

Environmental Assessment Scoping Report for

November 2023

*Township Establishment of
Ohangwena Extension 1, 2 & 3
in Helao Nafidi, Ohangwena
Region.*

APP-002482

Prepared for: Helao Nafidi Town Council

Private Bag 503, Ohangwena

Contact Number: +264 65 261 900

Contact Person: Elinafye Haimbili/
Sakaria Mangundu

Email: e.haimbili@helaonafidi.org;

sakaria@helaonafidi.org



Prepared by: Stubenrauch Planning Consultants

P.O. Box 41404, Windhoek

Contact Person: Bronwynn Basson

Contact Number: +264 (61) 25 11 89

Fax Number: +264 (61) 25 11 89

Email: bronwynn@spc.com.na



PROJECT DETAILS

Title	Environmental Scoping Report for the: <ul style="list-style-type: none"> Township Establishment of Ohangwena Extension 1, 2 & 3 in Helao Nafidi, Ohangwena Region. 		
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Proponent	Helao Nafidi Town Council Private Bag 503, Ohangwena Contact Person: Elinafye Haimbili/ Sakaria Mangundu Contact Number: +264 65 261 900 Email: e.haimbili@helaonafidi.org ; sakaria@helaonafidi.org		
Environmental Assessment Practitioner	Stubenrauch Planning Consultants P.O. Box 41404, Windhoek Contact Person: Bronwynn Basson Contact Number: +264 (61) 25 11 89 Fax Number: +264 (61) 25 11 89 Email: bronwynn@spc.com.na		
Report date	November 2023		
	Name	Signature	Date
Author	Zanthea Wantenaar		November 2023
Document Reviewer	Victoria Shikwaya		November 2023

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EXECUTIVE SUMMARY

Introduction

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

- **Subdivision of the Remainder of the Farm Helao Nafidi Townlands No. 997 into Portions A, B, C and the Remainder**
- **Layout Approval and Township Establishment on Portion A of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 155 Erven and the Remainder to become known as Ohangwena Extension 1**
- **Layout Approval and Township Establishment on Portion B of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 55 Erven and the Remainder to become known as Ohangwena Extension 2**
- **Layout Approval and Township Establishment on Portion C of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 102 Erven and the Remainder to become known as Ohangwena Extension 3**

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 Helao Nafidi Town Council is desirous to establish three (3) new townships by obtaining the necessary approvals for the following statutory steps:

- **Subdivision of the Remainder of the Farm Helao Nafidi Townlands No. 997 into Portions A, B, C and the Remainder**
- **Layout Approval and Township Establishment on Portion A of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 155 Erven and the Remainder to become known as Ohangwena Extension 1**
- **Layout Approval and Township Establishment on Portion B of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 55 Erven and the Remainder to become known as Ohangwena Extension 2**
- **Layout Approval and Township Establishment on Portion C of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 102 Erven and the Remainder to become known as Ohangwena Extension 3**

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 **1 September 2023**;
- Notices were placed in the New Era newspaper dated **1 September 2023** and **8 September 2023** and the Namibian newspapers dated **1 September 2023** and **11 July 2023**, 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**);
- A public meeting was held on **13 September 2023** at Ohangwena meeting tree next to the Telecom Network Tower.

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 **09 October 2023**). The comment period will remain open until the final scoping report is submitted to MEFT.

The Draft Scoping Report was circulated from the **17 October 2023** until the **31 October 2023** 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 13**, 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 13**, 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 undeveloped 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 Helao Nafidi

are further expected to benefit from the establishment on the new townships and their social lives will be uplifted. The development will create employment opportunities for the locals. The significance of the social impact was therefore deemed to be High (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
HNTC	Helao Nafidi Town Council
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 Helao Nafidi Town Council hereinafter referred to as the proponent intends to undertake the following activities:

- **Subdivision of the Remainder of the Farm Helao Nafidi Townlands No. 997 into Portions A, B, C and the Remainder**
- **Layout Approval and Township Establishment on Portion A of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 155 Erven and the Remainder to become known as Ohangwena Extension 1**
- **Layout Approval and Township Establishment on Portion B of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 55 Erven and the Remainder to become known as Ohangwena Extension 2**
- **Layout Approval and Township Establishment on Portion C of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 102 Erven and the Remainder to become known as Ohangwena Extension 3**

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 10.1 (a) Infrastructure	The construction of oil, water, gas and petrochemical and other bulk supply pipelines	The project involves the installation of bulk services
Activity 10.1 (b) Infrastructure	The construction of Public roads	The proposed project includes the construction of roads.

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 10.2 (a) Infrastructure	The route determination of roads and design of associated physical infrastructure where – it is a public road	The proposed project includes the route determination of roads.

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

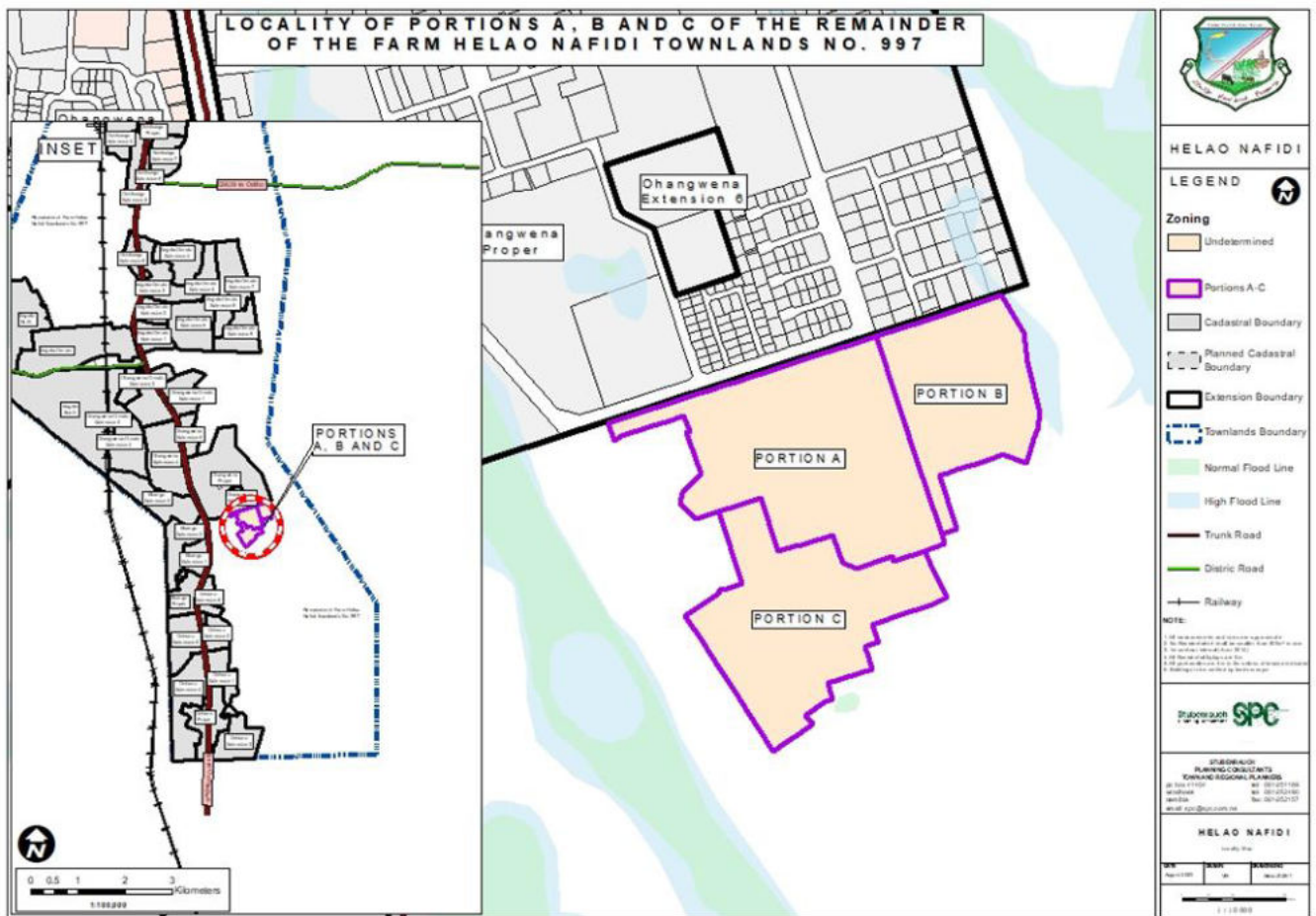
Helao Nafidi is a town in Ohangwena Region located in the far northern Namibia at the border to Angola.

1.3 SIZE, ZONING AND OWNERSHIP

The size, zoning and ownership of Portions A, B and C of the Remainder of the Farm Helao Nafidi Townlands No. 997 is outlined in Table 1 below.

