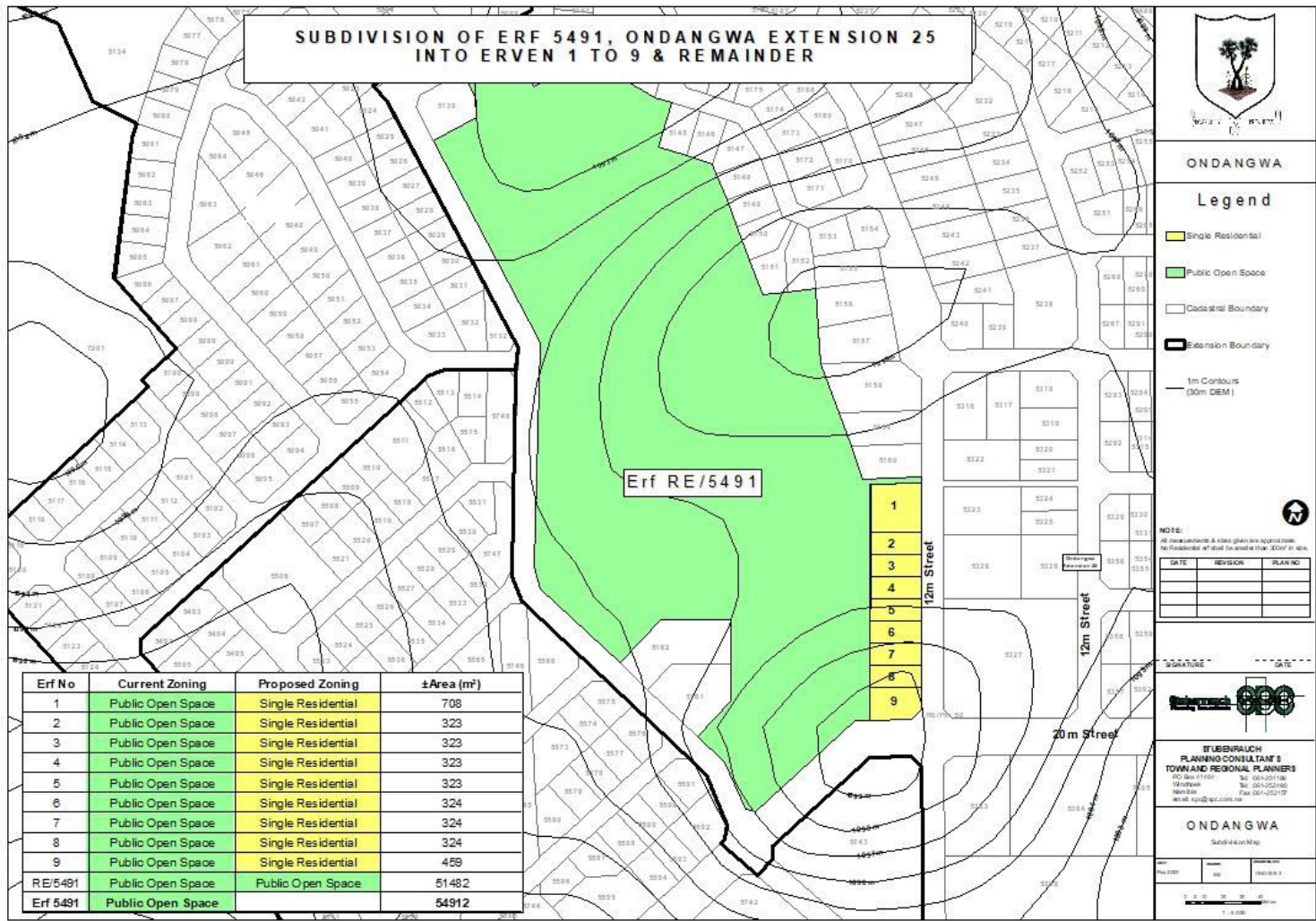


Figure 8: Subdivision of Erf 5491, Ondangwa Extension 25

As depicted in **Figure 8** above, there is a pathway, approximately 3 meters wide created for the subdivision of Erf 5491, Ondangwa Extension 25 that will facilitate the flow of stormwater from the subject ref into the street.

Table 5: Subdivision of Erf 5491, Ondangwa Extension 25

| Erf No | Current Zoning | Proposed Zoning | ±Area (m²) | Density |
|-----------------|--------------------------|------------------------|------------------------------|----------------|
| 1 | Public Open Space | Single Residential | 708 | 1:300 |
| 2 | Public Open Space | Single Residential | 323 | 1:300 |
| 3 | Public Open Space | Single Residential | 323 | 1:300 |
| 4 | Public Open Space | Single Residential | 323 | 1:300 |
| 5 | Public Open Space | Single Residential | 323 | 1:300 |
| 6 | Public Open Space | Single Residential | 324 | 1:300 |
| 7 | Public Open Space | Single Residential | 324 | 1:300 |
| 8 | Public Open Space | Single Residential | 324 | 1:300 |
| 9 | Public Open Space | Single Residential | 459 | 1:300 |
| RE/5491 | Public Open Space | Public Open Space | 51482 | N/A |
| Erf 5491 | Public Open Space | | 54912 | N/A |

4.3.2 The Permanent Closure of Erf A/5491, Ondangwa Extension 25 as a “Public Open Space”

As depicted in **Figure 9** below, the Proponent intends to close Erven 1-9/5491, Ondangwa Extension 25 (measuring ±3431 m² in total) as a “Public Open Space”.