Table 2: Size, Zoning and Ownership

Portion No.	±Size (Ha)	Zoning	Ownership	Title Deed No.
Portion A	18.21	Undetermined	Helao Nafidi Town Council	T 7249/2005
Portion B	9.73	Undetermined	Helao Nafidi Town Council	T 7249/2005
Portion C	13.68	Undetermined	Helao Nafidi Town Council	T 7249/2005



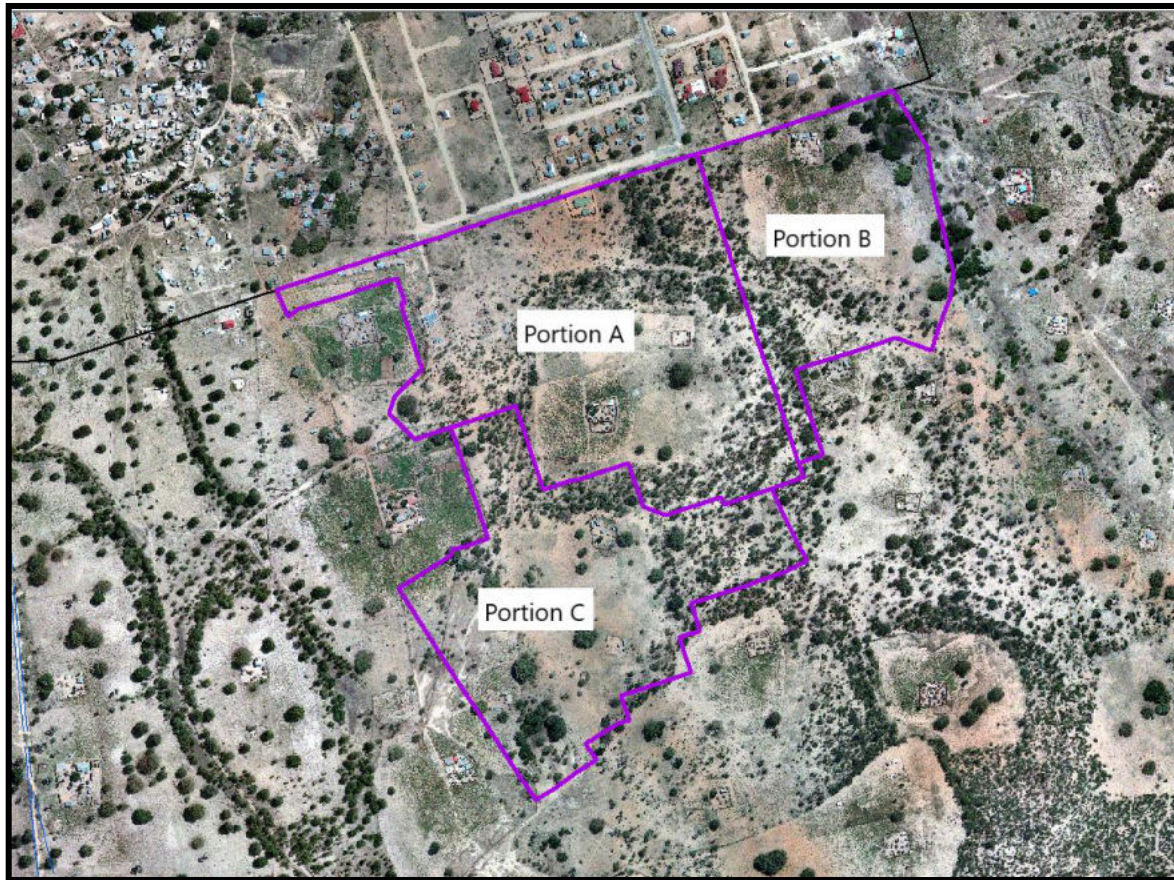


Figure 2: Aerial View of Portions A, B and C

1.4 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 the Remainder of the Farm Helao Nafidi Townlands No. 997 into Portions A, B, C and the Remainder**
- **Layout Approval and Township Establishment on Portion A of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 155 Erven and the Remainder to become known as Ohangwena Extension 1**
- **Layout Approval and Township Establishment on Portion B of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 55 Erven and the Remainder to become known as Ohangwena Extension 2**
- **Layout Approval and Township Establishment on Portion C of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 102 Erven and the Remainder to become known as Ohangwena Extension 3**

1.5 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 subject areas and the 'no-go' option was considered during this assessment. The unique character and appeal of Helao Nafidi were however taken into consideration with the design perspective.
- There are no specific layout design at present, but based on the feasibility study analysis, the proposed subject areas are the identified areas that require urgent intervention.

1.6 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 3** 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 3: 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
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

Section	Description	Section of FESR/ Annexure
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 community that may be affected by the activity;	Refer to Chapter 4
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 4** below provides a summary of the legal instruments considered to be relevant to this development and the environmental assessment process.

Table 4: 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 10.1 (a) Infrastructure Activity 10.1 (b) Infrastructure Activity 10.2 (a) Infrastructure
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 and consolidation of land as well as the establishment of townships 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 3** below) provides an outline of the EIA process to be followed.

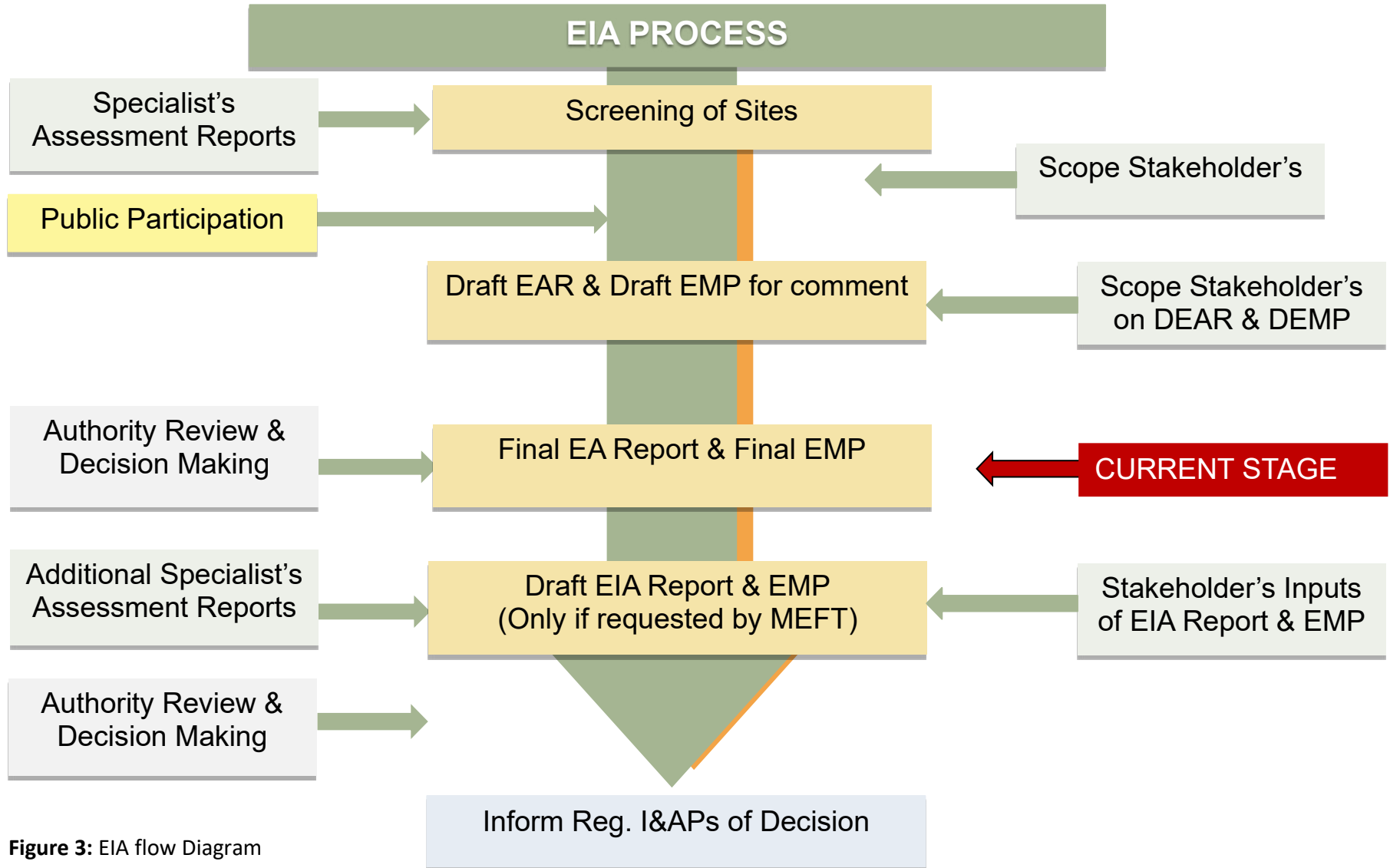


Figure 3: EIA flow Diagram

3 ENVIRONMENTAL BASELINE DESCRIPTION

3.1 SOCIAL ENVIRONMENT

3.1.1 Socio-Economic Context

The statistics shown in **Table 5** below are derived from the 2011 Namibia Population and Housing Census (Namibia Statistics Agency, 2011), and presented from a local and regional perspective.