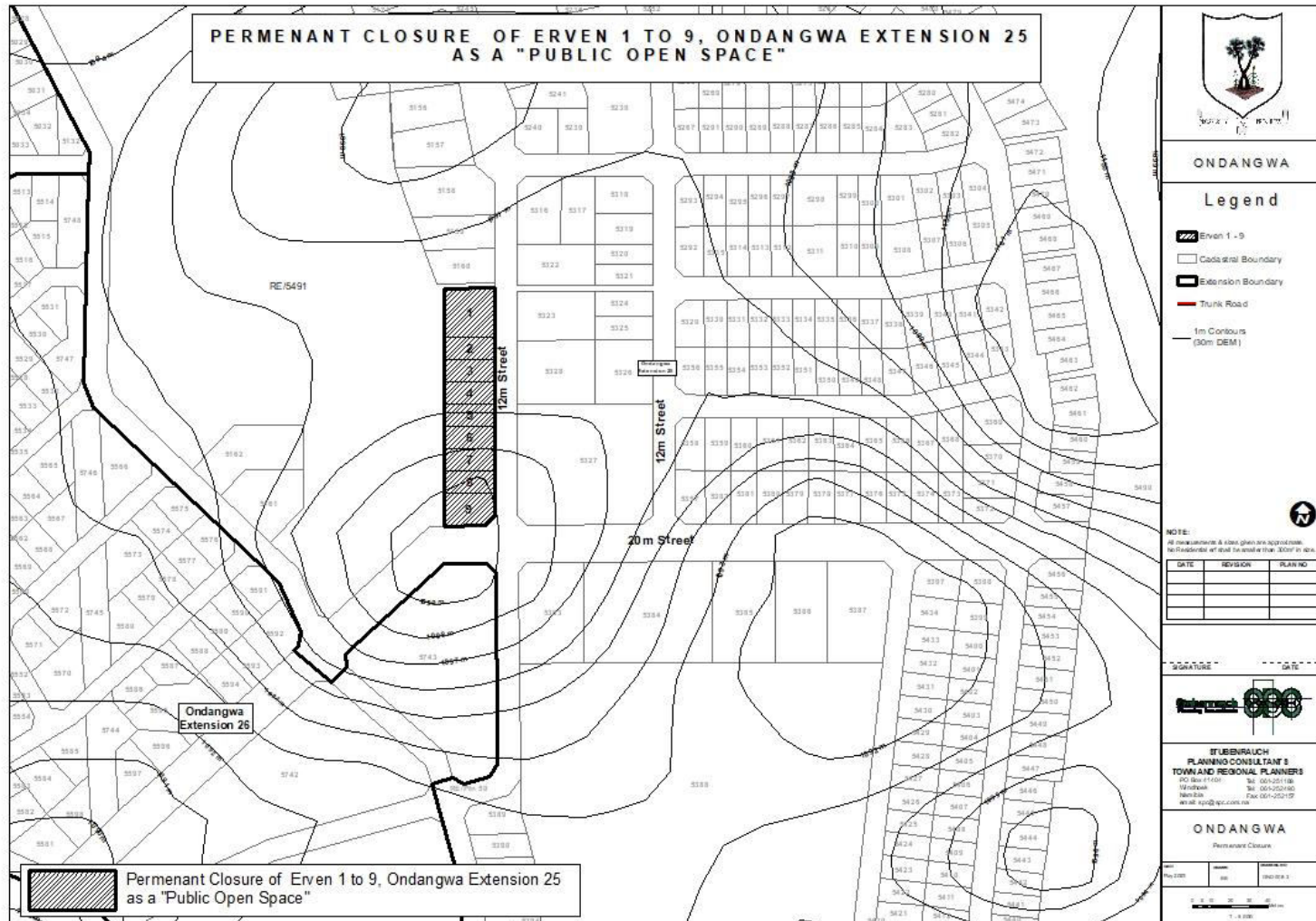


Figure 9: Proposed Permanent Closure

4.3.3 Rezoning of Erf A 1-9/5491, Ondangwa Extension 25 from “Public Open Space” to “Single Residential” with a density of 1:300.

To enable the proponent to create more housing options and meet the demand for serviced residential land for its inhabitants on the subject Erf, it must be rezoned from “Public Open Space” to “Single Residential” with a density of 1:300.

This rezoning is the final step that will create the additional erven and will help to curb the demand for serviced residential land on the subject erf.

The “Single Residential” erven created will help to curb urban sprawl within the town of Ondangwa by concentrating development in already existing built-up areas, while also preserving open spaces and the natural habitats.

Rezoning from “Public Open Space” to “Single Residential” could help the Ondangwa Town Council to accommodate the growing population of Ondangwa while maintaining a balance between environmental conservation and urban development.

4.3.4 Engineering Services and Access Provision

4.3.4.1 Water and Sewer

Erf 5491, Ondangwa Extension 25 is already connected to the reticulation system of water and sewer of the Ondangwa Town Council. Therefore, the newly created erven will retain these connections and any additional connection is to be made in accordance with the engineering standards and requirements of Ondangwa Town Council.

4.3.4.2 Electricity

Erf 5491, Ondangwa Extension 25 is already connected to NORED’s distribution grid which currently provides electrical power to Ondangwa. Any additional connection to be required will be done in accordance with the standards and requirements of NORED.

4.3.4.3 Road and Storm Water

Currently, the storm water on Erf 5491, Ondangwa Extension 25 follows the natural drainage paths on site.

The proposed Erven 1 to 9/5491 fall within the main storm water channel. As such, necessary measures as per the Ondangwa Stormwater Management Report (2012) will be implemented and the affected erven will be properly filled to redirect the storm water to avoid inundation of the newly created Erven, as well as flooding of the surrounding properties as a result of the filling up of the new properties.

4.3.4.4 Access Provision

Access to Erf 5491 is currently gained from the internal street network of Ondangwa Extension 25 which is 12m wide. The proposed subdivided Erven will individually gain access from the existing municipal street network. The street width and capacity is sufficient to carry additional traffic to be generated through the proposed subdivision and rezoning.