Table 5: Statistics of the Helao Nafidi Urban Constituency (Namibia Statistics Agency, 2011)

HELAO NAFIDI	
ATTRIBUTE	INDICATOR
Population	28 635
Females	15 695
Males	12 940
Population under 5 years	15%
Population aged 5 to 14 years	27%
Population aged 15 to 59 years	49%
Population aged 60 years and above	9%
Female: male ratio	82:100
Literacy rate of 15 years old and above	83%
People above 15 years who have never attended school	30%
People above 15 years who are currently attending school	6%
People above 15 years who have left school	30%
People aged 15 years and above who belong to the labour force	58%
Population employed	51%
Homemakers	5%
Students	61%
Retired or old age income recipients	34%
Income from pension	20%
Income from business and non-farming activities	17%
Income from farming	31%
Income from cash remittance	5%
Wages and salaries	23%
Main Language	Oshiwambo Languages-97.7%
OHANGWENA REGION	
ATTRIBUTE	INDICATOR
Population	150 809
Population aged 60 years and above	6%
Population aged 5 to 14 years	11%
Population aged 15 to 59 years	67%

3.1.2 Archaeological and Heritage Context

No archaeological and heritage resources are expected to be found on the proposed sites. 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.

3.2 BIO-PHYSICAL ENVIRONMENT

3.2.1 Climate

The climate of the Ohangwena Region is classified as tropical semi-arid with a dry season of 5-6 months. The average maximum temperature varies between 24 and 32°C with the average minimum temperature between 8 and 18°C. According to the modified Koppen system Ohangwena can be classified as a warm steppe region. Similarities between climatic conditions in northern Namibia and the Sahel region in northern Africa are obvious.

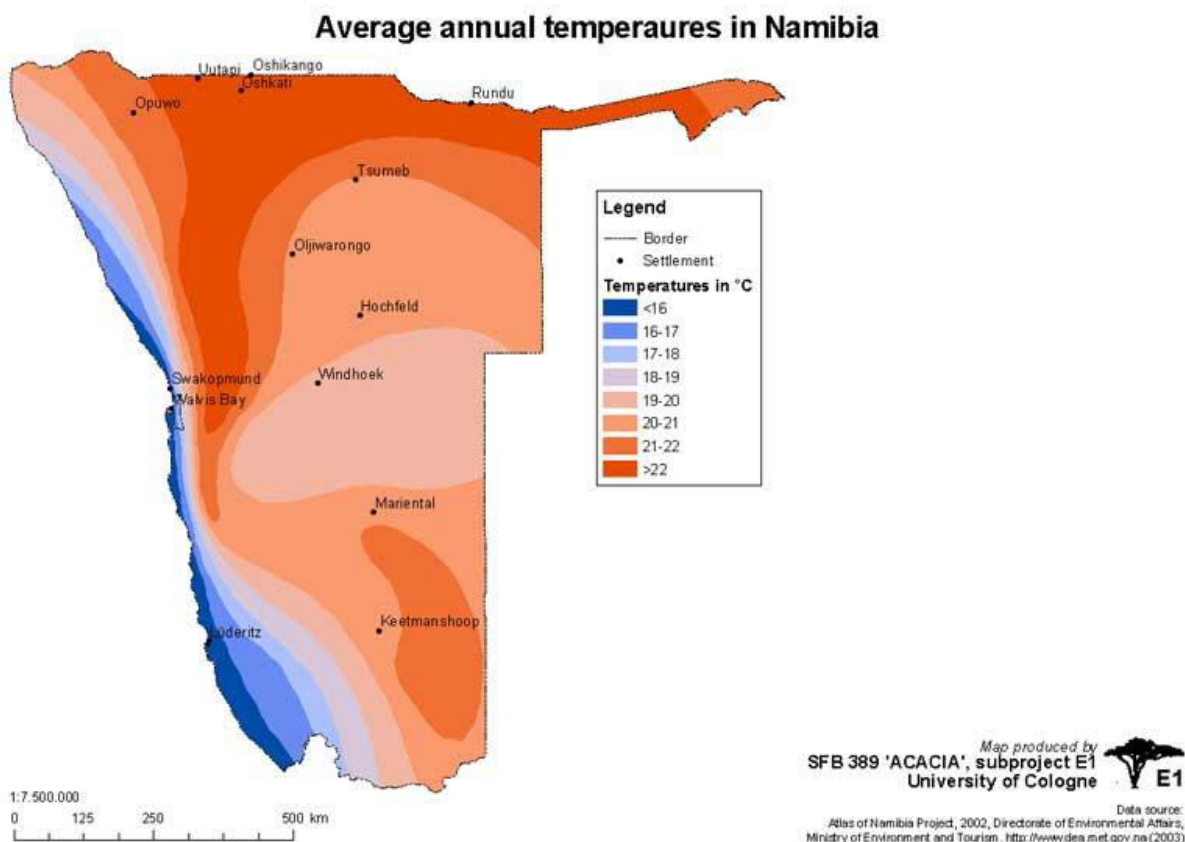


Figure 4: Annual average temperature (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/e1_download_climate_e.htm#temperature_annual)

The mean annual rainfall in the Ohangwena Region varies between 450 and 550 mm per year as indicated in **Figure 4** above, increasing from west to east. The rains occur usually between October and May, concentrating mainly on the period January-March. Rainfall is highly variable from year to year and place to place. Most of the rain falling in the region has its origin from moisture transported by trade winds from the Indian Ocean. During their movement across southern Africa these winds lose much of their humidity. Rainfall occurs often during convective thunderstorms and can be very heavy during short periods. Rainfall is mostly experienced during the summer, with the average annual rainfall being more than 600 mm per year as indicated in **Figure 5** below. Most of the rain in Helao Nafidi is experienced between November and early April. Analysis of rainfall in the North-central Namibia over the past 31 years indicated that 11 of those years inadequate rainfall necessary for crop production with surface waters also evaporates quickly or seeps away into the sandy soils (Tamayo et al., 2011).

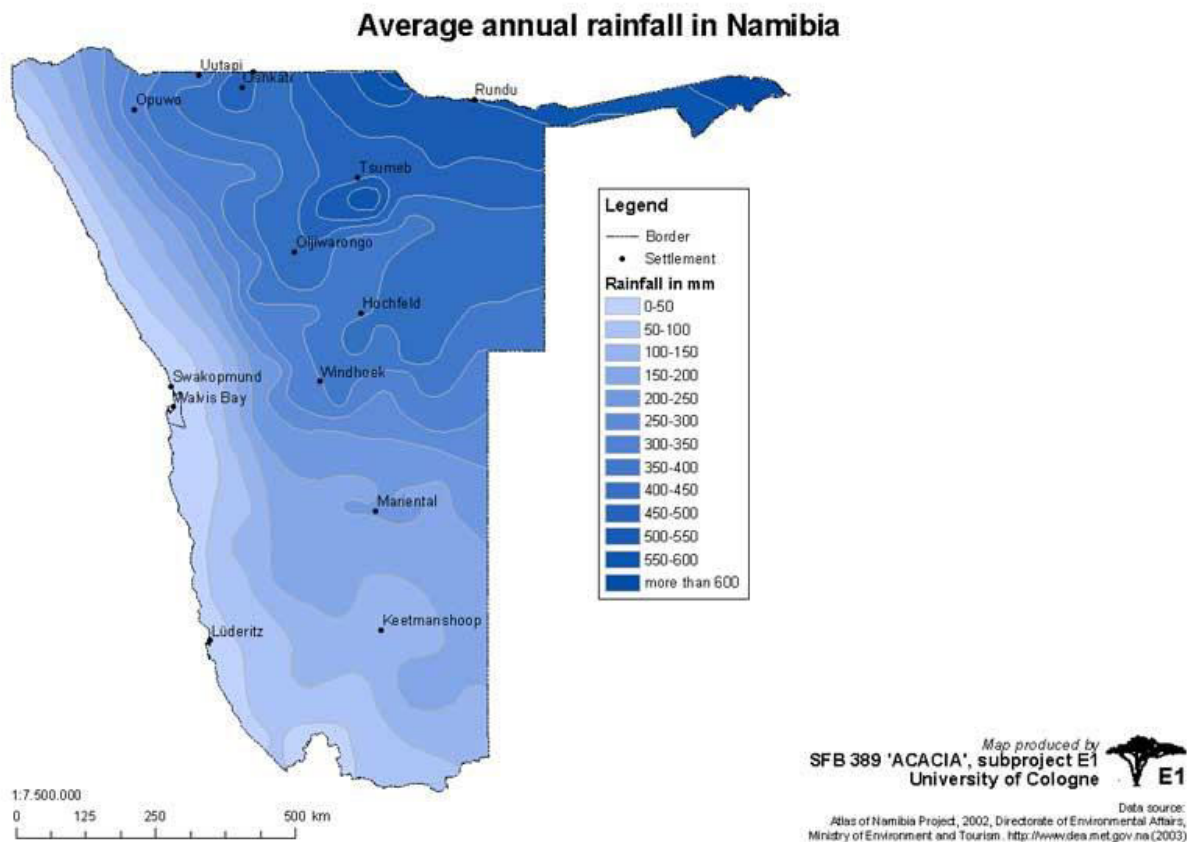


Figure 5: Average annual Rainfall (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/climate/rainfall-annual.jpg)

3.2.2 Topography, Geology and Soils

The topography of Ohangwena Region is characterized by an extremely flat plain between 1090 and 1150m above mean sea level. The gradient of the plain is approximately 1:2500 decreasing from north to south.