5 PUBLIC PARTICIPATION PROCESS

5.1 PUBLIC PARTICIPATION REQUIREMENTS

In terms of Section 21 of the EIA Regulations a call for open consultation with all I&APs at defined stages of the EIA process is required. This entails participatory consultation with members of the public by providing an opportunity to comment on the proposed project. Public Participation has thus incorporated the requirements of Namibia's legislation, but also takes account of international guidelines, including Southern African Development Community (SADC) guidelines and the Namibian EIA Regulations. Public participation in this project has been undertaken to meet the specific requirements in accordance with the international best practice. Please see **Table 6** below for the activities undertaken as part of the public participation process. The I&APs were given time to comment from **21 February 2024 to 12 March 2024**.

Table 6: Table of Public Participation Activities

| ACTIVITY | REMARKS |
|---|-----------------------|
| Placement of site notice/poster in Ondangwa | See Annexure A |
| Placing advertisements in two newspapers namely the Namibian and New Era (20 February 2024 and 27 February 2024) | See Annexure B |
| Written notice to surrounding property owners and Interested and Affected Parties via Email (21 February 2024) | See Annexure C |

5.1.1 Environmental Assessment Phase 2

The second phase of the PPP involved the lodging of the Draft Environmental Scoping Report (DESR) to all registered I&APs for comment. Registered and potential I&APs were informed of the availability of the DESR for public comment *via* a letter/email dated **11 April 2024**. An Executive Summary of the DESR was also included in the letters to the registered I&APs. I&APs had until **25 April 2024** to submit comments or raise any issues or concerns they may have with regard to the proposed project.

6 ASSESSMENT METHODOLOGY

The purpose of this chapter is to describe the assessment methodology utilized in determining the significance of the construction and operational impacts of the proposed project, and where applicable the possible alternatives, on the biophysical and socio-economic environment.

Assessment of predicted significance of impacts for a proposed development is by its nature, inherently uncertain – environmental assessment is thus an imprecise science. To deal with such uncertainty in a comparable manner, a standardised and internationally recognised methodology has been developed. Such accepted methodology is applied in this study to assess the significance of the potential environmental impacts of the proposed development, outlined as follows in **Table 7**.

Table 7: Impact Assessment Criteria

| CRITERIA | CATEGORY |
|---|--|
| Impact | Description of the expected impact |
| Nature Describe type of effect | Positive: The activity will have a social / economical / environmental benefit. Neutral: The activity will have no effect Negative: The activity will have a social / economical / environmental harmful effect |
| Extent Describe the scale of the impact | Site Specific: Expanding only as far as the activity itself (onsite) Small: restricted to the site's immediate environment within 1 km of the site (limited) Medium: Within 5 km of the site (local) Large: Beyond 5 km of the site (regional) |
| Duration Predicts the lifetime of the impact. | Temporary: < 1 year (not including construction) Short-term: 1 – 5 years Medium term: 5 – 15 years Long-term: >15 years (Impact will stop after the operational or running life of the activity, either due to natural course or by human interference) Permanent: Impact will be where mitigation or moderation by natural course or by human interference will not occur in a particular means or in a particular time period that the impact can be considered temporary |
| Intensity Describe the magnitude (scale/size) of the Impact | Zero: Social and/or natural functions and/ or processes remain unaltered Very low: Affects the environment in such a way that natural and/or social functions/processes are not affected Low: Natural and/or social functions/processes are slightly altered |

| CRITERIA | CATEGORY |
|---|--|
| | <p>Medium: Natural and/or social functions/processes are notably altered in a modified way</p> <p>High: Natural and/or social functions/processes are severely altered and may temporarily or permanently cease</p> |
| <p>Probability of occurrence Describe the probability of the Impact <u>actually</u> occurring</p> | <p>Improbable: Not at all likely</p> <p>Probable: Distinctive possibility</p> <p>Highly probable: Most likely to happen</p> <p>Definite: Impact will occur regardless of any prevention measures</p> |
| <p>Degree of Confidence in predictions State the degree of confidence in predictions based on availability of information and specialist knowledge</p> | <p>Unsure/Low: Little confidence regarding information available (<40%)</p> <p>Probable/Med: Moderate confidence regarding information available (40-80%)</p> <p>Definite/High: Great confidence regarding information available (>80%)</p> |
| <p>Significance Rating The impact on each component is determined by a combination of the above criteria.</p> | <p>Neutral: A potential concern which was found to have no impact when evaluated</p> <p>Very low: Impacts will be site specific and temporary with no mitigation necessary.</p> <p>Low: The impacts will have a minor influence on the proposed development and/or environment. These impacts require some thought to adjustment of the project design where achievable, or alternative mitigation measures</p> <p>Medium: Impacts will be experienced in the local and surrounding areas for the life span of the development and may result in long term changes. The impact can be lessened or improved by an amendment in the project design or implementation of effective mitigation measures.</p> <p>High: Impacts have a high magnitude and will be experienced regionally for at least the life span of the development, or will be irreversible. The impacts could have the no-go proposition on portions of the development in spite of any mitigation measures that could be implemented.</p> |

*NOTE: Where applicable, the magnitude of the impact has to be related to the relevant standard (threshold value specified and source referenced). The magnitude of impact is based on specialist knowledge of that particular field.

For each impact, the EXTENT (spatial scale), MAGNITUDE (size or degree scale) and DURATION (time scale) are described. These criteria are used to ascertain the SIGNIFICANCE of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The decision as to which combination of alternatives and mitigation measures to apply lies with the proponent, and their acceptance and approval ultimately with the relevant environmental authority.

The SIGNIFICANCE of an impact is derived by taking into account the temporal and spatial scales and magnitude. Such significance is also informed by the context of the impact, i.e. the character and identity of the receptor of the impact.