Geologically, Ohangwena Region is in the Kalahari group geological formation, which is floored by mid-Proterozoic crustal rocks of the Congo craton. The formation contains possibly as much as 8600m of sedimentary rocks of the Proterozoic Damara sequence, some 360m of Karoo rocks and about 130m of cretaceous rocks overlain by a blanket of unconsolidated Kalahari sequence sediments up to 600m thick.

The successive layers of sands, sandy clay, sandstones, and conglomerates of the Kalahari group are up to 500 thick and of Tertiary to Quaternary age (30-40 million years). Kalahari sandstones can be seen everywhere in the bottoms of wells, borrow pits and water reservoirs.

The soils of Ohangwena Region can broadly be classified into four groups:

1. Aeolian sands (arenosols)
2. Solonetz soil
3. Non-solonetz soils
4. Black clays.

Helao Nafidi falls within the Cuvelai landscape, the Cuvelai lies on silt, clay, limestone and sandstone sediments. The area is distinguished by a myriad of drainage channels known as oshanas, these oshanas direct water to the Etosha Pan. They often fill with water during the wet season and cut into the underlying sediments (Mendelsohn et al., 2000), making the area subject to seasonal flooding; areas that are most affected by the floods in Ohangwena region are the constituencies of Endola, Ondobe, Omulonga, Engela, Ongenga, Oshikango, Eenhana, and Ohangwena (Tamayo et al., 2011).

Water to the area is partly supplied by Namwater, which is imported from the Calueque dam in Angola. Groundwater is also abstracted from the Ohangwena Kalahari Acquirer by means of boreholes (iwrn, 2015) and traditionally dug wells (Tamayo et al., 2011).

The Region lies within the Kalahari sands geophysical region as depicted in **Figure 6** below. Helao Nafidi falls within the Kalahari Woodland land type indicated as beige in **Figure 6** below.

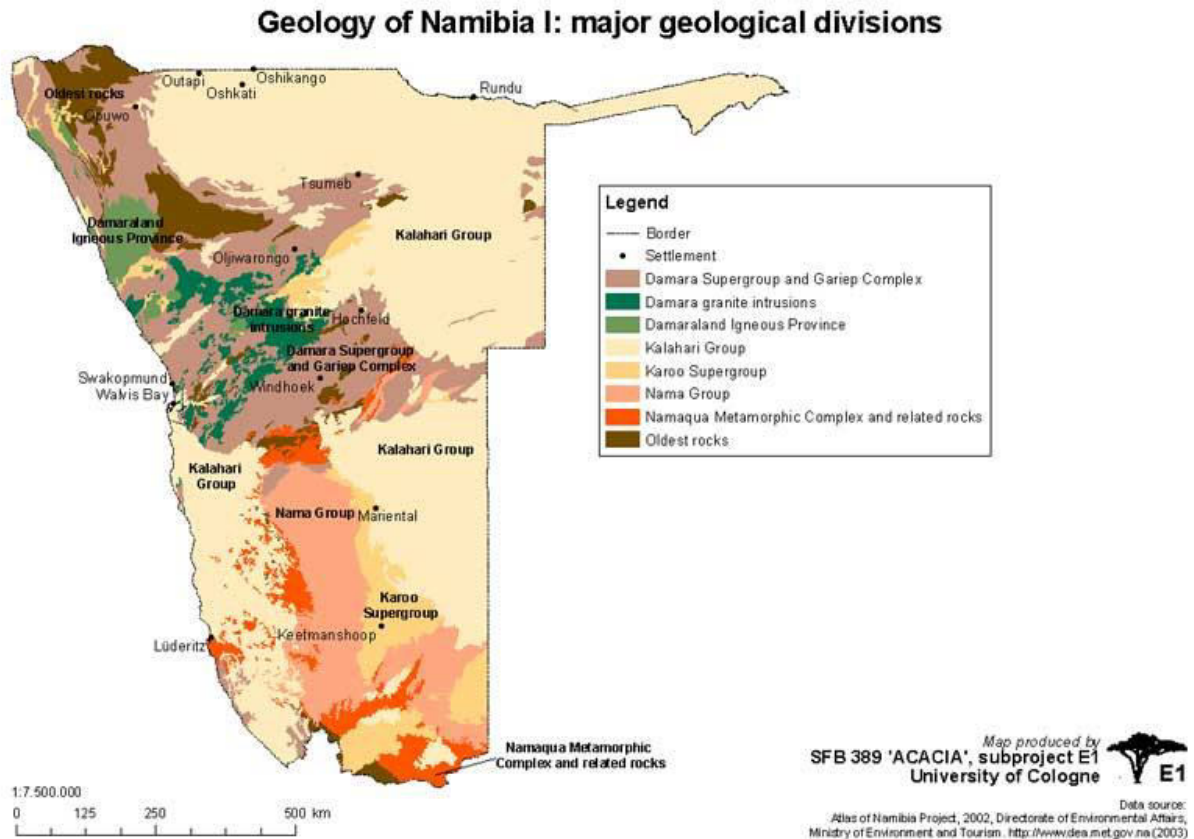


Figure 6: Geology of Namibia (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/physical/geology.jpg)

3.2.3 Hydrology and Hydrogeology

Namibia is an arid country with low rainfall and high evapotranspiration. The only permanent rivers are along the northern and southern borders. Across the country, surface waters are ephemeral after seasonal rainfall, with many of them dammed. However, in Ohangwena Region, there are no permanent rivers or lakes. Groundwater in this region is available throughout the year but saline. The water resources available for the inhabitants and their livestock are the following:

- a) Rainfall during the rainy season. Rainwater can be collected from roofs and surface catchment areas into reservoirs and ponds.
- b) Surface water which flows during the rainy season in ephemeral rivers and oshanas and collects in natural pans. This water can be channeled and stored in ponds and reservoirs.
- c) Groundwater in different types of aquifers. Many of the aquifers in Ohangwena Region contain however saline water, which is unsuitable for human consumption without removal of salts.

- d) River water transported from Kunene River in Angola by means of canals and pipelines to major settlements in Omusati, Oshana, Oshana and Oshikoto regions.

The soils in the Helao Nafidi Area have been formed largely from fine sediments carried in water, and are of the Calcisols type, which are not too dense or clayey; and neither too sandy, infertile and porous. These fertile soils and access to fresh water in shallow wells allowed people to settle and farm in the area, it is believed that that the Cuvelai-Etoshia Basin supports many more people per unit area than most rural places in Southern Africa (Mendelsohn, Jarvis and Robertson, 2013).

Water to the area is partly supplied by Namwater, which is imported from the Calueque dam in Angola. Groundwater is also abstracted from the Ohangwena Kalahari Acquirer by means of boreholes (iwrn, 2015) and traditionally dug wells (Tamayo et al., 2011).

Having said that there are no perennial rivers or surface waters in Ohangwena region, the region receives seasonal flood waters from the Cuvelai system. Therefore, the seasonal flood in the Cuvelai system is very important for the rural economy in Ohangwena region in a way that the fresh surface water, naturally or artificially collected in pans and oshanas, provides high quality water for rural households until it evaporates. Furthermore, the floodwaters also recharge groundwater, bring in fish, which is an important source of protein for the inhabitants, and regenerate grazing for livestock.