6.1 MITIGATION MEASURES

There is a mitigation hierarchy of actions which can be undertaken to respond to any proposed project or activity (See **Figure 10** below). These cover avoidance, minimization, restoration and compensation. It is possible and considered sought after to enhance the environment by ensuring that positive gains are included in the proposed activity or project. If negative impacts occur, then the hierarchy indicates the following steps.



Impact avoidance: This step is most effective when applied at an early stage of project planning. It can be achieved by:

- not undertaking certain projects or elements that could result in adverse impacts;
- avoiding areas that are environmentally sensitive; and
- putting in place preventative measures to stop adverse impacts from occurring.

Impact minimization: This step is usually taken during impact identification and prediction to limit or reduce the degree, extent, magnitude, or duration of adverse impacts. It can be achieved by:

- scaling down or relocating the proposal;
- redesigning elements of the project; and
- taking supplementary measures to manage the impacts.

Restoration: This step is taken to improve degraded or removed ecosystems following exposure to impacts that cannot be completely avoided or minimised. Restoration tries to return an area to the original ecosystem that occurred before impacts. Restoration is frequently needed towards the end of a project's life cycle but may be possible in some areas during operation.

Figure 10: Mitigation Hierarchy

Impact compensation: This step is usually applied to remedy unavoidable residual adverse impacts. It can be achieved by:

- rehabilitation of the affected site or environment, for example, by habitat enhancement;
- restoration of the affected site or environment to its previous state or better; and
- replacement of the same resource values at another location (off-set), for example, by wetland engineering to provide an equivalent area to that lost to drainage or infill.

7 ASSESSMENT OF POTENTIAL IMPACTS AND POSSIBLE MITIGATION MEASURES

7.1 INTRODUCTION

This Chapter describes the potential impacts on the biophysical and socio-economic environments, which may occur due to the proposed activities described in Chapter 4. These include potential impacts, which may arise during the operation of the proposed development (i.e. long-term impacts) as well as the potential construction related impacts (i.e. short to medium term). The assessment of potential impacts will help to inform and confirm the selection of the preferred layouts to be submitted to MEFT: DEAF for consideration. In turn, MEFT: DEAF's decision on the environmental acceptability of the proposed project and the setting of conditions of authorisation (should the project be authorised) will be informed by this chapter, amongst other information, contained in this EA Report.

The baseline and potential impacts that could result from the proposed development are described and assessed with potential mitigation measures recommended. Finally, comment is provided on the potential cumulative impacts which could result should this development, and others like it in the area, be approved.

7.2 PLANNING AND DESIGN PHASE IMPACTS

During the planning and design phase consideration should be given on aspects such as impacts of traffic and existing municipal infrastructure.

7.2.1 Traffic Impacts

The intended development may have an impact on traffic in the subject area as the sites are currently undeveloped. Once the proposed sites are developed traffic in the area is expected to increase. The traffic is not expected to increase significantly as the portions are in close proximity to an already developed area within the town.

7.2.2 Existing Service Infrastructure Impacts

The subject erf is fully connected to the municipal reticulation system of the Ondangwa Town Council, which consists of water, electricity and sewer connections, this connection will be maintained. Storm water run-off will be accommodated within the street reserves or then as stipulated by the Ondangwa Town Council.

7.3 CONSTRUCTION PHASE IMPACTS ON THE BIOPHYSICAL ENVIRONMENT

The construction phase impacts are those impacts on the biophysical and socio-economic environment that would occur during the construction phase. These impacts are inherently temporary in duration but may have longer lasting effects.

7.3.1 Flora and Fauna Impacts (Biodiversity)

The land uses that currently exist in the area, the natural environment and drainage patterns are respected, and as such, no negative impacts on the natural or urban environment of Ondangwa are expected to arise from the proposed development. The physical land use for the property will also not negatively impact the natural environment as most of the vegetation found on-site will be respected in all the town planning processes.

7.3.2 Surface and Ground Water Impacts

Surface and groundwater impacts may be encountered during the construction and operation phase, especially if development takes place within the rainy season. The risk of contaminating such water sources can be increased by accidental spillage of oils and fuels and any other equipment used during construction. This risk is minimized by the fact that the construction phase will be a short-term activity.

The area is located on higher grounds, limiting the effect of possible inundations from the natural stormwater drainage lines (iishana) which surround the subject area.

7.3.3 Soil Erosion Impacts

Given the characteristics of the proposed site, soil erosion is likely to be encountered especially if construction will take place during the rainy season, the removal of the sparse vegetation will render the soil vulnerable to erosion as they also serve the purpose of keeping the soils compacted.

7.4 CONSTRUCTION PHASE IMPACTS ON THE SOCIO-ECONOMIC ENVIRONMENT

7.4.1 Heritage impacts

No archaeological and heritage resources are expected to be found on the site. The project management should however be made aware of the provisions of the National Heritage Act regarding the prompt reporting of archaeological finds. Section 3.1.2 provides an overview of the archaeological and heritage context of the town and region.

7.4.2 Health, Safety and Security Impacts

Due to the demand for construction workers during the construction of the proposed project an influx of migrant workforce who will require temporary accommodation in Ondangwa might be experienced. Experience with other construction projects in a developing-world context has shown that, where migrant construction workers have the opportunity to interact with the local community, a significant risk is created for the development of social conditions and sexual behaviors that contribute to the spread of HIV and AIDS.

In response to the threat the pandemic poses, MEFT has developed a policy on HIV and AIDS. This policy, which was developed with support from USAID, GTZ and the German Development Fund, provides for a non-discriminatory work environment and for workplace programs managed by a Ministry-wide committee. The MEFT has also recently initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.

7.4.3 Traffic Impacts

Traffic is expected to increase during the construction phase of the project in areas where construction will take place. A number of trucks and other heavy machinery will be required to deliver, handle and position construction materials as well as to remove spoil material. Not only will the increase in traffic result in associated noise impacts, but it will also impact on the roads in the area.

7.4.4 Noise Impacts

Construction may result in associated noise impacts. These noise impacts will mainly be associated with construction machinery and construction vehicles. The impact is however limited mainly to the construction period only.

7.4.5 Dust and Emission Impacts

Excavation and stockpiles during the construction phase could result in dust impacts, if not managed correctly. Dust could impact negatively on the health of the nearby community if mitigation measures are not implemented. Dust impacts are primarily associated with the construction phase.

7.4.6 Municipal Services

The construction phase will result in additional people on-site, who will require provision of the following services:

- Potable water for domestic (ablution and drinking) and construction purposes.
- Temporary toilets during the construction phase.

- Solid waste management (domestic and construction waste).

These services if not managed well are likely to create an opportunity for water wastage; litter; solid and human waste pollution.

7.4.7 Storage and Utilisation of Hazardous Substances

Hazardous substances are regarded by the Hazardous Substance Ordinance (No. 14 of 1974) as those substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances. During the construction period, the use and storage of these types of hazardous substances, such as shutter oil, curing compounds, types of solvents, primers and adhesives and diesel, on-site could have negative impacts on the surrounding environment if these substances spill and enter the environment.

7.5 OPERATIONAL PHASE IMPACTS

The operational phase impacts are those impacts on the biophysical and socio-economic environment that would occur during the operational phase of the proposed project and are inherently long-term in duration.

7.5.1 Visual and Sense of Place Impacts

The extent of this disturbance will depend on how highly the interested and affected parties valued the initial aesthetic quality of the site. The intended activities for the proposed site may alter the sense of place for the existing community and property owners situated in close proximity to the site, as well as the residents of Ondangwa who frequent the sites.

7.5.2 Noise Impacts

The operational activities may result in associated noise impacts, depending on the exact type of activities taking place on the properties. However due to the nature of the land uses proposed for the subject even it is not expected that the noise levels will be significant if managed well.

7.5.3 Emission Impacts

The air quality in the area is considered to be fairly good. Additional emissions are not expected due to the land uses that are intended for the site.

7.5.4 Waste Impacts

Increased amounts of waste may be generated as a result of the operational activities at the sites. Effective waste management on site should be practiced as per the recommendations in the EMP.

7.5.5 Social Impacts

The creation of new erven through the subdivision of Erf 5491, Ondangwa Extension 25 will enable Ondangwa Town Council to provide additional erven that will meet the demand for serviced residential land and whilst empowering the residents towards wealth generation and economic upliftment.

It will further help to create more housing options for the people in the Town of Ondangwa. Through the creation of more erven, the Ondangwa Town Council will be able to generate additional revenue from the sales of the properties and from the rates and taxes payable to Council.

Thus, it is put forward that the intended development will not have any negative socio-economic impacts but rather positively contributes to the development of Ondangwa.

7.6 CUMULATIVE IMPACTS

The cumulative impact of the proposed developments regarding the degradation of the project area is very difficult to rate. If all proposed mitigation measures are however in place to minimise the overall impacts then the cumulative impact can be expected to be rated as **Medium-Low (negative)** for the proposed developments.

7.7 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan (EMP) is contained in **Annexure E** of this report. The purpose of the EMP is to outline the type and range of mitigation measures that should be implemented during the construction, operation and decommissioning phases of the project to ensure that negative impacts associated with the development are avoided or mitigated.

7.8 SUMMARY OF POTENTIAL IMPACTS

A summary of all the potential impacts from the proposed project assessed above is included in **Table 8**. The **Tables 9 – 11** provide a summary of the mitigation measures proposed for the impacts. While some difference in magnitude of the potential impacts would result from the proposed alternatives this difference was not considered to be significant for any of the potential impacts. As such, the table below applies to all proposed alternatives.

Table 8: Summary of the significance of the potential impacts

| Description of potential impact | Project alternative | No mitigation / mitigation | Extent | Magnitude | Duration | Significance | Probability | Confidence | Reversibility | Cumulative impact |
|--|-----------------------|----------------------------|--------|------------|-------------|--------------|-------------|------------|---------------|-------------------|
| PLANNING AND DESIGN PHASE | | | | | | | | | | |
| 1. Traffic Impacts | Ondangwa Extension 25 | No mitigation | Local | Medium | Medium term | Medium | Probable | Certain | Reversible | Medium (-ve) |
| | | Mitigation | Local | Low | Medium term | Low | Probable | Certain | Reversible | Low (-ve) |
| | No go | No mitigation | Local | Neutral | Medium term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Medium term | Neutral | Probable | Certain | Reversible | Neutral |
| 2. Proposed services | Ondangwa Extension 25 | No mitigation | Local | Medium | Medium term | Medium | Probable | Certain | Reversible | Medium (-ve) |
| | | Mitigation | Local | Low | Medium term | Low | Probable | Certain | Reversible | Low (-ve) |
| | No go | No mitigation | Local | Neutral | Medium term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Medium term | Neutral | Probable | Certain | Reversible | Neutral |
| CONSTRUCTION PHASE | | | | | | | | | | |
| 3. Biodiversity (Fauna and Flora) | Ondangwa Extension 25 | No mitigation | Local | Medium-Low | Short term | Medium | Probable | Certain | Reversible | Medium (-ve) |
| | | Mitigation | Local | Low | Short term | Low | Probable | Certain | Reversible | Low (-ve) |
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 4. Surface & ground water | Ondangwa Extension 25 | No mitigation | Local | Medium | Short term | Medium | Probable | Certain | Reversible | Medium (-ve) |