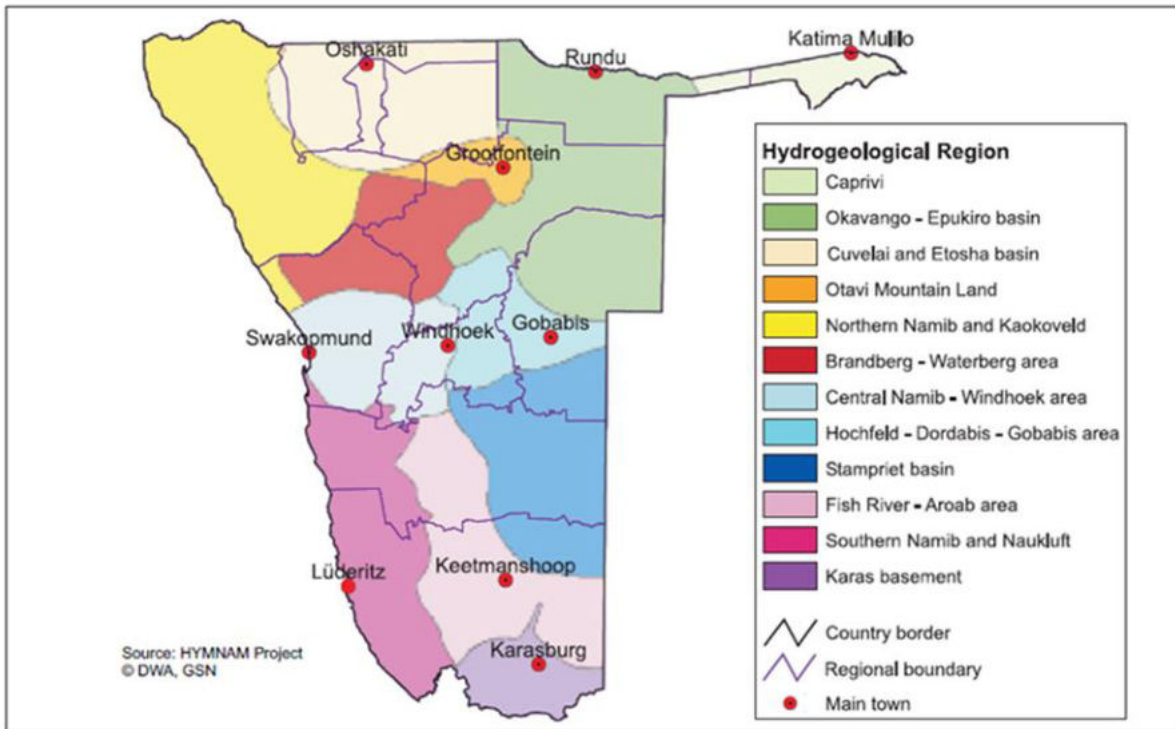


Figure 7: Groundwater basins and hydrogeological regions in Namibia

3.3 TERRESTRIAL ECOLOGY

3.3.1 Flora and Fauna

There are about eight major vegetation types in the Cuvelai Basin strongly influenced by various factors such as the underlying soil, geology and rainfall, Helao Nafidi is located in the Cuvelai Drainage vegetation type. The iishanas and other lowlands in the area are mostly covered by various grass species. On higher ground (omitunda) between the drainage channels Mopane trees and shrubs dominate the woodlands., however a variety of other trees typical of Kalahari woodlands are also found in some areas of the Cuvelai Drainage, Makalani palms are prominent where the soil has some salinity (Mendelsohn, Jarvis and Robertson, 2013). Other trees that could be observed on site include the marula, bird plum, jackal berry and acacia species.

Vegetation resources are a critical part of many households in the Cuvelai basin, with the Helao Nafidi area being no exception. They are used for grazing for livestock, poles for fencing and home construction, fruits for consumption and production of beverages, grass for thatching and production of baskets, wood for fuel, fish traps, storage containers etc. (Mendelsohn, Jarvis and Robertson, 2013).

The area of Helao Nafidi has between 51-80 species of birds; the northern parts of the Cuvelai Basin generally have fewer species due to the dense human population. Frog species are about 11; the African bullfrogs become very abundant after emerging from a state of aestivation during good rains and are harvested as food. The fencing of the Etosha national Park has blocked off the migration routes of wildlife, although some movements of animals may be observed they are relatively few outside the Park (Mendelsohn, Jarvis and Robertson, 2013).

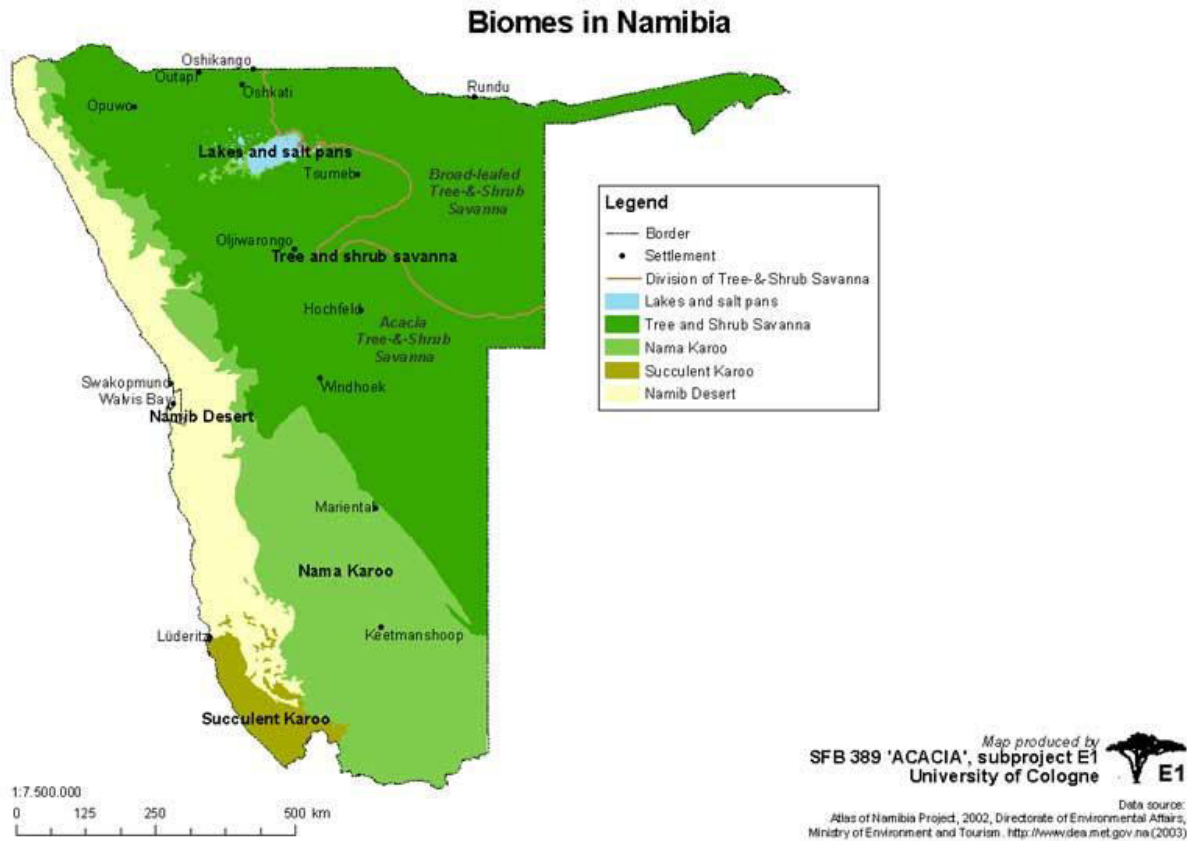


Figure 8: Biomes of Namibia (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/living_resources/biomes.jpg)

4 PROJECT DESCRIPTION

4.1 PROJECT COMPONENTS

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

- **Subdivision of the Remainder of the Farm Helao Nafidi Townlands No. 997 into Portions A, B, C and the Remainder**
- **Layout Approval and Township Establishment on Portion A of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 155 Erven and the Remainder to become known as Ohangwena Extension 1**
- **Layout Approval and Township Establishment on Portion B of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 55 Erven and the Remainder to become known as Ohangwena Extension 2**
- **Layout Approval and Township Establishment on Portion C of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 102 Erven and the Remainder to become known as Ohangwena Extension 3**

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 1.6 above there are no specific layout design at present, but based on the feasibility study analysis, the proposed subject areas are the identified areas that require urgent intervention. 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, whereby the subject area would remain vacant and undeveloped. Thus, the Helao Nafidi 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 and will not benefits from the land tenure securities. Thus, the no-go alternative is not considered to be the preferred option.

4.3 THE PROPOSED DEVELOPMENT

4.3.1 Project Background

The Town Council of has identified the shortage of serviced land to provide for the growing demand for housing for the middle-income bracket in Helao Nafidi. The Council thus instructed Stubenrauch Planning Consultants to develop three new residential neighbourhood areas which will provide for the housing needs of the residents of Helao Nafidi.

According to the proposed Helao Nafidi Structure Plan (2022 - 2032), the Town Council of Helao Nafidi confirmed that there is a housing backlog of 5129 residential based on the assumption that the average household size consists of 5 people per household. Accepting that the average township extension is not to provide more than 300 erven this means that there is a need to provide 17 formal residential township extensions. The structure plan has thus identified a possible intervention for this backlog, which is designing and establishing new townships, to cater for the influx of people and backlog of residential erven as well as to encourage property ownership within the town and to increase municipal income through rate and tax collection.

The establishment of the townships of Ohangwena Extensions 1 to 3 is thus needed and desirable with the town of Helao Nafidi, as it is a step taken by the Local Authority to addresses the housing backlog in the town, while simultaneously addressing the priority issues that have been identified by the proposed Helao Nafidi Structure Plan (2022 - 2032).

4.3.2 Project Description

The Helao Nafidi Town Council is desirous to establish three (3) new townships by obtaining the necessary approvals for the following statutory steps:

- **Subdivision of the Remainder of the Farm Helao Nafidi Townlands No. 997 into Portions A, B, C and the Remainder**
- **Layout Approval and Township Establishment on Portion A of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 155 Erven and the Remainder to become known as Ohangwena Extension 1**
- **Layout Approval and Township Establishment on Portion B of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 55 Erven and the Remainder to become known as Ohangwena Extension 2**
- **Layout Approval and Township Establishment on Portion C of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 102 Erven and the Remainder to become known as Ohangwena Extension 3**

Paragraphs 4.3.2.1 – 4.3.2.4 below will elaborate on the statutory steps outlined above.

4.3.2.1 Subdivision of the Remainder of the Farm Helao Nafidi Townlands No. 997 into Portions A, B, C and the Remainder

In order to create the portions on which the townships of Ohangwena Extensions 1 to 3 are to be established on, the Remainder of the Helao Nafidi Townlands No. 997 is to be subdivided into Portions A to C and the Remainder as outlined in **Table 6** below.

Table 6: Subdivision of the Helao Nafidi Townlands

Portion	Size (Ha)	Zoning
Portion A	18.21	Undetermined
Portion B	9.73	Undetermined
Portion C	13.68	Undetermined

The subdivision of the Remainder of the Helao Nafidi Townlands No. 997 into Portions A to C and the Remainder is depicted in **Figure 9** below.