| Description of potential impact | Project alternative | No mitigation / mitigation | Extent | Magnitude | Duration | Significance | Probability | Confidence | Reversibility | Cumulative impact |
|---------------------------------|-----------------------|----------------------------|--------|------------|------------|--------------|-------------|------------|---------------|--------------------|
| | | Mitigation | Local | Low | Short term | Medium - low | Probable | Certain | Reversible | Medium - Low (-ve) |
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 5. Soil erosion | Ondangwa Extension 25 | No mitigation | Local | Medium | Short term | Medium - low | Probable | Certain | Reversible | Medium - low (-ve) |
| | | Mitigation | Local | Low | Short term | Low | Probable | Certain | Reversible | Low (-ve) |
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 6. Heritage | Ondangwa Extension 25 | No mitigation | Local | Very low | Short term | Very low | Probable | Certain | Irreversible | Very low(-ve) |
| | | Mitigation | Local | Negligible | Short term | Negligible | Probable | Certain | Irreversible | Negligible (-ve) |
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 7. Health, safety and security | Ondangwa Extension 25 | No mitigation | Local | Medium-Low | Short term | Medium-Low | Probable | Certain | Reversible | Medium-Low (-ve) |
| | | Mitigation | Local | Low | Short term | Low | Probable | Certain | Reversible | Low (-ve) |
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 8. Traffic impacts | Ondangwa Extension 25 | No mitigation | Local | Low | Short term | Low | Probable | Certain | Reversible | Low (-ve) |
| | | Mitigation | Local | Very low | Short term | Very low | Probable | Certain | Reversible | Very low |

| Description of potential impact | Project alternative | No mitigation / mitigation | Extent | Magnitude | Duration | Significance | Probability | Confidence | Reversibility | Cumulative impact |
|---------------------------------|-----------------------|----------------------------|--------|-----------|------------|--------------|-------------|------------|---------------|--------------------|
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 9. Noise impacts | Ondangwa Extension 25 | No mitigation | Local | Medium | Short term | Medium - low | Probable | Certain | Reversible | Medium - Low (-ve) |
| | | Mitigation | Local | Low | Short term | Low | Probable | Certain | Reversible | Very low (-ve) |
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 10. Emissions impacts | Ondangwa Extension 25 | No mitigation | Local | Medium | Short term | Low | Probable | Certain | Reversible | Low (-ve) |
| | | Mitigation | Local | Low | Short term | Very Low | Probable | Certain | Reversible | Very Low (-ve) |
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 11. Municipal services | Ondangwa Extension 25 | No mitigation | Local | Low | Short term | Low | Probable | Certain | Reversible | Low (-ve) |
| | | Mitigation | Local | Very low | Short term | Very low | Probable | Certain | Reversible | Very low (-ve) |
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 12. Waste | Ondangwa Extension 25 | No mitigation | Local | Low | Short term | Medium | Probable | Certain | Reversible | Medium (-ve) |
| | | Mitigation | Local | Very low | Short term | Low | Probable | Certain | Reversible | Low (-ve) |

| Description of potential impact | Project alternative | No mitigation / mitigation | Extent | Magnitude | Duration | Significance | Probability | Confidence | Reversibility | Cumulative impact |
|---------------------------------------|-----------------------|----------------------------|--------|------------|-------------|--------------|-------------|------------|---------------|-------------------|
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 13. Hazardous Substances | Ondangwa Extension 25 | No mitigation | Local | Low | Short term | Medium | Probable | Certain | Reversible | Medium (-ve) |
| | | Mitigation | Local | Very low | Short term | Low | Probable | Certain | Reversible | Very low (-ve) |
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| OPERATIONAL PHASE | | | | | | | | | | |
| 1. Visual & sense of place | Ondangwa Extension 25 | No mitigation | Local | Medium | Medium term | Medium | Probable | Certain | Reversible | Medium (-ve) |
| | | Mitigation | Local | Medium-Low | Medium term | Medium-Low | Probable | Certain | Reversible | Medium-Low (-ve) |
| | No go | No mitigation | Local | Neutral | Medium term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Medium term | Neutral | Probable | Certain | Reversible | Neutral |
| 2. Noise | Ondangwa Extension 25 | No mitigation | Local | Medium-Low | Medium term | Medium-Low | Probable | Certain | Reversible | Medium-Low (-ve) |
| | | Mitigation | Local | Low | Medium term | Low | Probable | Certain | Reversible | Low (-ve) |
| | No go | No mitigation | Local | Neutral | Medium term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Medium term | Neutral | Probable | Certain | Reversible | Neutral |

| Description of potential impact | Project alternative | No mitigation / mitigation | Extent | Magnitude | Duration | Significance | Probability | Confidence | Reversibility | Cumulative impact |
|---------------------------------|-----------------------|----------------------------|--------|------------|-------------|--------------|-------------|------------|---------------|-------------------|
| 3. Emissions | Ondangwa Extension 25 | No mitigation | Local | Medium-Low | Medium term | Low | Probable | Certain | Reversible | Low (-ve) |
| | | Mitigation | Local | Low | Medium term | Very Low | Probable | Certain | Reversible | Very Low (-ve) |
| | No go | No mitigation | Local | Neutral | Medium term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Medium term | Neutral | Probable | Certain | Reversible | Neutral |
| 4. Waste | Ondangwa Extension 25 | No mitigation | Local | Low | Long term | Medium | Probable | Certain | Reversible | Medium (-ve) |
| | | Mitigation | Local | Very low | Long term | Low | Probable | Certain | Reversible | Low (-ve) |
| | No go | No mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Short term | Neutral | Probable | Certain | Reversible | Neutral |
| 5. Social impact | Ondangwa Extension 25 | No mitigation | Local | High | Long term | Medium (+) | Probable | Probable | Reversible | Medium (+) |
| | | Mitigation | Local | High | Long term | Medium (+) | Probable | Probable | Reversible | Medium (+) |
| | No go | No mitigation | Local | Neutral | Long term | Neutral | Probable | Probable | Reversible | Neutral |
| | | Mitigation | Local | Neutral | Long term | Neutral | Probable | Probable | Reversible | Neutral |