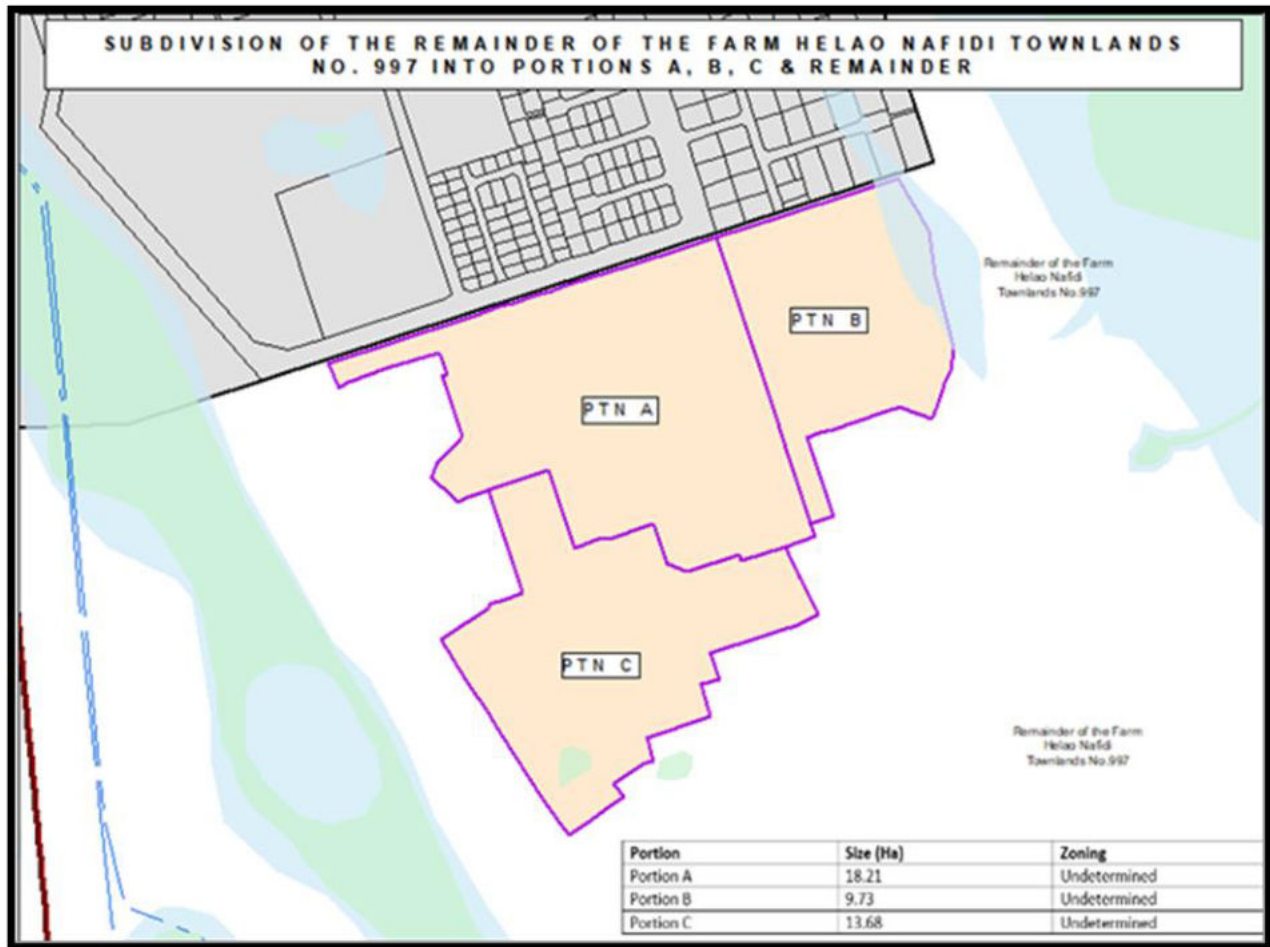


Figure 9: Subdivision of the Remainder of the Farm Helao Nafidi Townlands No. 997 into Portions A, B, C & Remainder

4.3.2.2 Layouts of the Proposed Development

Layout Approval and Township Establishment on Portion A of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of approximately 155 Erven and the Remainder to become known as Ohangwena Extension 1.

Ohangwena Extension 1 comprises of 155 Erven and the Remainder (streets). The layout makes provision for 154 Residential erven and 1 Public Open Space, as outlined in **Table 7** below.

Table 7: Ohangwena Extension 1 Summary Table

Zoning	No of Erven	± Total Area(ha)	% of Total Area
Residential	154	12.25	67.26
Public Open Space	1	0.46	2.51
Street	Remainder	5.51	30.23
Total	156 and the Remainder	18.21	100.00

Ohangwena Extension 1 seeks to provide residential erven, and this is why the layout is comprised of 154 residential erven. The residential erven in Ohangwena Extension 1 range from 500m² – 1000m² on average, however there are some residential erven that are much larger than this which accommodate existing homesteads such as Erf 119 which measures 2719m² in extent.

There is one (1) Public Open Space in the layout, and this Public Open Space which can be developed into a recreational area, as determined by the community's needs. This can include a sports field, a play park and other related land uses.

There are no other land uses other than residential and public open space provided for in Ohangwena Extension 1, as the neighboring Ohangwena Proper has these supporting land uses, and they can be utilized by the residents of Ohangwena Extension 1.

The street network of Ohangwena Extension 1 follows a simple grid layout, which will allow for the efficient connection of services, as well as the efficient distribution of traffic throughout the neighborhood. The streets vary in width, from a minimum of 15 meter wide to 45-meter-wide streets. The layout of Ohangwena Extension 1 is depicted in Figure 3 of this document.

4.3.2.3 Layout Approval and Township Establishment on Portion B of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of 55 Erven and the Remainder to become known as Ohangwena Extension 2

Ohangwena Extension 2 comprises of 56 Erven and the Remainder (streets). The layout makes provision for 53 Residential erven and 2 Public Open Spaces, as outlined in **Table 8** below.

Table 8: Ohangwena Extension 2 Summary Table

Zoning	No of Erven	± Total Area(ha)	% of Total Area
Residential	53		
Public Open Space	1		

Street	Remainder		
Total	55 and the Remainder		100.00

Ohangwena Extension 2 seeks to provide residential erven, and this is why the layout is comprised of 53 residential erven. The residential erven in Ohangwena Extension 1 range from 1000m² – 1400m² on average, however there are some residential erven that are much larger than this which accommodate existing homesteads such as Erf 119 which measures approximately 5387m² in extent.

There is one (1) Public Open Space in the layout. The public open space has been placed at the edge of the township to serve multiple purposes beyond recreation such as to allow for better flood management because that portion falls on high flood line and to accommodate the 22m powerline servitude that runs over it. During heavy rainfall or flood events, this area will act as natural buffer, absorbing access water and reducing the risk of flooding to the residential units. The powerline will be registered against Ohangwena Extension 2.

There are no other land uses other than residential and public open space provided for in Ohangwena Extension 2, as the neighbouring Ohangwena Proper has these supporting land uses, and they can be utilised by the residents of Ohangwena Extension 2.

During the initial planning phase of this extension, Council has identified that a few households as well as cattle pens encroached on to the proposed street. The Helao Nafidi Town Council has however compensated these households so that they may no longer encroach the street. Therefore, there are no obstructions that will hinder the access in the proposed township.

The street network of Ohangwena Extension 2 same as Extension 1, follows a simple grid layout, which will allow for the efficient connection of services, as well as the efficient distribution of traffic throughout the neighbourhood. The streets vary in width, from a minimum of 15 metre wide to 45-metre-wide streets. The layout of Ohangwena Extension 2 is depicted in Figure 3 of this document.

4.3.2.4 Layout Approval and Township Establishment on Portion C of the Remainder of the Farm Helao Nafidi Townlands No. 997 consisting of 102 Erven and the Remainder to become known as Ohangwena Extension 3

Ohangwena Extension 3 comprises of 102 and the Remainder (streets). The layout makes provision for 97 Residential erven, 2 Business erven, 1 Institutional erf and 2 Public Open Spaces, as outlined in **Table 9** below.

Table 9: Ohangwena Extension 3 Summary Table

Zoning	No of Erven	± Total Area(ha)	% of Total Area
Residential	102	8.01	
Business	2	0.28	
Institutional	1	0.56	
Public Open Space	2		
Street	Remainder	3.57	
Total	106 and the Remainder	13.68	100.00

Ohangwena Extension 3 also seeks to mainly provide residential erven, and this is why the layout is comprised of 102 residential erven out of 106 erven being created in this layout. The residential erven in Ohangwena Extension 3 range from 500m² to 1000m² on average, however there are some residential erven that are much larger than this to accommodate existing homesteads, such as Erf 33 which measures 2956m² in extent.

Ohangwena Extension 3 makes provision for two (2) Business erven, and both erven measure 1422m² in extent. The business erven will provide a commercial aspect to the neighborhood, as they can be developed into shops, convenience stores, and other business-related land uses that can allow the residents of Ohangwena Extension 3 to obtain amenities, without having to travel to the Central Business District of Helao Nafidi.