Table 9: Proposed mitigation measures for the planning and design phase

| PLANNING AND DESIGN PHASE IMPACTS | |
|--|---|
| Impact | Mitigation Measures |
| Traffic | <ul style="list-style-type: none"> • Ensure that road junctions have good sightlines. • Provide formal road crossings at relevant areas. • Provide for speed reducing interventions such as speed bumps at relevant road sections. |
| Existing Service Infrastructure | <ul style="list-style-type: none"> • It is recommended that alternative and renewable sources of energy be explored and introduced into the proposed development to reduce dependency on the grid. • Solar geysers and panels should be considered to provide for general lighting and heating of water and buildings. • Water saving mechanisms should be considered for incorporation within the developments in order to further reduce water demands. • Re-use of treated wastewater should be considered wherever possible to reduce the consumption of potable water. |

Table 10: Proposed mitigation measures for the construction phase

| CONSTRUCTION PHASE IMPACTS | |
|-----------------------------------|---|
| Impact | Mitigation Measures |
| Flora and Fauna | <ul style="list-style-type: none"> • Adapt the proposed developments to the local environment – e.g. small adjustments to the site layout could avoid potential features such as water bodies and vegetation. • Prevent the destruction of protected and endemic plant species. • Prevent contractors from collecting wood, veld food, etc. during the construction phase. • Do not clear cut the entire development site, but rather keep the few individual trees/shrubs not directly affecting the developments as part of the landscaping. • The plants that are to be kept should be clearly marked with “danger tape” to prevent accidental removal. |

| CONSTRUCTION PHASE IMPACTS | |
|---|---|
| Impact | Mitigation Measures |
| | <ul style="list-style-type: none"> • Regular inspection of the marking tool should be carried out. • The very important plants should be “camped off” to prevent the unintended removal or damage to these trees. • Recommend the planting of local indigenous species of flora as part of the landscaping as these species would require less maintenance than exotic species. • Transplant removed plants where possible, or plant new plants in lieu of those that have been removed. • Prevent the introduction of potentially invasive alien ornamental plant species such as; <i>Lantana</i>, <i>Opuntia</i>, <i>Prosopis</i>, <i>Tecoma</i>, etc.; as part of the landscaping as these species could infest the area further over time. |
| Surface and Ground Water Impacts | <ul style="list-style-type: none"> • It is recommended that construction takes place outside of the rainy season in order to limit flooding on site and surface water pollution. • No dumping of waste products of any kind in or in close proximity to surface water bodies. • Heavy construction vehicles should be kept out of any surface water bodies and the movement of construction vehicles should be limited where possible to the existing roads and tracks. • Ensure that oil/ fuel spillages from construction vehicles and machinery are minimised and that where these occur, that they are appropriately dealt with. • Drip trays must be placed underneath construction vehicles when not in use to contain all oil that might be leaking from these vehicles. • Contaminated runoff from the construction sites should be prevented from entering the surface and ground water bodies. • All materials on the construction site should be properly stored. • Disposal of waste from the sites should be properly managed and taken to the designated landfill site. • Construction workers should be given ablution facilities at the construction sites that are located at least 30 m away from any surface water and regularly serviced. |

| CONSTRUCTION PHASE IMPACTS | |
|------------------------------------|---|
| Impact | Mitigation Measures |
| | <ul style="list-style-type: none"> • Washing of personnel or any equipment should not be allowed on site. Should it be necessary to wash construction equipment these should be done at an area properly suited and prepared to receive and contain polluted waters. |
| Soil Erosion | <ul style="list-style-type: none"> • It is recommended that construction takes place outside of the rainy season in order to limit potential flooding and the runoff of loose soil causing further erosion. • Appropriate erosion control structures must be put in place where soil may be prone to erosion. • Checks must be carried out at regular intervals to identify areas where erosion is occurring. • Appropriate remedial actions are to be undertaken wherever erosion is evident. |
| Heritage | <ul style="list-style-type: none"> • The project management should be made aware of the provisions of the National Heritage Act regarding the prompt reporting of archaeological finds. • In the event of such finds, construction must stop, and the project management or contractors should notify the National Heritage Council of Namibia immediately. |
| Health, Safety and Security | <ul style="list-style-type: none"> • Construction personnel should not overnight at the site, except the security personnel. • Ensure that all construction personnel are properly trained depending on the nature of their work. • Provide for a first aid kit and a properly trained person to apply first aid when necessary. • Restrict unauthorised access to the site and implement access control measures. • Clearly demarcate the construction site boundaries along with signage of “no unauthorised access”. • Clearly demarcate dangerous areas and no-go areas on site. • Staff and visitors to the site must be fully aware of all health and safety measures and emergency procedures on site. • The contractor must comply with all applicable occupational health and safety requirements. • The workforce should be provided with all necessary Personal Protective Equipment where appropriate. |

| CONSTRUCTION PHASE IMPACTS | |
|-----------------------------------|---|
| Impact | Mitigation Measures |
| Traffic | <ul style="list-style-type: none"> • Limit and control the number of access points to the site. • Ensure that road junctions have good sightlines. • Construction vehicles need to be in a road worthy condition and maintained throughout the construction phase. • Transport the materials in the least number of trips as possible. • Adhere to the speed limit. • Implement traffic control measures where necessary. |
| Noise | <ul style="list-style-type: none"> • No amplified music should be allowed on site. • Inform immediate neighbours of construction activities to commence and provide for continuous communication between the neighbours and contractor. • Limit construction times to acceptable daylight hours. • Install technology such as silencers on construction machinery if noise levels are significantly high. • Do not allow the use of horns as a general communication tool but use it only where necessary as a safety measure. |
| Dust and Emission | <ul style="list-style-type: none"> • It is recommended that dust suppressants such as Dustex be applied to all the construction clearing activities to ensure at least 50% control efficiency on all the unpaved roads and reduce water usage. • Construction vehicles to only use designated roads. • During high wind conditions the contractor must make the decision to cease works until the wind has calmed down. • Cover any stockpiles with plastic to minimise windblown dust. • Provide workers with dust masks. |