The layout makes provision for one (1) Institutional erf. This erf measures 5581m² in extent and it can be developed as per the needs of the community. This includes community facilities such as a library, a community center, a kindergarten, primary school and other related land uses.

Ohangwena Extension 3 makes provision two (2) Public Open Spaces. These Public Open Spaces can be developed into recreational areas, as determined by the community's needs. This can include sports fields, play park and other related land uses.

The street network of Ohangwena Extension 3 is an extension of the neighboring extension of Ohangwena Extension 1. It follows a simple grid layout, which will allow for the efficient connection of services, as well as the efficient distribution of traffic throughout the neighborhood. The streets vary in width, from a minimum of 15 meter wide to 30-meter-wide streets.

The layout of Ohangwena Extensions 1 - 3 is depicted in **Figure 10** below.

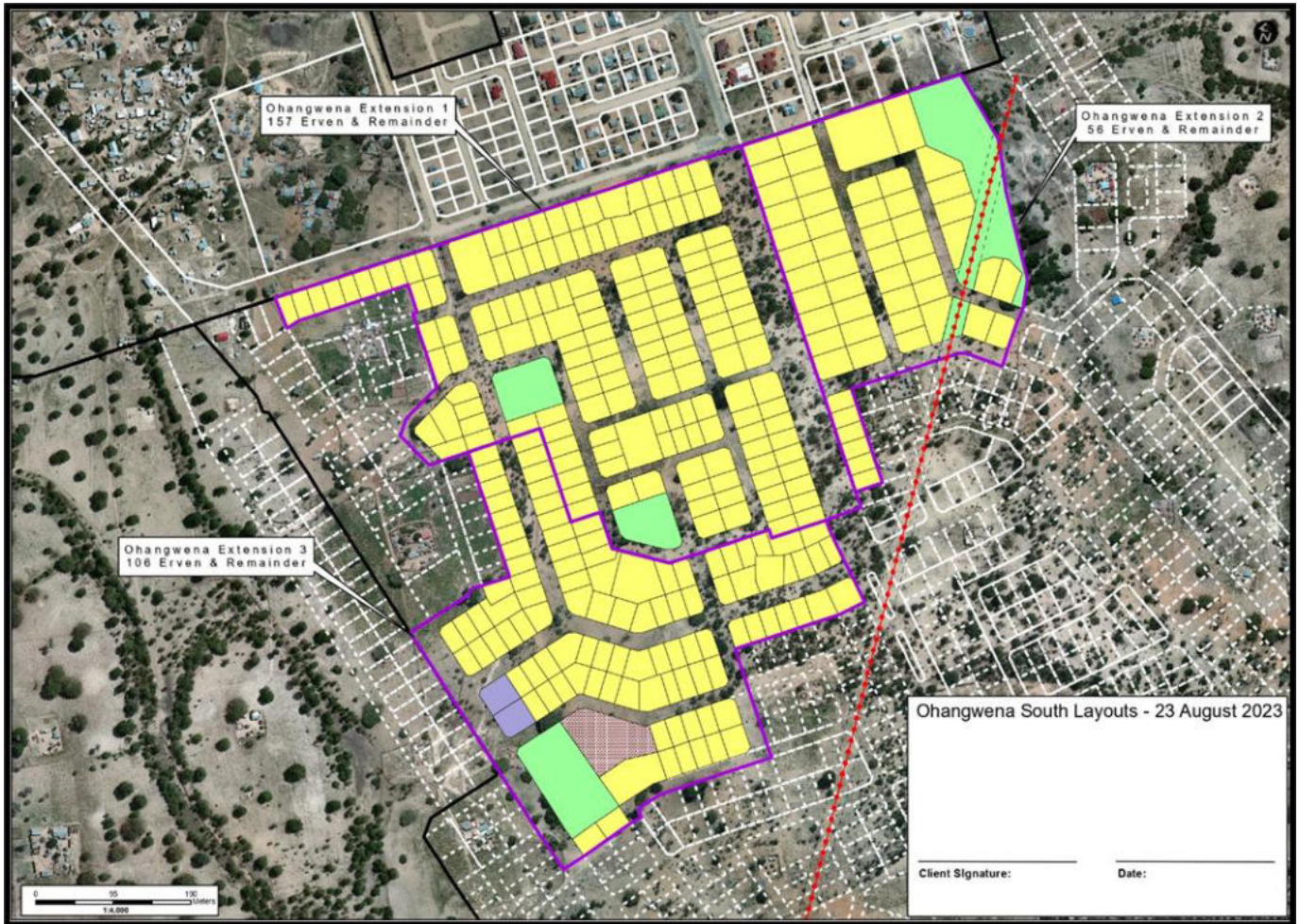


Figure 10: Draft layout of Ohangwena Extension 1 to 3

4.3.3 Engineering Services and Access Provision

Electricity, water, sewer and storm water

The design of bulk services as well as internal service delivery for the three extensions will be coordinated and installed as per the specifications of the Helao Nafidi Town Council.

Access to the intended development will be obtained from the internal street network of the adjacent Ohangwena Proper.

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 10** below for the activities undertaken as part of the public participation process. The I&APs were given time to comment from **1 September 2023 to 09 October 2023**.

Table 10:Table of Public Participation Activities

ACTIVITY	REMARKS
Placement of site notice/poster in Helao Nafidi	See Annexure A
Placing advertisements in local newspapers on namely the New Era Newspapers on 1 September 2023 and 8 September 2023 and the Namibian newspapers dated 1 September 2023 and 11 July 2023).	See Annexure B
Written notice to surrounding property owners and Interested and Affected Parties via Email (1 September 2023)	See Annexure C
A public meeting held on 13 September 2023 at 14h00 at MTC tower	See Annexure C

At the time of draft report writing, no environmental or social concerns regarding the development were received by the consultant from the general public.

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 **17 October 2023**. An Executive Summary of the DESR was also included in the letters to the registered I&APs. I&APs had until **31 October 2023** 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 11**.

Table 11: 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 11** 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.

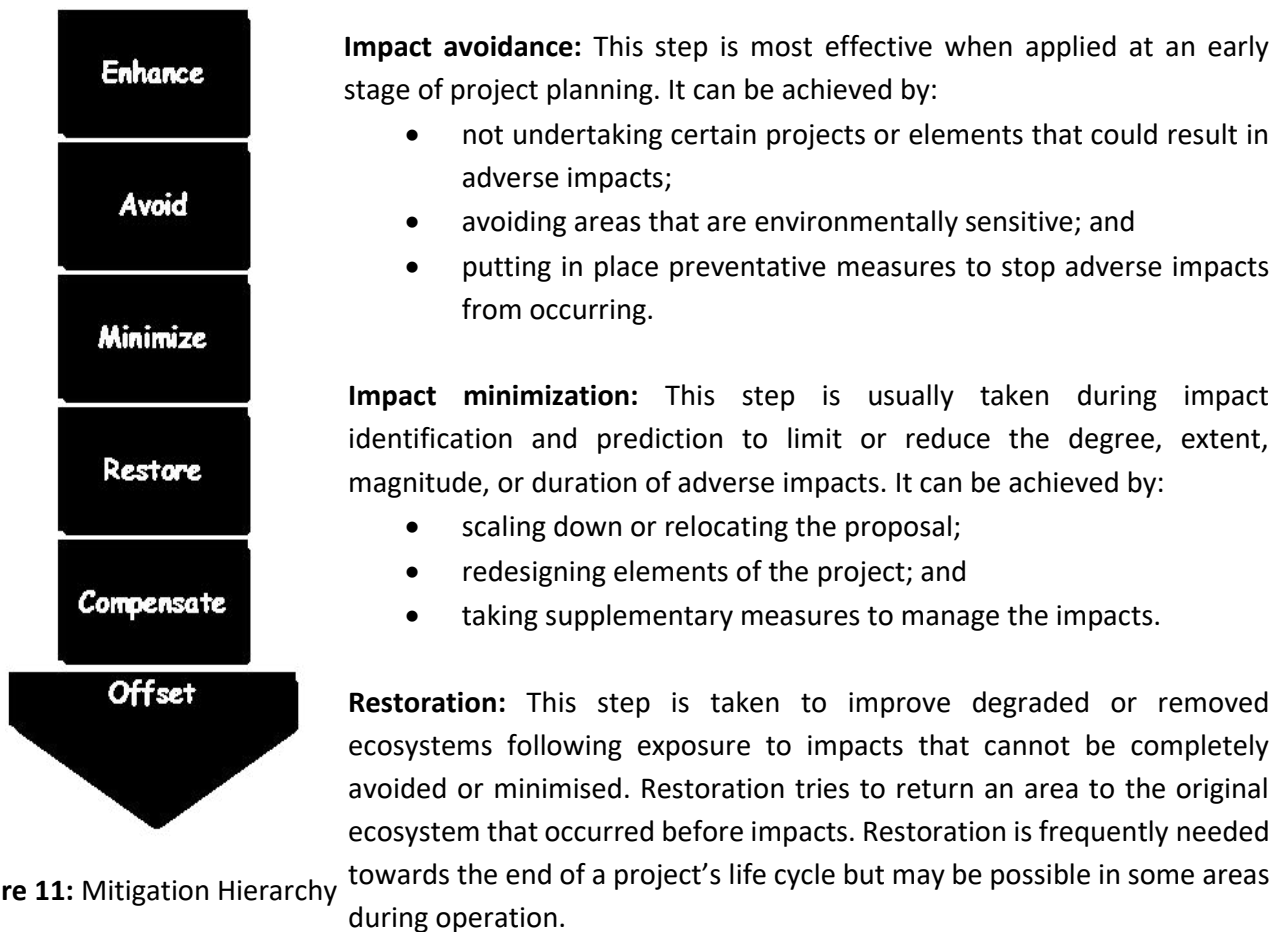


Figure 11: Mitigation Hierarchy

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 subject areas are in close proximity to an already developed area within the town.

7.2.2 Existing Service Infrastructure Impacts

The HNTC as the managing authority has committed itself to support the implementation and operation of the proposed township establishments to ensure the provision of tenure security for the respective residents. The costs involved in the provision of engineering services within the scheme areas will be borne by the respective community members, subsidised by the HNTC as necessary. The servicing process will be under the technical guidance of the HNTC; and it will be conducted incrementally as the funds become available.

The proposed areas are to be connected to the necessary services of the town. Once the sites become developed the increasing demand on the existing services would have to be determined and additional services would have to be provided for if needed.

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 proposed site has been disturbed as a result of human activities for residential, commercial, and institutional purposes amongst others. It can however be expected that the surrounding areas which support natural vegetation will also support species of conservation in particular smaller vertebrates (reptiles, amphibians, mammals and birds) because in the Cuvelai Basin relatively few large wild animals live outside the Etosha National Park, movements of wildlife were tempered with firstly as human population in the Cuvelai increased and thereafter abruptly stopped by the erection of game-proof fences around Etosha between 1961 and 1973 (Berry, 1997).

Natural aquatic communities are largely absent from the region as a result of the absence of surface water flow due to the high infiltration rates, however good rains and floods do bring species of fish and frogs.

Large areas of vegetation and trees are still found within the proposed development areas and should be kept as far as possible within the block layouts in order to help with landscaping and softening the sense of place, but also to provide the resources associated with them such as fruits used for consumption and beverages.

The trees located on the subject sites should be accommodated in the proposed use for the area. Trees protected under the Forestry Act 12 of 2001 should be protected within the development and may not be removed without a permit from the local Department of Forestry.

It is anticipated that the proposed development area and associated infrastructure (e.g. water, sewage, access route, etc.) would have localised negative implications on the environment and associated fauna and flora should the proposed mitigation measures as outlined in the EMP be enforced.

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.

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.

7.4 CONSTRUCTION PHASE IMPACTS ON THE SOCIO-ECONOMIC ENVIRONMENT

7.4.1 Heritage impacts

Helao Nafidi is not located in a Heritage Protection Zone. Thus, there will be no impact on the heritage resources of the area. 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 bulk infrastructure service construction of the proposed project an influx of migrant workforce who will require temporary accommodation in Helao Nafidi 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 (bulk services materials, etc.) 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. Safety of pedestrians will also need to be considered, especially with regards to pedestrian crossings, more so the children attending school in the development area. An

increase in traffic will also result in more dust impacts considering that most of the roads in the study area are gravel in nature.

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.

7.4.8 Waste Impacts

During construction waste may be generated on site. Waste generated during construction must be disposed of at the nearest approved landfill site.

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 sites 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 Helao Nafidi who frequent the site. The additional buildings and infrastructure to be erected on site will cause a higher visual impact to the natural area.

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

Many people in Helao Nafidi town are residing and conducting business activities in informal structures that are not properly serviced with the relevant municipal services such as water, sewage, electricity and roads. The subject areas will be provided with these amenities, which will enhance the

quality of life of the residents and attract more investors. This will in turn uplift the general economy of the town and create more employment and business opportunities for the residents.

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 F** 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 13**. The **Tables 14 – 16** 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 12: 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	FLT Helao Nafidi	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	FLT Helao Nafidi	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)	FLT Helao Nafidi	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

Description of potential impact	Project alternative	No mitigation / mitigation	Extent	Magnitude	Duration	Significance	Probability	Confidence	Reversibility	Cumulative impact
4. Surface & ground water	FLT Helao Nafidi	No mitigation	Local	Medium	Short term	Medium	Probable	Certain	Reversible	Medium (-ve)
		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	FLT Helao Nafidi	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	FLT Helao Nafidi	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	FLT Helao Nafidi	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	FLT Helao Nafidi	No mitigation	Local	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	Mitigation	Local	Very low	Short term	Very low	Probable	Certain	Reversible	Very low
		No mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
		Mitigation	Local	Neutral	Short term	Neutral	Probable	Certain	Reversible	Neutral
9. Noise impacts	FLT Helao Nafidi	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	FLT Helao Nafidi	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	FLT Helao Nafidi	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	FLT Helao Nafidi	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	FLT Helao Nafidi	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	FLT Helao Nafidi	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	FLT Helao Nafidi	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	FLT Helao Nafidi	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	FLT Helao Nafidi	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	FLT Helao Nafidi	No mitigation	Local	High	Long term	High (+)	Probable	Probable	Reversible	High (+)
		Mitigation	Local	High	Long term	High (+)	Probable	Probable	Reversible	High (+)
	No go	No mitigation	Local	Neutral	Long term	Neutral	Probable	Probable	Reversible	Neutral
		Mitigation	Local	Neutral	Long term	Neutral	Probable	Probable	Reversible	Neutral

Table 13: 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. • Engineering solutions are to be imposed on the management of stormwater to help curb the effect of inundations on the settlements. Where necessary, the stormwater should be channelled out of the settlements into the main storm water channels (iishana) to prevent damages to the properties.

Table 14: 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.

CONSTRUCTION PHASE IMPACTS	
Impact	Mitigation Measures
	<ul style="list-style-type: none"> • 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. • 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.

CONSTRUCTION PHASE IMPACTS	
Impact	Mitigation Measures
	<ul style="list-style-type: none"> • Contaminated runoff from the construction sites should be prevented from entering the surface and ground water bodies. • The seasonal flooding that affects the eastern part of the Bonya Informal Settlement can be contained and managed by re-directing the water into the mainstream through a cohesive storm water management plan. • 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. • 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. • The block layout plan for Bonya should make provision for urban agriculture on the blocks that are along the main stormwater channels (iishana). This will help ensure food sustainability for the residents and also promote economic sustainability through the sale of the surplus. The agriculture blocks will be under the administration of the HNTC and will be leased out to individuals or group thereof to help generate revenues for the HNTC.
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.

CONSTRUCTION PHASE IMPACTS	
Impact	Mitigation Measures
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.
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.

CONSTRUCTION PHASE IMPACTS	
Impact	Mitigation Measures
	<ul style="list-style-type: none"> • Limit construction times to acceptable daylight hours. Construction should be limited to normal working days and office hours from 08h00 to 17h00 and 7:30 – 13:00 on Saturdays. • Install technology such as silencers on construction machinery if noise levels are significantly high. • Provide ear plugs and earmuffs to staff undertaking the noisy activity or working within proximity thereof or alternatively, all construction workers should be equipped with ear protection equipment. • 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 Duster 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. • Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 40 km/hr should be set for all vehicles travelling over exposed areas • Cover any stockpiles with plastic to minimise windblown dust. • Provide workers with dust masks.
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. • Ensure that no excavated soil, refuse or building rubble generated on site are placed or dumped on surrounding properties or land

CONSTRUCTION PHASE IMPACTS	
Impact	Mitigation Measures
	<ul style="list-style-type: none"> • 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. • Strictly, no burning of waste on the site or at the disposal site is allowed as it possess environmental and public health impacts
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 15: 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). • Ensure proper and regular maintenance of the area. • No illegal dumping of waste should be allowed
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.

OPERATIONAL PHASE IMPACTS	
Impact	Mitigation Measures
	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. The formalisation of Bonya and Ombili should seek to incorporate the social and cultural practices that are pertinent to the day-to-day operations of the communities to ensure that the social and cultural well-beings of the communities are not disrupted. Provision should be made for informal markets to enable the residents to operate their day-to-day small scale businesses activities to maintain their livelihoods. Further provision should be made for sustainable urban agricultural practices to enable the residents to grow their own food and strive towards achieving food security and ending hunger as required by the Sustainable Development Goal 2 (SDG2). The formalisation of Bonya and Ombili will comprise of both freehold land, starter title and land hold rights to cater to individuals in various income categories The HNTC to encourage and assist the residents of the affected settlements to form saving groups and raise money for the installation of the necessary engineering services as well as for the administration of the FLTS

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 13**, 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 Helao Nafidi are expected to benefit from the township establishments. The provision of basic services is not only important to ensure the health of a community, but also to promote development. It is envisaged that the township establishments and the construction of bulk services in Helao Nafidi will form the keystone of uplifting and expanding the town and create a more sustainable livelihood for the community socially and economically.

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 Helao Nafidi are further expected to benefit from the proposed development. The significance of the social impact was therefore deemed to be **High (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: DEAF for consideration and decision making. If MEFT: DEAF 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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