| CONSTRUCTION PHASE IMPACTS | |
|-----------------------------------|---|
| Impact | Mitigation Measures |
| Waste | <ul style="list-style-type: none"> • It is recommended that waste from the temporary toilets be disposed of at an approved Wastewater Treatment Works. • A sufficient number of waste bins should be placed around the site for the general waste. • A sufficient number of skip containers for the heavy waste and rubble should be provided for around the site. • Solid waste will be collected and disposed of at an appropriate local land fill or an alternative approved site, in consultation with the local authority. |
| Hazardous Substances | <ul style="list-style-type: none"> • Storage of the hazardous substances in a bunded area, with a volume of 120 % of the largest single storage container or 25 % of the total storage containers whichever is greater. • Refuel vehicles in designated areas that have a protective surface covering and utilise drip trays for stationary plant. |

Table 11: Proposed mitigation measures for the operational phase

| OPERATIONAL PHASE IMPACTS | |
|----------------------------------|--|
| Impact | Mitigation Measures |
| Visual and Sense of Place | <ul style="list-style-type: none"> • It is recommended that more 'green' technologies be implemented within the architectural designs and building materials of the development where possible in order to minimise the visual prominence of such a development within the more natural surrounding landscape. • Natural colours and building materials such as wood and stone should be incorporated as well as the use of indigenous vegetation in order to help beautify the development. • Visual pollutants can further be prevented through mitigations (i.e. keep existing trees, introduce tall indigenous trees; keep structures unpainted and minimise large advertising billboards). |
| Noise | <ul style="list-style-type: none"> • Do not allow commercial activities that generate excessive noise levels. • Continuous monitoring of noise levels should be conducted to make sure the noise levels does not exceed acceptable limits. • No activity having a potential noise impact should be allowed after 18:00 hours if possible. |
| Emissions | <ul style="list-style-type: none"> • Consider tarring of the internal road network. • Manage activities that generate emissions. |
| Waste | <ul style="list-style-type: none"> • Solid waste will be collected from site regularly. • Waste should be disposed of at an appropriate local land fill, in consultation with the local authority. • No waste may be buried or burned. |
| Social Impacts | No specific mitigation measures are required, only that the local community be consulted in terms of possible job creation opportunities and must be given first priority if unspecialised job vacancies are available. |

8 CONCLUSION

The purpose of this Chapter is to briefly summarise and conclude the DESR and describe the way forward.

8.1 CONSTRUCTION PHASE IMPACTS

With reference to **Table 8**, none of the negative construction phase impacts were deemed to have a high significance impact on the environment. The construction impacts were assessed to a **Medium to Low (negative)** significance, without mitigation measures. With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the construction phase impacts is likely to be reduced to a **Low (negative)**.

8.2 OPERATIONAL PHASE

The most significant operational phase impact **medium (positive)** is the social impact. This is as a result of the potential job opportunities during construction as well the increased development within the area. Furthermore, the community of Ondangwa are expected to benefit from the new accommodation facility due to it providing housing and additional amenities which may not be readily available in the town.

8.3 LEVEL OF CONFIDENCE IN ASSESSMENT

With reference to the information available at the project planning cycle, the confidence in the environmental assessment undertaken is regarded as being acceptable for the decision-making, specifically in terms of the environmental impacts and risks. The Environmental Assessment Practitioner believes that the information contained within this FESR is adequate to allow MEFT: DEAF to be able to determine the environmental acceptability of the proposed project.

It is acknowledged that the project details will evolve during the detailed design and construction phases. However, these are unlikely to change the overall environmental acceptability of the proposed project and any significant deviation from what was assessed in this FESR should be subject to further assessment. If this was to occur, an amendment to the Environmental Authorisation may be required in which case the prescribed process would be followed.

8.4 MITIGATION MEASURES

With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the construction and operational phase impacts is likely to be reduced to a **Low (negative)**. **It is further extremely important to include an Environmental Control Officer (ECO)**

on site during the construction phase of the proposed project to ensure that all the mitigation measures discussed in this report and the EMP are enforced.

It is noted that where appropriate, these mitigation measures and any others identified by MEFT: DEAF could be enforced as Conditions of Approval in the Environmental Authorisation, should MEFT: DEAF issue a positive Environmental Authorisation.

8.5 OPINION WITH RESPECT TO THE ENVIRONMENTAL AUTHORISATION

Regulation 15(j) of the EMA, requires *that the EAP include an opinion as to whether the listed activity must be authorised and if the opinion is that it must be authorised, any condition that must be made in respect of that authorisation.*

It is recommended that this project be authorised because should the development not proceed the subject area will remain in its current state. The local community is expected to benefit from the development as a result of the potential job opportunities during construction as well as the increased development within the area. Furthermore, the community of Ondangwa are further expected to benefit from the new erven which will make available much needed residential erven. The significance of the social impact was therefore deemed to be **Medium (positive)**.

The “no go” alternative on the other hand was deemed to have a **High (negative)** impact, as all the social benefits resulting from the development would not be realised.

The significance of negative impacts can be reduced with effective and appropriate mitigation provided in this report and the EMP. If authorised, the implementation of an EMP should be included as a condition of approval.

8.6 WAY FORWARD

The FESR is herewith submitted to MEFT: DEA for consideration and decision making. If MEFT: DEA approves or requests additional information / studies all registered I&APs and stakeholders will be kept informed of progress throughout the assessment process.

9 REFERENCES

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